



Perceptions of Online Teaching Effectiveness in Higher Education: Case of Private Universities in Rwanda

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Abstract: This study was undertaken to investigate the online teaching effectiveness in higher education institutions during Covid 19 pandemic. It is quantitative descriptive research design which intended to describe the phenomenon of online teaching and learning in private universities. The targeted respondents were lecturers who ever delivered an online course. Both Universities and lecturers were selected purposively due to the presumed technology infrastructure and lecturer's firsthand experiences in on online teaching. Institutions are named institution A and B in this study due to research ethical consideration. The survey was sent to 93 lecturers from both selected universities, regardless whether they had the aforementioned experiences. Consequently, the researcher was able to collect back only 34 questionnaires. The research instruments used were borrowed from Volery (2000) and was a bit modified to suit the present research. It was composed of four indicators such as –Instructional design and organization, Facilitation of Discussion, Digital library, and online teaching experience. The results indicate that the main challenge that universities have to deliver an effective online teaching is the lack of digital library with a mean of 3 and 1 standard deviation. It is therefore recommended to private universities to digitalize their libraries for effective online teaching. Furthermore, as the study was quantitative, it is recommended for future researchers to undertake the same study from either qualitative research or mixed methods approaches for in depth understanding of the phenomenon.

Keywords: Online learning, Distance learning, Digital library, Instructional design, Computer based learning

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1. Introduction

Since decades ago, there has been an increasing demand for higher learning institutions to shift from traditional mode to online mode of teaching (Broadbent & Poon, 2015, Greenland & Moore 2014, and Mccrory, 2010). The

changing reality of the 21st century accelerated the aforementioned demand due to various needs of learners and advanced technology (Greenland & Moore 2014), after which developed countries universities embarked on a journey of switching from face to face, distance learning to online learning (Mccrory, 2010). However, their

counterpart institutions in developing countries remained lagging behind to make use of the new technology and embrace the ever changing realities of the 21st century (Soloja & Skok, 2014). The reluctance of universities from developing countries in implementing online learning is associated with obstacles such as lack of appropriate infrastructure, lack of accreditation by the global scale acknowledged organizations, insufficient use of online learning quality assurance measures (Moussa & Moussa, 2009), and learning materials development (Bhuasiri, 2012). Furthermore, Azawei, Parslow, & Lundqvist (2016) identify that challenges that hinder higher learning institutions to implement online learning is connected to users' willingness to switch from traditional teaching routines to digital based learning. The same authors further arguing that some instructors understand online learning as a way of delivering learning content electronically by computer, cell-phones, or other portable electronic gadgets. Additionally, Azawei, et al., 2016, Bollinger and Wasilik, 2009) agree with the statement that "*Millions of words have been written about the technology, and its potentials, but not much about what the teachers and the learners actually do online is known (Salmon 2012, p11.)*". It is therefore paramount importance to investigate the online learning experience of private universities in Rwanda during Covid 19 pandemic.

1.1 Statement of the problem

Online learning has potential to impact the 21st century education as it might reach out individual learners' convenience (Gorbunovs, Kapenieks, Cakula, 2016). Additionally, online learning serves as a tool for reducing higher educational instructional costs (Casement, 2013). While Covid 19 caused the global financial crisis and thus universities were supposed to keep delivering courses at the cheaper cost, higher education institutions in Rwanda closed doors during lockdowns due to lack of preparedness to embracing online teaching. Consequently, students learning advancement got stuck and they repeated the year of study. Furthermore as Covid 19 pandemic persisted, universities resumed learning activities and the higher education council allowed them to offer thirty percent of their curricula. It is with the above respect that this study aims to investigate the online learning effectiveness in higher education institutions during coronavirus pandemic.

1.2 Theoretical framework

A theory refers to "*a set of statements, principles, or ideas that relate to a particular subject and they usually describe, explain, and or predicts phenomena (Picciano, 2017)*". According to Graham, Henri, and Gibbons (2013) the term theory and model are used as synonymous in research except that a model often visualizes the existing reality or a concept while the theory describes a

phenomenon in the abstractive form. Online learning as a new mode of acquiring knowledge has no unique theories to describe it; rather its theories are built upon old models of learning such as behaviorism, social constructivism and cognitive models (Hrastinski, 2009). Similarly, (Picciano, 2017) identifies three online learning theories namely community of inquiry theory (CoI), Connectivism theory, and online collaborative learning theory (OCL). The community of inquiry theory asserts that the successful online learning happens when there is a high interactivity between students and the instructor after which the learning experience will result into three dimensions of learning—social presence, cognitive presence and teaching presence. In other words, the community of inquiry theory advocates that online class participants both students and instructor must show their visibility throughout social, learning and teaching interactive activities. As to connectivism theory, Picciano (2017) recommends students' training on how to use IT gadgets and regurgitate the vast ocean of information they are exposed to. Basically, to learn smoothly, the connectivism theory advocates the association of learning with prior experience. It is in that respect that it emphasizes the students and teacher training on the IT and online learning tools before the actual learning activities are introduced. Additionally, the online collaborative learning theory emphasizes that students of different performance levels should work together in small groups towards the common goal and are responsible for each other's learning as well as their own (Gokhale, 1995). This implies that to have a successful online class and being an effective online teacher, there should be an active and live class discussions alike those which are in a face to face or traditional mode of learning. Only what should make the difference between those two different classes is the distance.

2. Literature Review

Studies show that the massive publications on online learning emerged early 1990s together with the advent of internet, raised the growing interest in online learning (Volery, Lord, 2000). At the beginning, the concept—online learning was often used interchangeably with "distance learning, computer based learning distributed learning or lifelong learning (Volery, Lord, 2000)." Although those concepts of distance learning and online learning have closest meaning, literature shows that they are slightly different. Moore and Kearsley, (1996) maintain that distance learning refers to a learning environment where 'students and teachers are separated by distance and sometimes by time. As for online learning, Curran (2008) adds that it refers to the process by which students and teachers communicate with one another and interact with course content via Internet-based learning technologies. In a nutshell, Kentnor (2015) summarizes that online learning is an updated version of distance learning through which, the content delivered by the use

of computer and internet cannot be lower than 80% of the content to teach (Ellen & Seaman, 2011; Shelton & Saltsman, 2005). Distance learning evolved around various forms from correspondence education in (Philipps, 1728), radio in 1894s (Omaha World Herald, 1897; Buckland & Dye, 1991), television in 1932s (Koenig & Hill, 1967) to online—internet based learning or online learning in 1980s (Rudestam & Schoenholtz-Read, 2002) cited in (Kentnor, 2015). Kentnor (2015) asserts that online educational programs emerged in 1989, when the university of Phoenix began using compu Serve. Shortly thereafter, 1991 the world wide web was unveiled, and the university of Phoenix became one of the first universities to offer online education programs through internet. Although there is a slight contradiction in literature regarding the exact year the e-learning emerged, authors highlight that it emerged between eighties and nineties of nineteen century (Hubackova, 2015, Bezovski, & Poorani, 2016).

2.1 Effective learning delivery tools

In the review of the literature about how effective e-learning environment ought to be, the focus was placed upon the readiness of private universities in Rwanda in delivering an effective online learning since the outbreak of covid 19 which imposed schools to close campuses. An effective online learning is assessed through different perspectives namely instructors readiness, learners' readiness and a supportive learning environment. In as much as a the "content in the e-learning environment is presented and distributed via e-learning tools supported by the learning management system (Bezovski & Poorani, 2016), there is an assumption that private universities in Rwanda were ready to deliver an effective online learning when they abruptly shifted from traditional mode of teaching. Bezovski & Poorani, 2016) classify e-learning tools in two categories namely synchronous category, which comprises instructor and learner simultaneous presence throughout virtual classrooms, webinars, video conferencing and alike, and asynchronous—reading materials, audio, and video, forums, wikis, etc.

2.2 Factors influencing online learning success

Factors contributing to online learning success were extensively discussed. Alqahtani, and Rajkhan (2020) identifies several factors among others—effectiveness, technology, instructor characteristics and students 'characteristics (Lopez, Nagelhout, 1995). The failure or success in online learning mainly depends on the aforementioned factors. Either one or the other of both results is due to the fact that technology in online learning is defined as a tool for content delivery (Craig, Coldwell-Neilson, Goold, & Beekhuyzen, 2012). However

technology alone cannot lead online learning success in as much as instructors and students are not fully engaged.

2.3 Technology in online learning

As technology use is increasingly becoming a driving tool in all areas of life (Craig, Coldwell-Neilson, Goold, & Beekhuyzen, 2012), its use in schools, particularly in higher education institutions became urgent during the COVID- 19 pandemic. Its role is not limited to affect the increase of students interaction, and facilitation of knowledge transfer (Raja & Nagasubramani,2018), but also it increases access to education as students can learn any time and wherever they are. While schools worldwide abruptly closed down their doors as a result COVID-19 pandemic, the online teaching remained the only option that higher education institutions could use to continue their schooling activities. However, despite the aforementioned advantages of technology use in education, Raja & Nagasubramani (2018) reveal some barriers that hinder the successful implementation of online teaching such as lack of access, resources, expertise and support. The study conducted in Rwanda in relation to online learning experience during COVID-19 pandemic indicates that one among challenges students face is the limited access to the electricity and internet (Nsengimana, Bazimaziki, Nyirahabimana, Mushimiyimana, Mutarutinya, Mugabo, & Nsengimana, 2021). These findings serve the basis of presuming that both instructors and students in higher learning education were not prepared to embrace the online learning as they were imposed to swiftly change from traditional to digital learning.

2.4 Online Instructors and Students' Characteristics

Instructors' characteristics have greater impact on student's success or failure of the students and they can vary depending on the learning environment. With reference to online teaching, different researchers have identified the key characteristics of an online teacher which make him successful in his/her teaching activities. Alqahtani, and Rajkhan (2020) identifies three characteristics—instructor's attitudes towards technology, teaching style, and control of technology, which can affect the learning outcomes. The authors opinions align with (Ulug, Ozden, & Eryilmaz, 2011) who add that instructor's positive attitudes affect students' performance, whereas negative attitudes lead to their failure. However, when it comes to compare university instructors' age and students, you realize that a number of higher education instructors are technology migrates, whereas their students are net generations. Instructors therefore tend to slowly respond to their students' needs and queries while such attitudes lower students learning interests. Additionally, Barbour & Bennett, 2013; Garrison, Anderson, & Archer, 2001; Hoyle, 2010; Lai,

2017; Stroet, Opdenakker, & Minnaert, 2013; Velasquez, Graham, & Osguthorpe (2013) state that an effective online teacher is able to foster the students relationships. This relationship has to do with the way he/she gets them connected with the learning tasks, encouragement for individual contribution and collective discussions (Brinthaup, Fisher, Raffo, Woodard, & Gardner, 2011).

In virtual learning environment teachers-students interaction plays a vital role in students' engagement and mentorship as they always need a consistent interaction with their instructor and peers Alqahtani, and Rajkhan, (2020). To create such consistent interaction, an online instructor must have a good control of technology. Alqahtani, and Rajkhan (2020) highlight that those control skills which may hold students together with the instructor are but not limited to students' passwords modification, changing the course setting, and organizational skills. However, in as much as classroom learning activities are run by both instructors and learners, the involvement of either side is highly needed for effective teaching and learning. In other words, the combined characteristics of instructors and learners may affect the online learning success. With respect to students' characteristics, which influence the online learning delivery, Alqahtani, and Rajkhan (2020) maintain that students' prior experience, access to computers at home and personality are the main students' characteristics that can influence the online learning success.

3. Methodology

This study used quantitative research design which intended to describe the phenomenon of online teaching and learning experience of lecturers who were required to teach online during the lockdown caused by COVID 19 pandemic in Rwanda. The targeted lecturers were those who either were delivering an online course or taught an online course. The study targeted the two private universities which were selected purposively and named A and B in this study due to confidentiality issues. The selection of these institutions was led by two criteria namely— researcher's assumptions of believing that their had strong technological infrastructure than others, and the high enrollment rate of students residents of Kigali city whereby the access to electronic gadgets and internet connectivity is higher than their counterpart who are living in Kigali city. With respect to the population as mentioned above, online lecturers who were teaching an online course or have ever taught it were eligible to respond to the survey. However, given that all lecturers had no such

experience, respondents were also selected purposively based on their firsthand experience with an online teaching. The survey was sent to all lecturers from the two selected private universities regardless of whether they had the aforementioned experience because those with that experience were not well identified and thus the targeted population size was known. Consequently, only 34 respondents were able to answer the survey. The research instruments used was borrowed from Volery (2000) and was a bit modified to suit it with the research context. It was composed of four indicators such as – Instructional Design and Organization, Facilitating Discussion, Digital Library, and Online teaching experience with 10 items, 8 items, 7 items, and 5 items respectively. As to the measurement of indicators, the research instrument had five scales ranged from strongly disagree to strongly agree with numerical values ranged from one to five as shown in the descriptive statistics data presented in results table.

4. Results and Discussion

Data collected were analyzed with the support of SPSS 20219 version. As the purpose of the study was to investigate the perceptions of instructors regarding how effective they have been with reference to their online teaching experience, we only have used descriptive statistics for reporting the findings of this study such as means, percentages and standard deviations. Findings were summarized in table which indicates respondents perceptions about each of the four variables identified as the key measurement indicators of an effective online teaching. We furthermore interpreted the findings and contrasted them with the previous studies findings in order to justify their accuracy and generalize the study findings.

Perceptions of Online Learning Effectiveness in Higher Education

To assess the respondents' perceptions towards online teaching effectiveness, we used four indicators which are Instructional design and organization, Facilitation of Discussion, Digital library and online teaching experience of lecturers. Furthermore, the respondents' views were ranged from values 1 to 5 which represents five Likert scales where by 1 represented strongly Disagree (SD), 2 for Disagree (D), 3 for Neutral (N), 4 for Agree (SA) and 5 for strongly disagree or (SD). Below is the table which shows the results which emerged out of the university lecturers 'perceptions towards the online teaching.

Indicators		Hosting university				Total	Mean	SD	
		Institution A		Institution B					
		Fr.	%	Fr.	%				Fr.
Instructional design and organization	SD	2	5	0	0	2	3	4	1
	D	2	5	0	0	2	6		
	N	2	8	3	16	5	10		
	A	14	41	7	42	21	41		
	SA	14	41	6	35	20	40		
Facilitating Discussion	SD	0	0	0	0	0	0	4	1
	D	2	6	1	5	3	5		
	N	2	6	2	13	4	8		
	A	16	47	9	53	25	49		
	SA	14	41	4	27	18	36		
Digital library	SD	2	5	2	16	4	8	3	1
	D	5	17	6	36	11	22		
	N	4	16	4	23	9	19		
	A	13	37	4	22	17	32		
	SA	9	26	0	3	9	19		
Online teaching experience	AD	1	4	0	1	1	3	4	1
	D	2	5	1	4	3	5		
	N	3	8	2	16	5	10		
	A	19	56	7	43	26	52		
	SA	9	26	6	36	15	30		

The analysis shows that in the institution A, 41% agreed that there is an instructional design in place and organizational support which allow them to deliver the knowledge effectively. The same percentage has also strongly agreed that they have instructional design and organizational support that allows them to deliver the online lectures effectively. As for Institution B, 42% of the respondents confirmed to have the instructional design and organizational support whereas 35% highly agreed with the availability of those facilities. Generally, 41% Agreed with the indicators and 40% strongly agreed with the statement. The analysis by mean showed that the mean was 4 with 1 standard deviation. As the highest percentage of the respondents confirms that they have a common online instruction design model and agreed to have organizational support, it is evidenced that the Rwandan higher learning institutions are able to deliver an online teaching effectively. The stated assumption is in line with the research findings as, (Chen, 2016) highlights that a poor designed online course leads to confusion, loose of students' interest and frustration. Once therefore, students are not interested and engaged, teaching and learning activities cannot be effective in as much as an effective

teaching and learning takes place when students and teachers interact actively (Hanum, 2017). The effective learning and teaching takes place when there is an exchange of views between the participants whereby the instructors plays the role of a facilitator. An online instruction design model should be developed in such way it facilitates the flow of ideas among participants. It is from that perspective we assessed the online teaching and learning in higher education institutions in Rwanda based on the students interactions and the instructor's role in those discussion as a facilitator.

With regards to instructor's facilitation of online discussion, 47% of the respondents in the institution A moderately agreed that instructors facilitate students' exchanges, whereas 41% strongly confirmed it. Their counterparts in the institution B, 53% moderately agreed with the indicator against 27% who strongly confirmed the existence of students' smooth exchange of opinions. The average total of those who highly confirmed that they can facilitate discussion online is 36% against 49% who moderately agreed with that. With consideration of the mean which is 4 and 1 standard deviation; it can be

concluded that instructors in Rwandan higher learning institutions are able to facilitate students' online discussions. However, as the percentages of those who either highly or moderately confirm it are below the average, it can be assumed that there is still a need to improve learning experience throughout students and instructor discussion. As students' reaction depend upon their proficiency use online tools and yet both instructors and students were not prepared before their introduction to online learning (Butnaru, Niță, Anichiti, & Brînză, 2021), it can be presumed that the discussions did not flow effectively.

In connection with the use of digital library, 17% of the respondents in institution A against 16% in B disagreed with the availability of the digital library in their institution, whereas, 16% in A and 23% in B were Neutral on this variable. 37% in A against 22% moderately agreed to have a digital library, whereas 36% disagreed. The above results led to a mean score of 3 and 1 standard deviation, it can be argued that the digital libraries in universities and colleges in Rwanda do not function properly or not exist or a number of instructors do not use it. If therefore the second hypothesis is true, the only learning cannot be effective in as much as the digital libraries play the significant role in an online teaching. This is in support with the findings of (Abbasi and Zardary, 2012), which reveal that digital libraries support e-learning through the availability of resources via internet. If one among the advantages of both e-learning and digital library is to assist students in learning at their individual pace, location and time convenience (Vran, 2017), it can be argued that the digital library is nevertheless dissociated from e-learning. From the respondents' perceptions as summarized by the above findings, the lack of digital library remains a barrier to quality of online teaching.

About Online teaching experience, in the institution A, 56% moderately agreed to have an online teaching experience against 26% who strongly confirmed to have it. As for institution B, 16% confirmed to have a limited

experience in an online teaching, 43% indicated to have a moderate experience, whereas 36% strongly agreed to have this experience and with a mean of 4 and a 1 standard deviation. The above results indicate that instructors in both institutions have a limited level of an online teaching experience. This limited experience is a result of rapid shift from the traditional modes of teaching-face to face to digital teaching due to the wake of covid 19 whereby teachers forced to teach online before they were given trainings (Coman, Țiru, Meseșan-Schmitz, Stanciu, & Bularca, 2020). In other words, teaching was not effective as the lack of instructor-student interaction was revealed to be the main problem during the lockdown resulted into the awake of covid 19.

5. Conclusion and Recommendations

Although the results indicate that the courses taught during the first lock down caused by covid 19 in Rwandan higher education institutions were effectively delivered at a certain tolerated level, there are some indicators of poor instruction during the lock down— lack of electronic gadgets and internet connectivity mainly for students, and training for both prior to the use of online learning tools. Results may be doubted as instructors likely wanted to display the positive image of their institutions, however the lack of a digital library in conjunction with the afore stated indicators of poor online quality teaching serve as evidence of poor online instruction delivered during the lock down resulted into the awake of covid 19 pandemic. There is a need for further researchers to carry out a qualitative or a mixed method study to investigate in deep the availability of infrastructures in universities which may allow delivering the quality online teaching. The use heterogeneous population such as instructors, students and the university administrators and different methods will likely yield the trustworthy findings. As the current study has used few respondents, it is also recommended to future researchers to use a large number of respondents so that the generalizability can be assured.

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