

Extending a new model of e-learning system performance in higher learning institutions In Rwanda

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ABSTRACT

Globally, the current education requires the great effort and technology to produce the quality in Higher Learning Institution and in this time our society go fast to adopt new technology of learning. In this paper, we proposed new model of e-learning in Higher Learning Institutions in Rwanda and we introduced and design how it would work to improve the quality of education while facilitating the training and it is a key model of e-learning to lower expense of educational provisional. Based on the purpose of this paper, we collected data by using quantitative and qualitative methods as well as questionnaires, interviews and observations for the success of this paper. The target population was from ICT department staff and students from MKU with the sample size of 154 whereas 124 of responders out of our target sample size indicating a response rate of 80.52 percent which is strong number for this research. Data gathered and presented in tables and graphics for making interpretations and analysis of findings to be well understood by readers. The findings showed that the new model of E-learning could improve the performance of education in High learning institution.

Keywords: - E-Learning, e-Learning proposed Model, ICT, Internet, HLI

I. INTRODUCTION

Before the introduction of E-learning, it obviously to attend the class to everyone who need to graduate for awarding a degree or certificate and at that time a University of other high learning institution had to build many class rooms and pay a lot for international visitors to teach face to face in class at university where this demand a lot of budget (Hawkins, 2002).

Thus, E-learning would remained as the new tool to support learning environment even though it demands a range of contributions such as subject, technical, design and resources expertise (Connolly, 2007).

Then, in term of Information Communication and Technology (ICT) where it has demonstrated how it could enlarge the capacity and power in legacy of making an improvement in many areas such as Higher Learning Education, Research and innovation, Medicine and many much more different arts.

We can that the innovation in learning environment is now growing and it becomes very useful as its contribution in education sector (Connolly, 2007). Information Communication and Technology when it is used in education especially for the type of distance learning, it brings most advantage for a whole community where it can allow education facilities to be accessible remotely rather than the current situation (James et al., 2007).

However, also during a pedagogical situation where the needs of ICT is much valuable to support the improvement in education, it is crucial so that the ICT has intervened to boost the learning situation and of course this regard need additional model to improve learning can be accessible between lecturer and learners or students (Connolly, 2007).

According to James et al (2007), the future learning environment would demonstrate that you can do your job and choose the time which is suitable for to attend online lessons as long as you have learning materials that could facility your learning.

Back to the presence of using E-learning in Higher Learning Education (HLE) career like University where the aim was to enlarge the number of students who cannot join the school as currently situation because of different circumstances like attending school not suitable to some people because of their jobs but need to study and then online learning or e-Learning became the solution. In this research paper, the researchers have gathered all information needed to start the e-Learning model which could be suitable for many higher learning institutions and its implementation as compared to the previous models used by many researchers in pedagogical situation (Steven, 2009).

Education in Rwanda in many Universities has demonstrated that the e-learning model is needed to help as many students wanted to study in different ways like weekend, evening, day and even in the holidays and this showed it has been succeed widespread as new technology that could attractive and improve the effectiveness in education content and teaching situation (Bizimana et al.,2020).

Models of e-learning describe where technology plays a specific role in supporting learning environmental and we can say that one model can be good to one learning institution but not suitable to others (Stoel and Lee, 2003). They can be described both at the level of pedagogical principles and at the level of detailed practice in implementing the best principles for improving education in Higher Learning and this require time and experts to balances differences models in term to find the good one for learning institution(Stoel and Lee, 2003; Bizimana et al.,2020).

For Higher Learning Institution by using e-learning model would bring attractiveness in education and collaboration as well to reduce to build class rooms while reduce cost goes for international visitors and mostly, this could improve the quality in education as it give varieties way of reaching for resources studies and research for students and lecturers (Abrami and Bures,1996; Steven, 2009; Wagner, Hassanein and Head,2008).

In many countries where the education was born like west countries, showed that the improvement in education need to be evaluated just to see an improvement with the quality of education and bring the learning quality improvement (Hawkins, 2002). The common question arose is this: Why we need E-learning Model in our institution? This question can motivate learners and other stakeholders why they should use the e-learning system model while they are still using the current models of Learning.

Main problem arose in current education system as the current method of studying met with the barriers to provide education for all and in all conditions. In this way, understand how a student with disabilities want to study the courses but attending the class is not possible to this person but with E-learning, this student can stay home and have online course without attending the class room with lecturer or instructor. In this way, e-learning is shown its capability to remove some conditions that could not permit anyone to study as long as he/she needs to study without limitation of time and places (Wagner, Hassanein and Head,2008).

In this paper we have taken the private university like Mount Kenya University (MKU) located in kigali as the case study where this University has started to enjoy the best of e-learning in education services. This paper summarized the evolutional model used in e-learning and after research findings drafted the new model to be used at the Higher Learning Institutions which is still in journey to start new model of e-learning system.

In Rwanda, the new model of e-learning in Higher Learning Institutions would improve the quality of education and the numbers of students would be increased as they can take the courses without attending in class room with face to face with lecturer.

The main reason for this research paper to Rwanda's education could be looked on the different perspectives such as the cost went to the visitors who to teach from abroad or remotely, the workers from different institutions such as privates and publics who need to attend the courses at place or in class room which require them to spend a lot of time while traveling for attending the school. By studying and extending new model of e-learning in Higher Learning Education, there would be no more of spending a lot money for travel to school and cost for visitors would be reduced as they would provide courses online and the courses would be accessed for students, researchers, and other stakeholders anytime and anywhere as long as they have an internet.

This paper expresses the general objective which is to extend a model on E-learning system Performance in Higher learning institutions (HLI) in Rwanda. However, to reach to the objective of this research, we include the following specifics objectives which are:

- i. To develop a model on e-learning system performance in higher learning institutions in Rwanda.

- ii. To review the impact of IT Infrastructures effects on E-learning performance.
- iii. To identify the benefits available on the e-learning?
- iv. To establish the Relationship between Learning environment and models adopted for E-learning implementation.

II. LITERATURE REVIEW

2.1. E-learning and its Meaning

E-learning can be defined as the use of computer network technology, primarily over an intranet or through the Internet to deliver information and instruction to individuals or group of people or group of students (Welsh et al., 2003). E-learning requires a number of tools to support for providing its advantages on the learning environment like message boards, chatrooms, interactive assessment marked by computers, and prospects of unlimited access to electronic resources (McKnight,2001).

However, E-learning is more than computer and Internet. We can say that an E-learning may include all electronic devices such as CD ROMs, DVDs, Radios, Television, mobile phones, and so forth that could be used to enhance learning through multimedia capabilities and network technologies (Haddad, Draxler and Hernes, 2002). For this, we may say that Network technologies have the potential to deliver timely and appropriate knowledge and skills to the right people, at a suitable time, in a convenient place, which is what E-learning or E training is all about. This allows for personalizing, just in time, up to date, and user centered educational activities (Haddad, Draxler and Hernes, 2002).

Therefore, previous studies explained that e-learning have ability to permit acceptable performance of flexible educational programs to meet the various needs of students as one of determining for higher Learning Institution nowadays (Narangerel and Tsuyoshi,2017).

For instance, Jim (2002) explained that the E-learning could offer a rich choice of learning experiences that fit in with specific needs, aspirations and learning styles, and so much more to facilitate personal growth and professional development (Jim,2002). Furthermore, the E-learning approach could be a powerful tool or means to facilitate collaboration between different learners across the globe which means an instructor could teach the course and provide the content to students from different country at the same time (MacDonald and Thompson, 2005).

E-learning could be more than just using technology to deliver the instructional materials but rather in using technology to build learners' capacity to learn on their own and at their own pace (Jim, 2002). Unfortunately, Higher Learning Institution in developing countries may not have the capacity and necessary infrastructures and human resources to support and embrace E-learning capabilities for all learners which is the barrier for e-learning implementation (Bizimana et al.,2020).

2.2. The Role of E-Learning for Academic Performance

The e-learning performances viewed previously by intellectuals and also the academic reviews in the range from neutral to positive and in another hand they believed that that e-learning is at least as effective as traditional instructional strategies (Rosenberg, Grad and Matear, 2003). There are no major differences in academic performance between the more traditional and more technology-oriented modes of teaching and training (Cavanaugh, 2001). On the other hand, many reviews go further and in deep to discover what real is behind e-learning performance and then, this reproducing a principal positive attitude towards the influence of e-learning in Higher Learning Institution (Mayer, 2003).

The e-learning can be viewed widely and in many fields related to locations and time used and it for that we saw how benefiting the learning environment while offering a variety of new possibilities to learners (Breuleux et al., 2002).

Other benefits of using ICT tools to support e-learning model include increases the facility in enrollment or time in school as education programs reach in many regions far from schools, greater educational opportunity for students or learners who are unable to attend traditional schools or gain access to resources and when instructors not locally available, an e-learning system shows its performance while increasing in student-teacher communication during the class courses (Narangerel and Tsuyoshi,2017).

According to previous studies where authors like Cavanaugh (2005), Barker and Wendel(2001) showed that the students in virtual schools showed greater improvement than their conventional school colleagues. This showed that there were an improvement in critical thinking and researching while using computers materials and also show how learning independently is possible with time management (McKnight, 2001; Kearsley, 2006). There is no doubt that these students or group of students which have online courses work properly as those who are attending the classroom when they are managed well time and facilities (Kearsley, 2000).

It is for this equality between the delivery systems has been well documented over decades for adult learners and showed that there is a possibility to increase learning performance when using ICT tools reserved to support an e-learning at higher learning institution (Branigan, 2001). The successful online learning or, distance learning is depending on how learners remained independence while studying (Keegan, 1996).

2.3. The Role of Prior Computer Skills on Performance in E-Learning Setup

In an e-learning journey most students and instructors are better prepared than others to use e-learning technologies and services to enable their educational progress and successful. However, the readiness becomes crucial factor in accounting for the success of e-learning applications in education.

In this way, Looker and Thiessen (2002) provided that digital divide for Canadian youth, commented that access to and experience with computer technology determines what they called computer competency and that this competency is usually related with urban residents of higher economic status when we can add that this may happen even in our environment.

Levin and Arafeh (2002) observed that the differences between students who are highly motivated with skills in the internet usage and those who have had little opportunity to develop their experience with networking tools have different views on benefiting and enjoying e-learning world. Dewar and Whittington (2000) went further to find the conclusion and concluded that adult learners can predict the pattern of their participation in online courses which means that in all categories the support on e-learning world can be used to increase awareness on the e-learning usage.

2.4. Why e-learning model is needed in Higher Learning Institution in developing countries

The e-learning model play a vital role to any Higher Learning Institution and beyond this, the use of ICT in learning environment contributes more to this journey. However, the improvement also needs to be careful when managing on-line education (Drucker, 1998).

According to Haddad, Draxler and Hernes (2002) indicated that the benefits associated with E-learning could be many when the market is well monitored before implementation and this may include the role of stakeholders. Welsh et al. (2003) highlighted some benefits of e-learning and can be adopted for any country especially those from developing country like Rwanda. They said and these benefits including how e-learning provides consistent, worldwide

training and reduce delivery cycle time, increase learner convenience, and reducing of information overload, and also e-learning improves tracking learners activities, this allows institutions to have some controls to students to see if it is true they are in collaboration in online study and lastly, e-learning lower expenses of educational provision.

Adding that isolated students and professionals in the civil service or private sector could be able to work and study at their own pace without losing time, any time, and anywhere through the Internet or intranet depending on what facilities available (Haddad, Draxler and Hernes, 2002).

MacDonald and Thompson (2005) proved that e-learning combined with instructional strategies and multimedia tends to create positive attitudes of students and teachers as well as promoting decent learning outcomes which look good for developing country. Thus, stakeholders from Higher Learning Institution (HLI) in the developing world should make it possible to become creative in their successful way of embracing e-learning model but this could apply from one HLI to other, depending on the target visionary

The e-learning methodology has made it easy for such interaction to be possible because academic leaders or who are in charges of academic of HLI can share easily with students through emails and with the aid to which is available on of the online library portal.

2.5. E-learning Models

Previous studies evaluated different e-learning models and then we meant that there exist many e-learning models including demand driven model, Strategic e-learning Model, the technology acceptance model (TAM), and so forth and then each one is developed for certain case or state because a model can be applicable to one institution but not for another one. In this paper, we discussed for demand driven model, Strategic e-learning Model.

i. Demand- Driven Model (MacDonald)

Demand-driven learning model was developed in Canada as a collaborative effort between academics and experts from private and public industries and this promoted the learning strategies at the moment it implemented (MacDonald et al., 2001). This model discussed the technology learning management system, contents and services. An evaluation for program has been followed with continuous adaptation and improvement. The exact model is shown in **Fig 1**.

The technology is a support or a tool to achieve the desired learning outcomes in a cost-effective way. Primary goal of model is to encourage academics to actively

participate in the development and use technology in teaching process (MacDonald et al., 2001).

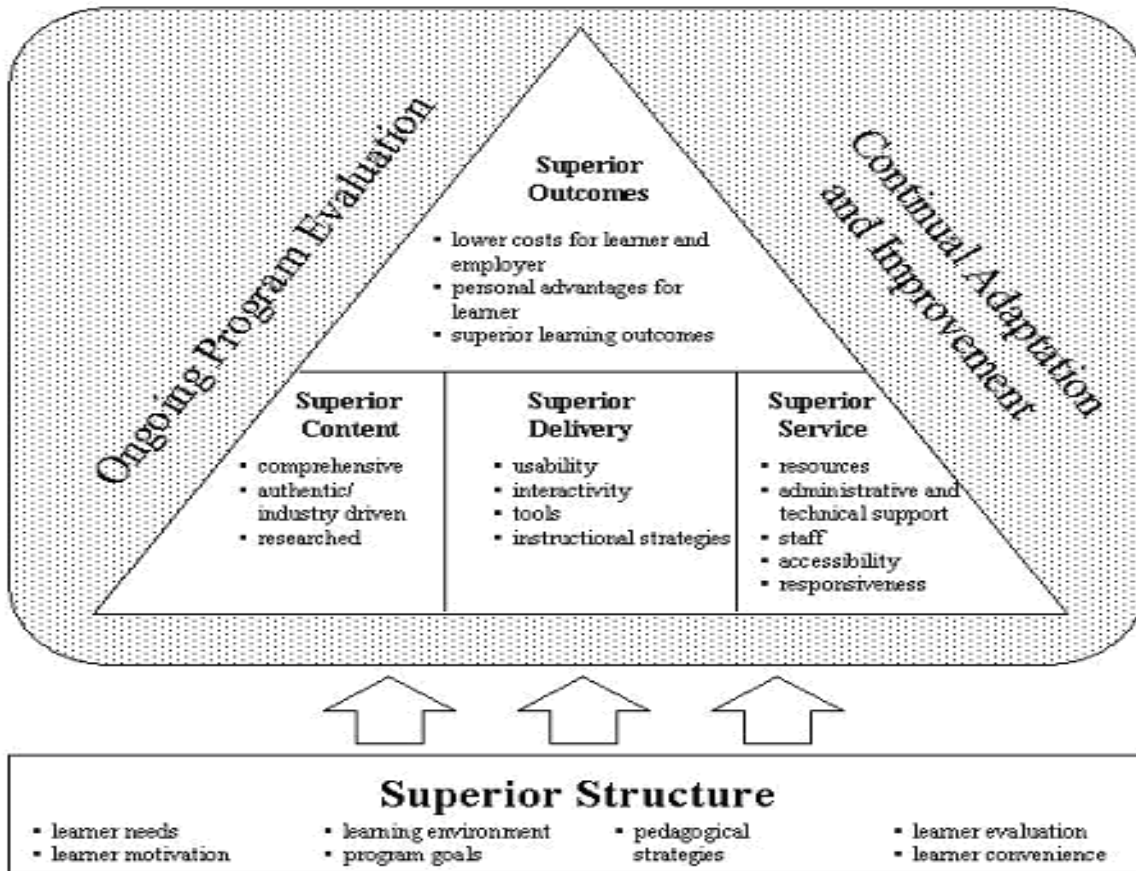


Fig 1: Demand- Driven Model (MacDonald)

This model highlights the importance of realizing the changing needs of students and instructors as well as pedagogical changes and therefore changes must be made in content and services in favor of learners (MacDonald et al., 2001).

ii. Strategic e-learning Model

The strategic e-learning Model developed by Meng-Jung Tsai, this model explained how to handle the feelings of isolation and how to solve online technological problems by themselves. The model has the learner at its core and this core connected to three interactive components named Perceived skills, self-regulation or self-monitoring and we found attitude, and motivation, anxiety all based in affection that explaining successful learning: However, the recent research explored online adoption for learners evaluate so fast as they gain new things easier while supported by e-learning facilities (Vaishali and Dayanand, 2015). The Fig 2 showed the strategic e-learning model developed by Meng Jun Tsai.

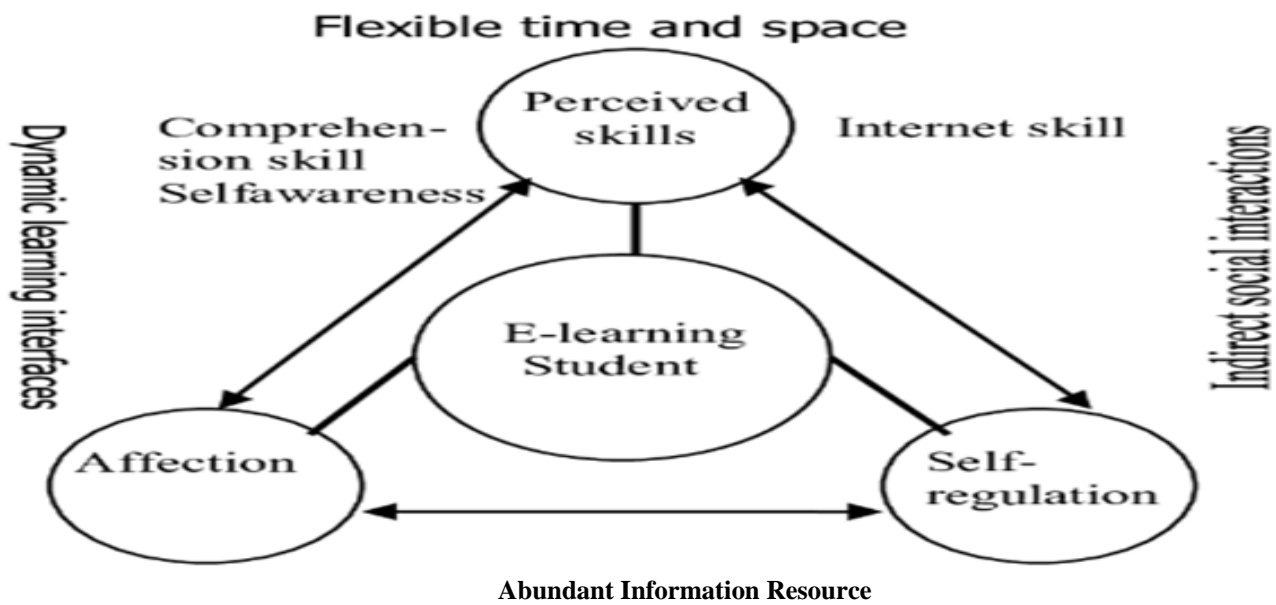


Fig 2: Strategic e-learning Model by Meng-Jung Tsai

III. METHODOLOGY

The researcher used a case study to get information on Extending a Model on e-learning system Performance in higher learning institutions in Rwanda. When used in combination, quantitative and qualitative methods complement each other and allow for a more complete analysis (Mugenda and Mugenda, 2003). However, the sample size is selected in such a way that knowledge gained is representative of the total population under study (Israel, 1992).

The sample size was calculated by using Yamane formula for sample size determination for defined small population (target population less than 2000) with confidence of 95% and margin error of 5% (Israel, 1992). For target population in IT department covered of 250 people and researcher classed them to from Staffs and Senior Management, and Senior Lecturers of MKU and Students of MKU. In this way the total population of 154 people selected as the sample size. In this way, questionnaires were distributed by the researchers to respondents to complete and conducted interview for those who couldn't complete the questionnaire. The management of Data allowed to researchers to put together information from at the beginning for archiving of valuable solution (Leicester, 2016). However, based on the objectives of the research paper, Qualitative and quantitative research method used and data

The eight statements were set to find the answer to this question

were analyzed in tabular format (Mugenda and Mugenda, 2003).

In this research survey, the main stakeholders of ICT department of MKU according to our sample size of 154 whereas a total 100 questionnaires were received and 24 persons were interviewed which is total covered of 124 participated. Hence, 124 out of our target sample size indicating a response rate of 80.52 percent which is strong number for this research.

IV. RESEARCH FINDINGS BASED ON THE OBJECTIVES

Based on the objectives, the questionnaire has been set so that the responders have to answer Yes or No and Agree or Disagree or don't know according to the statement provided.

4.1. How e-learning system could increase the performance of education in Higher Learning Institution

The eight statements were set to find the answer to this question.

Statements	The Performance of E-learning at University to improve Research	Learners can learn at home, at work, at college, library or community centers	Increased courses choice	e-learning attracts people that do not participate in conventional learning	e-learning is more interesting than conventional learning	e-learning can motivate people to use computers and the internet	e-learning can save costs on transport	Learners can learn in their own time
Count	72.00	65.00	67.00	50.00	75.00	78.00	80.00	70.00

Table 1: Rating of E-learning to improve Performance of Education in percentage

Explanation:

The Table 1 shows that the performance of E-learning at **in higher institution** to improve research in education rated at 72.00 percent which is indicating how they value how E-learning is good to help the Universities in making research

for improving Education. Then, 80.00 percent of the responders said that e-learning can save the costs they spend daily for transports from Home/Job to school.

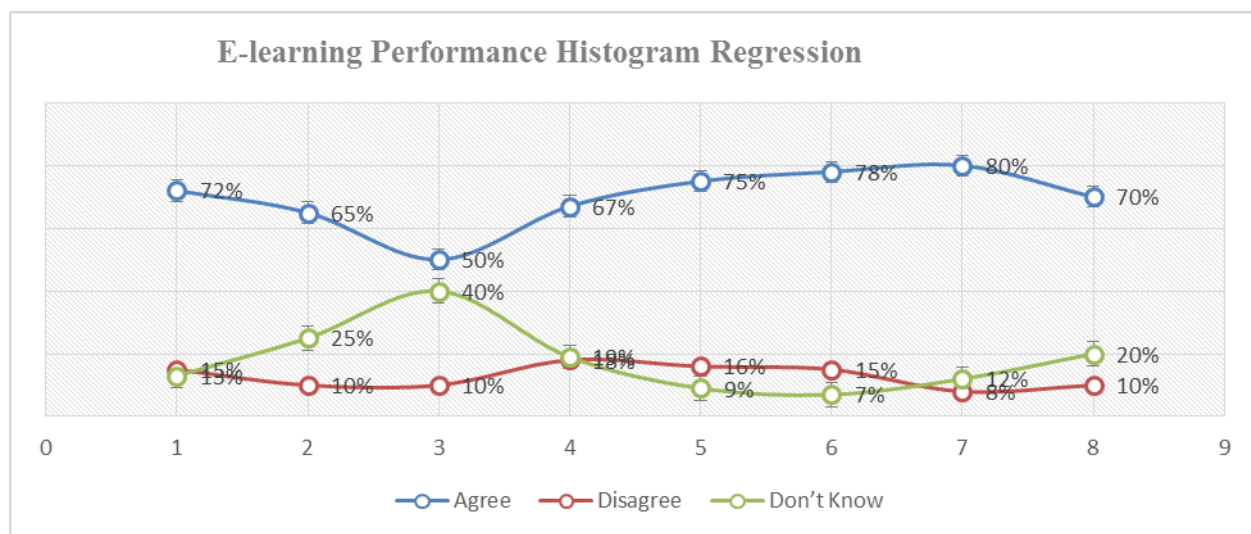


Fig 3: The regression of the E-learning performance

Fig 3 shows that 70.00 per cent of the responders said that Learners can learn in their own time which is meaning of saving time while they are using an E-learning system. 78.00 per cent said that e-learning can motivate people to use computers and the internet while 75.00 per cent said that e-learning is more interesting that conventional learning. As you can see that the responders ranked to 65.00 percent about learners can learn at home, at work, at college, Library or community centers. They rated also to how e-learning could

increase the courses choices at 67.00 percent whereas they rated at 50.00 percent to how e-learning attracts people that do not participate in conventional learning. The lower ranking below 70.00 percent was because of high percentage of responders that replied don't know. The Figure 9 shows the different curses of the e-learning as data gathered from the survey. The regression of the performance is on **Blue color** as shown. The **Blue curve** shows the views of respondents about e-learning Performance and its role in learning environment.

4.2. How ICT Infrastructures could have effects on e-learning performance?

To reach to the point of this question, five statements were set for responders

Details	ICT infrastructures support E-learning to increase productivity to learners	ICT infrastructures help to reduce cost go to lecturers/visitors	The effectiveness for learners increased	Higher and better performance of access to online courses
Count	82.00	73.00	75.00	76.00

Table 2: The impact of ICT Infrastructures on e-learning performance

As shown on the **Table 2**, responders rated at higher 82.00 percent to how IT infrastructures support E-learning to increase productivity to learners. The effectiveness performance for learners increased rated at 75.00 percent and higher and better performance of access to online courses

rated for 76.00 percent whereas how IT infrastructures help to reduce cost go to lecturers/visitors ranked at 73.00 percent. The findings showed that the responders understand well the role of ICT infrastructures to support e-learning implementation to success.

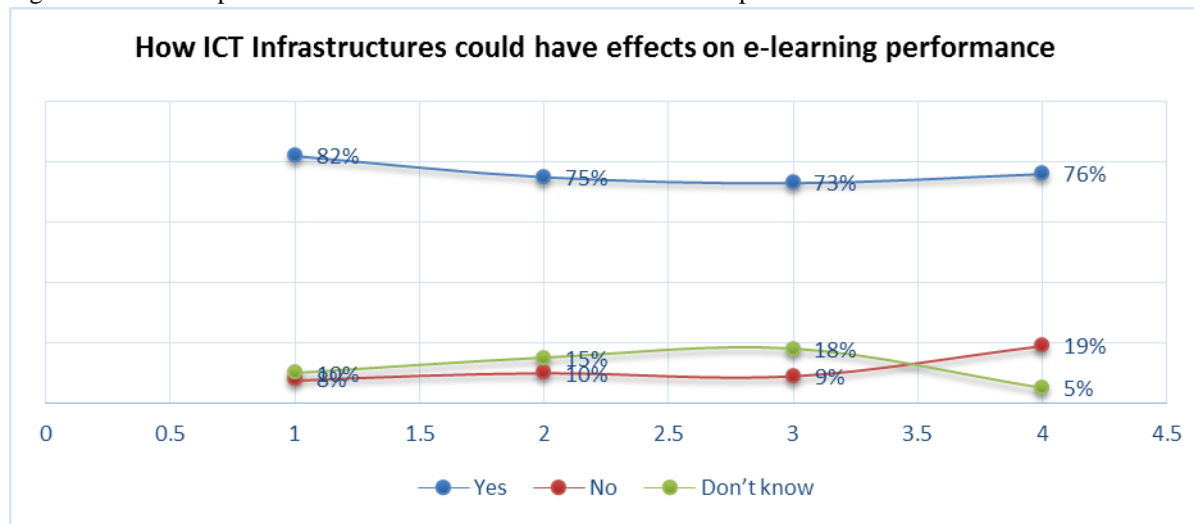


Fig 4: The Histogram of impact of ICT Infrastructures for E-learning

From the Table 2 we can that the regression rated by responders so that ICT Infrastructures supported E-learning is on Blue color as shown. The Blue curve shows the views of respondents about ICT Infrastructures supported E-learning.

4.3. The Relationship between current Learning and new model of E-learning

Details	Currently Learning is a good enough to help learning system	E-learning provides enough facilities to students and staffs	E-learning facilitates remote learning than current situation	E-learning minimized cost in term of providing course study	New Model of e-learning can extend a wide number of students than current learning
Count	60.00	55.00	78.00	70.00	71.00

Table 3: The Relationship between current Learning and new model of E-learning

Findings show in **Fig 5** illustrates the Relationship between current Learning and new model of E-learning where the responders ranked to 60.00 percent for how currently learning is a good enough to help learning system. E-learning to provide enough facilities to students and staffs ranked at

55.00 percent because more of responders answered neither disagree nor agree and other total disagree. This can be the cause of lack of knowledge or training for new model of learning to improve the quality of education. This is why

training in ICT in more important to start the good of e- learning.

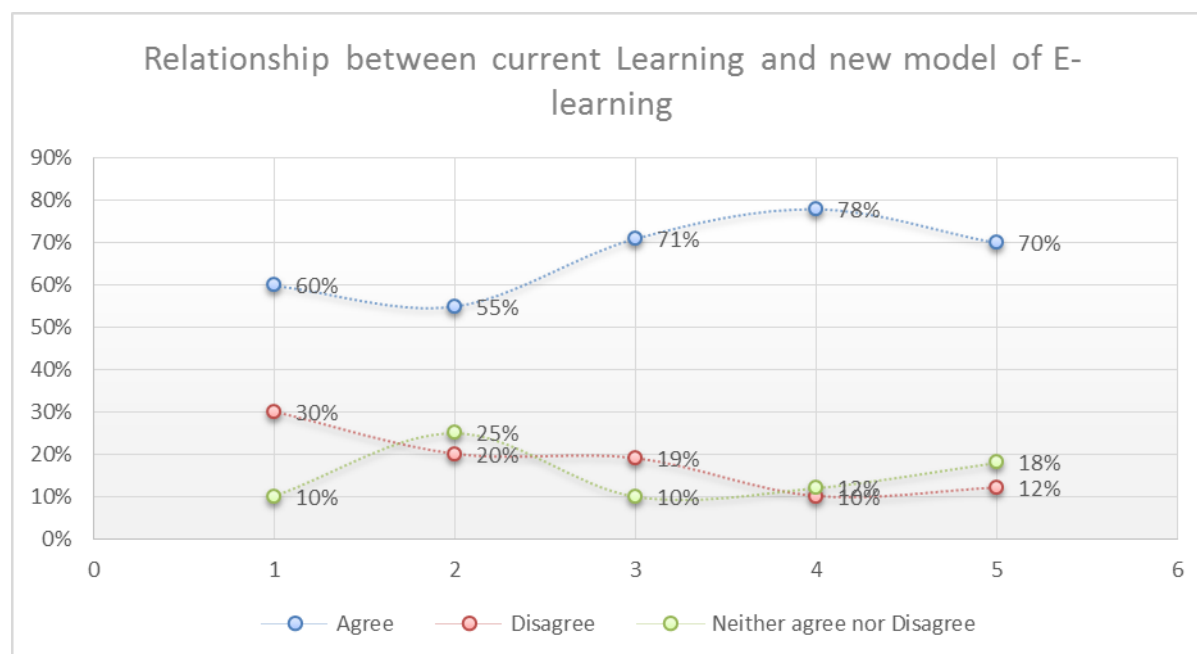


Fig 5: Comparison between New model of E-learning and Current Learning

This curve of blue shows that there were a big number of responders who understand well how e-learning is good by comparing with the current situation of study which allowing a student to stay in class every day. Fig 5 illustrates that New model of E-learning to extend a wide number of students than

current learning rated at 71.00 percent by responders and E-learning to facilitate remote learning than current situation for 78.00 percent whereas E-learning to minimize cost in term of providing course study facilities to students from different areas worldwide ranked at 70.00 percent.

4.4. Barriers for University to implement new model of E-learning

Statement	Lack of computer equipment and skills to use computer	Lack of internet connection and broadband connection	Lack of knowledge about e-learning, course choice and related.	Cost of computer equipment and internet connection	Lack of motivation from staffs and Negative attitudes to e-learning	Out of date and unreliable equipment and Cost of courses	Learning style not suited to the use of computers	Fear of computers to deal with new things remotely
Count	73.00	78.00	80.00	76.00	70.00	72.00	65.00	54.00

Table 1: Barriers for University to implement new model of E-learning

In the new model of E-learning, they could be some barriers for universities and it is recommended to revise all necessary tools and skills to start implementation at University for success project. The Fig 6 shows that lack of computer equipment and skills to use computer is a big barrier and ranked at 73.00 percent. Lack of internet connection and broadband connection ranked at 78.00 percent and lack of Knowledge about e-learning course choice and related ranked

at 80.00 percent. The cost of computer equipment and internet connection ranked at 76.00 percent whereas lack of motivation from staffs and negative attitudes to e-learning ranked at 70.00 percent. The Out of data and unreliable equipment and cost of e -learning courses ranked to 72.00 percent and learning style not suited to the use of computers ranked at 65.00 percent whereas the Fear of computers to deal with new things remotely ranked at 54.00 percent.

The Fig 6 shows the Regression of Barriers for Higher Learning Institution to support new model of e-learning

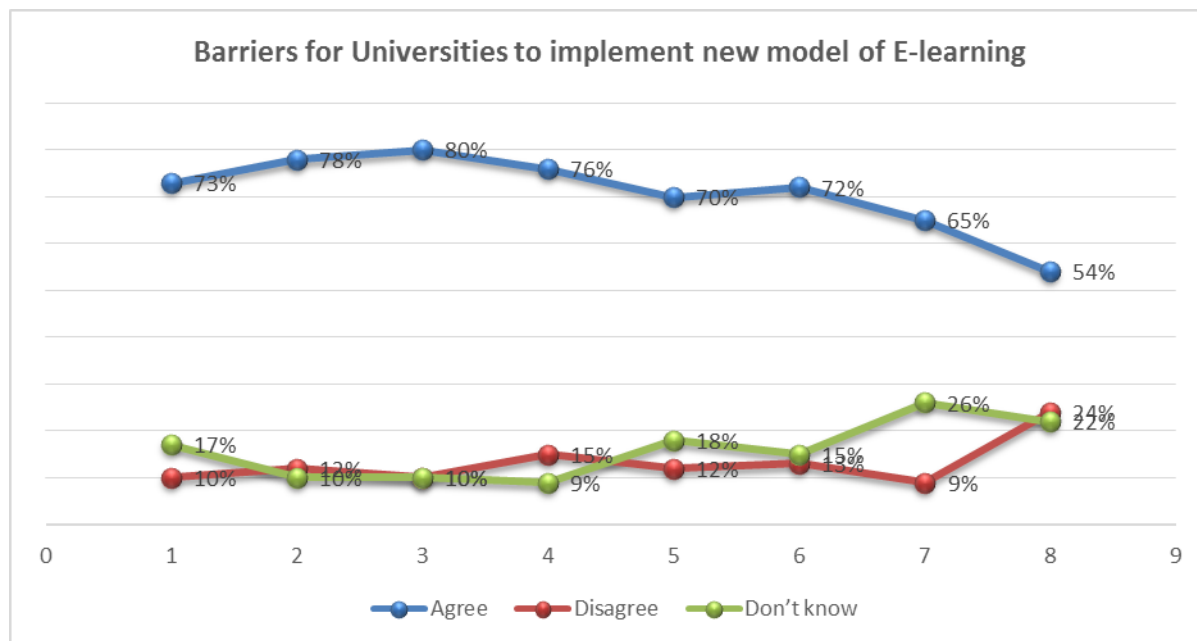


Fig 6: Regression of Barriers for Higher Learning Institution to support new model of e-learning

Fig 6 shows that the curve of lack of computer equipment and skills to use computer is at higher level and the Lack of internet connection and broadband connection is shown by the blue curve as the highest barrier. The lack of Knowledge about e-learning course choice and related has also the blue curve where it is at highest level. The red and green curves of showed that the people understand well the barriers of e-learning in Higher Learning Institution.

5. Analysis on the model on the e-learning which could be adopted for quality education in higher institution

There is no other model for learning environment than e-learning system platform as researcher gathered all information from responders to where they proved that e-learning system is the major model each Higher Learning Institution can adopt just for improving the quality of education and saving money that goes for class equipment. While using e-learning technology, do not need to always buy materials as you bought once where you saved the money and

this will not need to buy again the materials. This e-learning system performance would base on the technical skills of the users, learning environmental, the policies to follow as every technology has its own policies and this why for better implementation policies and guidelines have to be on stage. Models of e-learning described where technology plays a specific role in supporting learning.

Refers to the MacDonald et al. (2001) where showed that the learning models have many advantages while linking different parts for success. However the evaluation is always important especially in higher learning education environment. In this paper, we designed the proposed model that should be used in the most Higher Learning Institutions in Rwanda based on the what they have and what they need for successful implementation and showed the important elements to consider.

The Fig 7 showed the new proposed model of e-learning system to be used after research study.

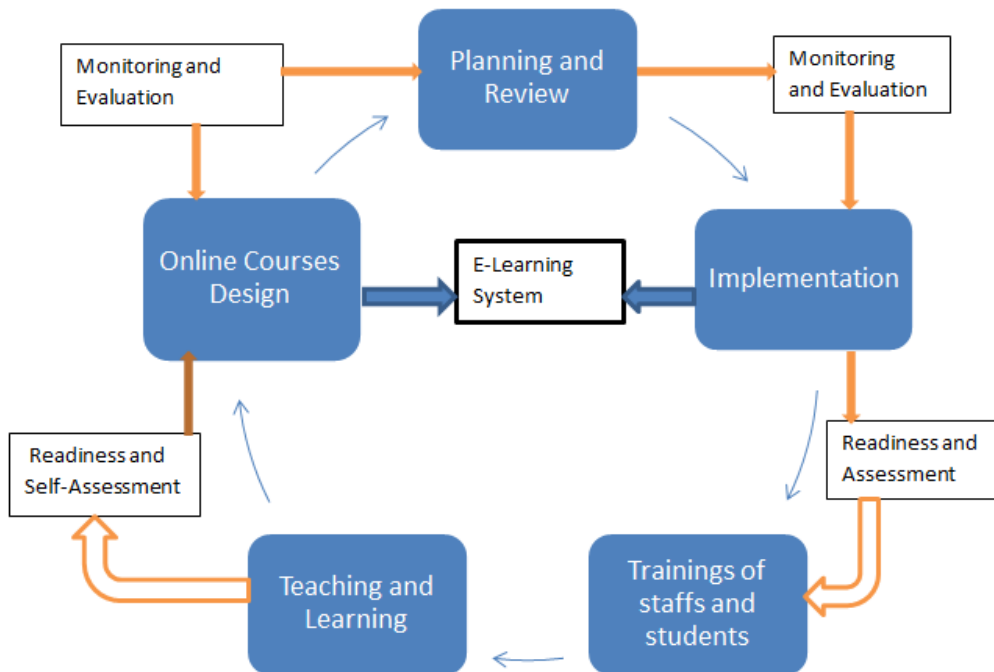


Fig 7: New Model after research study for HLI in Rwanda

6. Proposed New Model Explanations

- *Planning and Review Phase*

In this phase, the institution would be gathering all necessary information to start the project including the budget, specialist for distance learning to provide some ideas and compare to the successful eLearning models. In this phase, institution will set an order to follow for starting the project.

- *Implementation Phase*

In this phase, the institution would set up and gathered IT infrastructure related to distance learning and as well as prepared the smart class rooms with equipped with all facilities in distance learning with a support of high-speed internet connectivity. After implementation, the institution will go to the next level of training.

- *Training Phases (Staffs, Lecturers, Students)*

In this phase of training, the institution has to bring the specialist for training the staffs how to use an eLearning material and how they can be benefited from eLearning. They

should have training in ICT as well for new students. Sometime student lack enough skills on ICT and that is why the institution needs to make training for them so that they should have access to eLearning material easier. Because for all new technology, it is recommended to provide training for all stakeholders who will need to use it in accordingly. They have to know the policy of using this eLearning system and the policy would guide them. It means a policy document should be available for all to be read.

- *Teaching and Learning*

Here, as long as all stakeholders obtained the skills and knowledge about eLearning activities and services, the lecturers are ready to provide the courses to students and also students are ready to access the courses through online system. No matter the location they are as long as they can access the modules through online. This is why eLearning removes the barriers of those who cannot be able to sit for learning in classroom but even far from school they can continue the courses and graduate (Breuleux, Robert and Laferriere, 2002).

- *Readiness and Assessment*

Here, the students are being prepared and making themselves the free study just in term they are comfortable with the courses. They are mature enough as long as they have

skilled on the e-learning functionalities and they can follow themselves the contents and review as well as their interaction with lecturers, international visitors to provide online courses or training.

- **Online Courses design and Curriculum**

In this phase, as lecturers and students once trained, they should upload courses online and the institution would set the curriculum of the distance learning and all related to schedule to follow. Here, lecturers would put on the eLearning system the modules courses and providing guidance and guidelines to be used by students while they interact with e-learning.

- **Monitoring and Evaluation**

In every step, it recommends making an evaluation and monitoring of activities just to see how to improve the services and what is good to modify or add something new. The staff Management of Higher Institutions have to be in charge of this. Teaching and Learning can be evaluated accordingly and the preparedness after training laid the learners interacted fast to the Blended learning or eLearning model system platform.

7. E-learning Policies Enforcement

E-learning policies enforcement is the great tool in distance learning environment where the usability of the services between international visitors and the University facilitating how each one will be profited on it and including Lecturers, staff and Students must have to know how each one will be benefited on E-learning System utility and how they collaborate together.

The policy should look on every requirement to support services delivery all in term of quality of education at University like if students have access to online courses, modules and other materials that could help them in their programs and as well as easier submission of their works. The policy also has to demonstrate how teaching method will improve the quality of education and the policy has to show the starting time and ending time of the courses so that to whoever get distance learning would know what exact time need to complete the course.

“Yes, there is a policy for this distance learning and as well as e-learning system and we let students, Staff and Senior Management as well as Lecturers to know what is inside”
Said by one of the Staff.

This policy also mentions the basics skills for lecturers and students all in term of no one will lose access to the course offered online.

Students views about e-learning

Based on the interviews and questionnaires, researcher found that some students understand well the benefits and facilities available on the distance learning. They believe that while they can access online modules and programs and no need to be in class daily as long as you can sit home and work online, ask questions in student’s blogs and as well submit their works to the lecturers easier.

“As this e-learning model is implemented, I believe that I would not stay in class for long time as I work part time, it would help me to set good time where I should be fit on my courses.” **_A student**

Many of students believed how this e-learning system allows them to follow their courses from different areas and submit their works easier through online system.

Meanwhile, there are few of them that still not understand how this e-learning could help them and believe that the current system allows them to interact with their lecturer face to face and ask what they want from lecturers.

“Yes, the new model of e-learning is good but we need time to enjoy its facilities and I believe it will happen one day” **_A student.**

Researchers explained well to them that even though the old system helps to interact with their lecturers and what they see as the problems resolved in the distance learning system environment as you can ask any question through video call and receive the answers immediately.

What Lecturers views about E-learning New Model

Based on the research survey where Researchers interviewed and discussed with some lectures believed that this E-learning teaching method make job easier and Lecturers understood well the facilities from learning distances as they believe how it can help them to be trained from international professors.

“I should send the notes online and believe that every student will access my course and submit at the time.” **_Lecturer**

They believe that you can have online trainings and soon you start to practice what you have learned. As they can also send courses to student through online and make sure to each one who access to the courses as they set up modules and programs for students. In Learning management system like e-learning such as LatitudeLearning, Mycourse, Schoology, Moodle and so forth which are the learning techniques tools to provide courses module to students. This would facilitate the online teaching method. Some of tools are free and open source platform which can be accessible easier by lecturers and allow them to create online courses and manage virtual classrooms.

“The main benefit I see on distance learning like e-learning is that you do not need to be in class every day as you can send notes and students receive them, later you make a collection of their works without going in class many times which is helping me to save money for transport”. **_A lecturer from MKU**

Staff and Senior Managements Views about E-learning

Nowadays the teaching method like distance learning facilitates many Universities to provide trainings for lectures and the entire family of education believe that to boost quality education, different techniques would be used. In MKU, they have organized how students and lecturers have to interact with online courses. The staff as well as Senior Management believe how this E-learning method can support distance learning while it would provide trainings and as well as cost saving.

“As we collaborate with good Universities which have the higher ranking in education, this would help our lecturers to be trained through distance learning and this method of e-learning would help in cost saving as we currently paid a lot for visitors” **_ Senior Management.**

Does Internet Connectivity remain an Issue for New e-learning Model?

The internet connectivity with high speed is very important in the E-learning implementation. In many universities in Rwanda internet of Third Generation (3G) and Fourth Generation (4G) is available (Bizimana et al.,2020). The high-speed internet connectivity allows users to navigate quickly on the browser to upload courses and submit works easier without delay as the slower internet happened! However, the higher internet connectivity of 4G and 5G at hand can be started to be used in Rwanda to easier the new model of e-learning (Bizimana et al,2022).

V. CONCLUSION AND RECOMMENDATIONS

The general objective of this paper was to extending a model on E-learning system for improving the Performance of education in Higher learning institutions in Rwanda and based on the purpose of this study, we collected data by using quantitative and qualitative methods and we use as well questionnaires, interviews and observations for the success of this paper.

In this paper we design an appropriate model of E-learning to be adopted Higher Learning Institutions in Rwanda

and this illustrated that the Higher Learning Institutions must first putting in place the ICT infrastructures to support this new model of E-learning. The accessibility of higher internet connectivity like 4G and 5G will be an asset for students and lecturers or teachers to collaborate between them. This would make good relationship between learners and students because higher speed internet connectivity play a vital role in e-learning world (Bizimana et al, 2020; Bizimana et al.,2022).

After that the Higher Learning Institution would start to train the staffs and Lecturers and also others who would benefit from New model of E-learning. After that, the Higher Learning Institution would start to train the new students who are interested for this new model of E-learning. After all the stakeholders gain the skills and the knowledge on the use of new model E-learning, the Higher Learning Institution would start the distance learning program as long as implementation of all needed was putting in place.

The e-learning implementation in the Higher Learning Institutions could be meeting with some barriers as shown in this research study and it is better to think before how to manage these challenges to avoid or delay E-learning model for implementation to success.

VI. FUTURE STUDY

In the future research paper, we will carry a big range of findings where we would evaluate more than one Higher Learning Institutions to have widely view in the new model of e-learning system to improve the performance of education in Higher Learning Institutions. This will make the long design and plan for E-learning implementation in many Higher Learning Institutions in Rwanda.

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