E-LEARNING WORKING PAPER SERIES

Challenges and Opportunities of Adopting Online Learning at the University of Gondar: Lecturers' and Higher Officials' Perspectives

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November 2023

Challenges and opportunities of adopting online learning at the University of Gondar: Lecturers' and higher officials' perspectives

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Suggested citation:

Kibret, A.K, Eriku, G. A., and Ytayal M. M., (2023). *Challenges and opportunities of adopting online learning at the University of Gondar: Lecturers' and higher officials' perspectives.* Mastercard Foundation e-Learning Initiative Working Paper Series 1.0. https://doi.org/10.14507/MCF-eLi.I7

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Abstract

E-learning is the use of the internet and ICT to access learning material, interact with the content, instructor, and learners, and acquire knowledge. Education has grown rapidly and transformed the present isolated, teacher-center face-to-face education into online. Despite the impact of e-Learning, there are many challenges in adopting and implementing it in higher education. Therefore, the main purpose of the study was to investigate the perspective of lectures, challenges, and opportunities of adopting online learning. The study conducted institutional-based mixed quantitative and qualitative study designs at the University of Gondar from June to October 2022. Simple random sampling techniques were employed to select study participants for the quantitative study and purposive sampling was used to select higher officials for an in-depth interview. A structured self-administered and in-depth interview guide questionnaire was used for the quantitative and qualitative data respectfully. Linear regression analysis conducted for the quantitative data while inductive thematic analysis was undertaken for the qualitative data. Thirteen (13) higher officials were involved in an in-depth interview and 366 instructors participated in the quantitative study. The majority of participants believed that e-Learning is applicable. However, almost all participants agreed that the infrastructures are inadequate at the University of Gondar. Five main themes emerged from an inductive thematic analysis which includes: perceptions of adopting online learning, challenges of adopting online learning, opportunities of adopting online learning, strategies to overcome challenges, and higher officials' willingness and support. Most instructors and all higher officials are willing and happy to adopt. Internet connectivity, electric power, computer access, and poor perception of instructors, students, and employees will be a challenge to adopting e-Learning. Capacity-building training for the instructors and supporting teams and fulfilling infrastructures for the successful implementation of e-Learning at the University of Gondar is recommended.

1. Introduction

1.1. Background

The development of Information Technology (IT) has motivated improvements in various fields such as finance, business, health, and education. As a result, education has grown rapidly and stimulated in transforming the present isolated, teacher-center face to face education into online teaching and learning (e-Learning), which is a direct result of the integration of education and technology (1, 2).

E-learning is defined as the use of the internet and information and communication technologies to deliver online learning (3, 4). It is also defined as the use of the internet to access learning material, to interact with the content, instructor, learners and also to obtain support during the learning process, and to acquire knowledge (4). It is emerging as an important strategy to provide widespread and easy access to quality in higher education (5, 6).

Nowadays e-Learning is becoming very popular as the number of internet users are increasing. E-learning gives the advantage of year-round access as compared to face-to-face education which is a one-time class. E-learning is cost-effective as course contents once developed could be easily used and modified for teaching. E-learning provides students freedom from carrying school bags and stops cutting trees for the sake of paper, pencil, and rubber. (7, 8) E-Learning also facilitates the process of learning by increasing the accessibility and availability of learning material, personalized instructions, flexibility, reusability, cost effectiveness, personalized instructions, self-paced learning, multimedia and interactivity (9).

Despite the impact of e-Learning, there are many challenges in adopting and implementing it in higher education. Among the challenges includes internet connectivity, electricity, availability of computers, and access to existing computer labs at the university for the development of e-Learning (10-12). Studies also indicate that administrative willingness and support are very crucial for infrastructure and procedural groundwork that should be fulfilled before adopting an online teaching program, during implementing it, and for maintenance of a progressive online teaching program (13, 14).

Although the champions for the development of e-Learning in Ethiopia, particularly at the University of Gondar, initiated by the Mastercard Foundation, there is no study done yet that assess lecturers' perception, the need for infrastructure, and higher officials' willingness and support for introducing and implementing it in the university. Therefore, the main purpose of the

study was to investigate the challenges and opportunities of adopting online learning at the University of Gondar.

1.2. Research Questions

The research was guided by the following research questions:

A) Do the University of Gondar lecturers perceive using online learning systems applicable to course administration?
B) Does the University of Gondar have the appropriate infrastructure to adopt an online learning?
C) Do higher officials are motivated and willing to adopt online learning at University of Gondar?
D) What will be the challenges to adopted an online-Learning?
E) What could be the possible strategies to overcome the challenges during adopting online learning?

1.3. Literature Review

Perspective of lecturers, challenges, and role of higher official in adopting e-Learning

Several studies have shown that implementing e-Learning systems in higher education institutions in developing countries face different challenges that need to be addressed before introduced e-Learning successfully. The challenges include: poor infrastructure, inadequate IT support, lack of e-Learning policy and lack of university management support. Other challenges that have been found to impede effective implementation of e-Learning include lack of appropriate computer skills among learners and their instructors, inconsistent and unreliable internet connection, and lack of consistent and affordable electricity (15-17).

According to a study done in University of Kalyani, West Bengal and Australia university IT infrastructure is a foundation to successful e-Learning where educational institutions who adopt e-Learning systems have to pay considerable attention to develop and maintain infrastructures (4, 18, 19).

Furthermore, a study done by Barefield, Amanda C et.al revealed that leaderships had a great role in providing adequate and appropriate support to the success of implementing,

developing and maintaining an existing online program by developing the necessary organizational structures and culture to ensure a successful online program (14).

Evidence also supports the idea that the success of e-Learning in higher education depends on the positive attitude of lecturers towards the adoption of e-Learning. Inadequately trained staff can become an obstacle in learning process and can lead to problems in application of online learning (20-22). Instructors need to have a good knowledge and skill on technology and positive attitude towards e-Learning for a positive learning outcome. Relevant training has to be given to all academics for an institution to be successful in achieving their higher academics targets (23).

1.4.   Conceptual Framework

The conceptual framework was drawn from prior literature written on the area. The framework depicts perceptions of lecturers and challenges in adopting e-Learning as a result of a range of demographic factors, ICT infrastructure access, and higher official willingness and support**.** It served as a guide for the study. It is illustrated below in **Figure 1**.
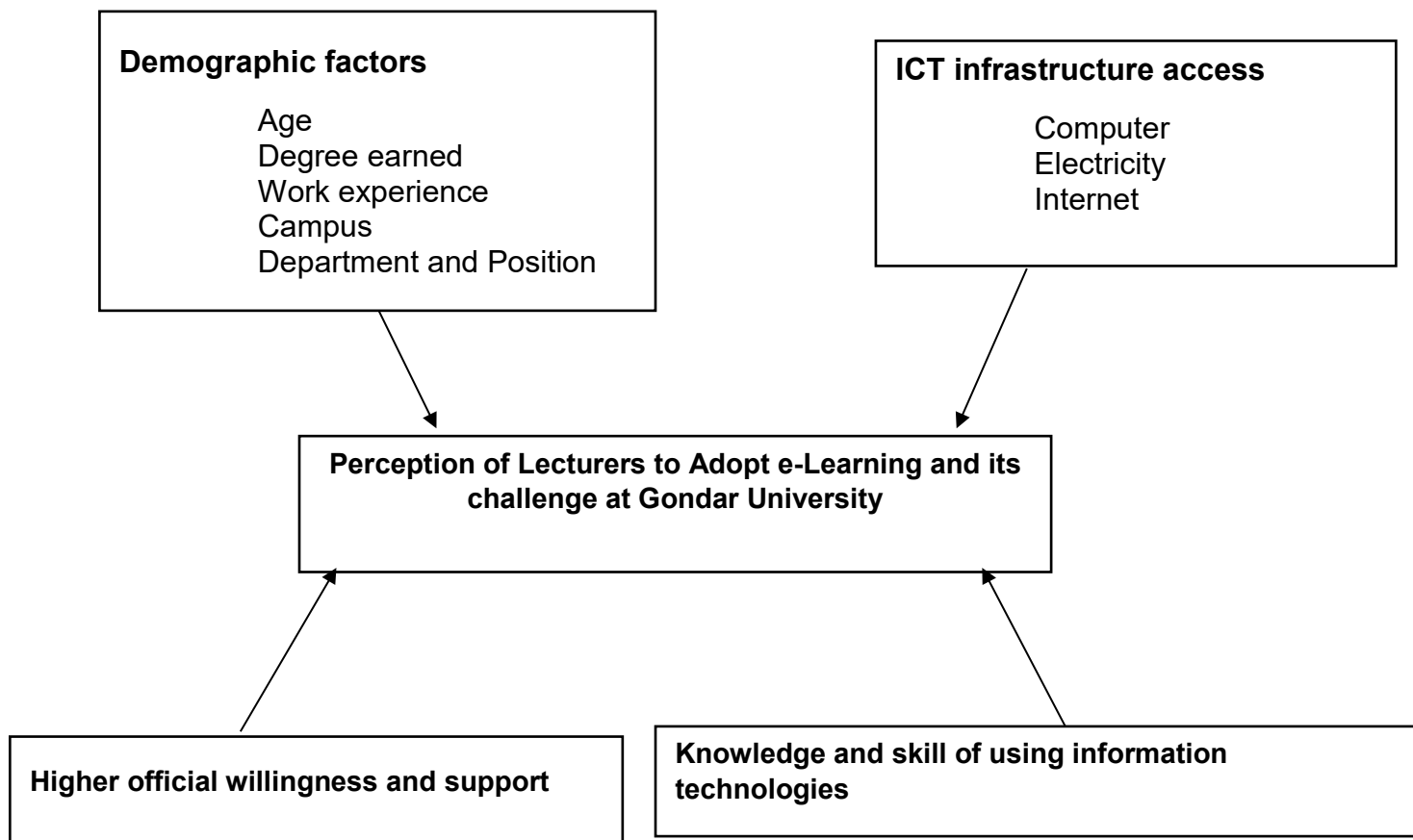
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┌─────────────────────────────────┐        ┌─────────────────────────────────┐
│ Demographic factors             │        │ ICT infrastructure access       │
│                                 │        │                                 │
│        Age                      │        │        Computer                 │
│        Degree earned            │        │        Electricity              │
│        Work experience          │        │        Internet                 │
│        Campus                   │        │                                 │
│        Department and Position  │        │                                 │
└─────────────────────────────────┘        └─────────────────────────────────┘
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Perception of Lecturers to Adopt e-Learning and its challenge at Gondar University

Higher official willingness and support

Knowledge and skill of using information technologies

Figure 1: Conceptual framework of the perception of lecturers to adopt e-Learning and its challenge at University of Gondar

2. The Significance of the Study

The study is significant for several reasons. First, findings from the study help the University and its partners to understand the perceptions of lecturers towards adopting online learning and to provide valuable knowledge during the scale-up phase. In addition, the study is significant to identify the possible challenges to adopting online learning and to avoid challenges during adopting and implementing online learning at University of Gondar.

Furthermore, finding from the current study informs the status of the university infrastructures which will help the university to design its policy and strategy to invest in infrastructures to adapt, sustain, and integrate online learning.

Finally, the study explored the willingness and support of higher officials to adopt and implement e-Learning and investigate their role in providing adequate and appropriate

support in promoting a synergistic environment conducive to technology adoption at University of Gondar.

3. Methods

3.1. Study Design, Setting, and Period

An institutional-based mixed qualitative and quantitative study design was conducted from May to September 2022 at the University of Gondar, Ethiopia. University of Gondar is located in the historic town of Gondar, and is one of the oldest and most well-established higher educational institution in the country. The university is also one of the largest and most distinguished higher educational institutions in Ethiopia, with a long and proud history of educational achievement and service. The university currently has over 2,700 academic staffs and 45,000 students enrolled in 87 undergraduates, 138 graduate, and 29 Ph.D. programs.

3.2. Study Population

All permanently hired lecturers and higher officials who were willing to give consent and were available during the study period was eligible for the study. Lecturers in this study were defined as those who are permanent staff of the university and who teach at the university. In addition, University higher officials are those university employees/focal persons who are authorized to act on behalf of the University, which include university president, vice president, college deans, school and institute heads, directors, coordinators, quality assurance focal persons, department heads and department academic coordinators.

3.3. Sample Size Determination

For quantitative study design the sample size was determined by linear regression formula

n = $Z^2O'^2$ / w2, where n-is the minimum sample size, O'= 0.96 is standard deviation of participants motivation to use online learning taken from previous study (16), Z is 95 % confidence interval which is 1.96 and W- 0.1 is level of precision,

n= 340, So, adding 10% nonresponse rate the final sample size of the study was **374.**

For the qualitative data, 13 key informants were selected purposely from each campus and saturation of data were considered to determine the number of participants. The key informant

participants include: college and school deans, academic and research directors, assistant registrar officer, college quality focal persons.

3.4.   Sampling Procedure and Technique

For quantitative data, the University of Gondar comprises five campuses and 2,700 academic staff. A list of lecturers was obtained and a sampling frame was prepared. Then, the sample size was proportionally allocated to the number of campuses. Finally, a simple random sampling technique of the lottery method was applied to select the study participants from each campus. A purposive sampling technique was employed to select participants for the qualitative study.

3.5.   Data Collection Tool and Procedure

Self-administered structured questionnaires, and key informant in-depth interview guides adopted from related literature with some modifications to suit the present study used as a data collection tool. The questionnaire included were section I; Demographic Information, section II; lecturer's perspective to adopt e-Learning at University of Gondar, section III; University of Gondar IT infrastructure status and section IV; key informants in-depth interview guides.

For quantitative data, self-administered structured open and close ended questionnaires was distributed and collected by ten lecturers (two for each campus). Both the data collectors and the supervisor were trained for one day on the objective, methodology, ensuring the confidentiality of the respondents, and approach prior to the actual data collection by the principal investigator and research advisor. Before the data was officially be collected, the questionnaire was pre-tested on 5% of the total sample size at Bahirdar University. Then, discussion was held after pretest and results were used for modification to avoid ambiguous content and other problems.

Key informant in-depth interview guides were used to collect the qualitative data. The interview guides were translated in to local Amharic language. Then key informant in-depth interviews were conducted to explore deep information from higher officials about willingness, support, challenges and opportunities of adopting online. The key informant in-depth interviews were tape-recorded to capture all information of the interviewees. The in-depth interview was conducted by the principal investigator who did the thematic analysis. The in-depth interview started after a suitably designed office room free of noise and disturbance was arranged and

ready. After completion of each key informant interview, the facilitators acknowledged each participant for his/her willingness and participation in the study.

3.6. Data Management and Analysis

The supervisors reviewed and checked the collected quantitative data routinely for completeness, accuracy, and consistency to take timely corrective measures. For quantitative data analysis, after appropriate coding, the data entered into Epi Info version 7 software and exported to Statistical Package for Social Sciences (SPSS) version 20 for analysis. Linear regression analysis was conducted to assess perception level of lecturers and the challenges to adopt online learning at UoG. Descriptive statistics of demographic information and other factors computed, and the results were presented using tables, graphs, mean and frequency.

For qualitative data analysis, tape recorded data from key informant interview was first transcribed text style. Then transcribed texts translated to English language by fluent experts in both languages. The transcribed notes edited, formatted and saved as textile. Then, the transcript notes saved in text file imported into Open Code version 4 software. Then inductive thematic analysis was employed. Finally, the findings from both quantitative and qualitative data were triangulated.

3.7. Ethical Consideration

The study was approved by the University of Gondar Ethical Review Board and permission to conduct the study in each campus was asked through a support letter. Informed consent was obtained from all study respondents after adequate information about the study was provided. Finally, the collected data was kept and treated confidentially.

4. Results

4.1. Quantitative Data Result

In this study, 365 instructors participated yielding a response rate of 95.6 %. Among the participants majority of them 80.8% (295) were males and were under the age of 35 years old 82.2% (300). Regarding their academic rank majority of them were lecturer 73.2% (267) and had master of science in their educational level 85.5% (312). In addition, majority of them had experience of teaching in higher education in the range between 5-10 years 49.7% (181). See Table 1 below.

Table 1: Sociodemographic characteristics of study participants at UoG 2022

No	Variables	Category	Frequency (n)	Percentage (%)
1	Gender	Male	295	80.8
		Female	70	19.2
2	Age	< 35	300	82.2
		>35	65	17.8
3	Campus	College of medicine and health science	96	26.3
		Maraki	65	17.8
		Atse Tewodros	96	26.3
		Atse Fasil	60	16.4
		Tseda	48	13.2
4	Academic rank	Graduate assistant-II	20	5.5
		Assistant lecturer	18	4.9
		Lecturer	267	73.2
		Assistant professor and above	60	14.4
5	Education	Bachelor degree	38	10.4

No	Variables	Category	Frequency (n)	Percentage (%)
		Master of Science (MSc)	312	85.5
		Medical Doctor and PhD	15	4.1
6	**Work experience in higher education**	<5	130	35.7
		5-10	181	49.7
		>10	53	14.6

Multiple Linear regression analysis of instructor's perception towards adoption of online learning and associated factors

Multiple linear regression was used to test if sociodemographic and ICT infrastructure factors significantly predicted perception of adopting online learning among instructors working at UoG. The result of the regression indicated that the predictors in the study explained 57.6 % of the variation in the perception of adopting online learning. The fitted regression model was: Perception to adopt online learning = 38.08 + β1*X1) + β2*X2+ β3*X3…. The overall regression was statistically significant (R^2 = 0.57, F(57, 306) = 7.29, p = < .0001). See Table 2 below.

Table 2: Regression statistics and anova table

Source	SS	df	MS	Number of obs = 364
				F (57, 306) = 7.29
Model	9851.40829	57	172.831724	Prob > F = 0.0000
Residual	7250.13017	306	23.6932359	R-squared = 0.5761
				Adj R-squared =0.4971
Total	17101.5385	363	47.1116762	Root MSE = 4.8676

It was found that academic rank significantly predicted perception of instructors towards adopting online learning [β= 3.9, CI (0.28-7.52)] where those who were assistant lecturer

increases the expected perception of instructors towards adoption of online learning by 3.9 times holding graduate assistant lecturer-II (the lowest academic rank) constant.

It was also found that competency in using technology for their work significantly predicted perception of instructors towards adopting online learning at P-value < 0.001 where with additional neutral [β= 5.45, CI (2.61, 8.28)], agree [β= 8.22, CI (5.62, 10.82)] and strongly agree response [β= 9.18, CI (6.17,12.18)] increases the expected perception of instructors towards adoption of online learning by 5.45, 8.22, and 9.18 times holding strongly disagree response constant to the question "I believe I have competency in using technology for their work". In addition, instructors knowledge of working online was found significantly predicted perception of instructors towards adopting online learning Disagree [β= -8.21, CI (-10.96, -5.46)], neutral [β= -9.09, CI (-12.15, -6.02)], agree [β= -8.90, CI (-11.75, -6.04)] and strongly agree response [β= -5.85, CI (-8.89, -2.81)] where those who disagree, neutral, agree and strongly agree decrease the expected predicted perception of adopting online learning at university of Gondar by 8.21, 9.09, 8.90, and 5.85 respectively holding strongly disagree responses constant. Furthermore, instructors' perception of access to computer and laptop access was found significantly predict perception of adopting online learning agree [β= -2.30, CI (-4.48, -0.10)], strongly agree [β= 3.80, CI (0.46, 7.13)]   where those who agree decrease the expected perception by 2.30 and those who strongly agreed increase the expected perception by 3.80 holding strongly disagree responses constant to the question "I feel working computers or laptops are enough". In addition, adequate IT support for academic staff was found significantly predict the perception of adopting online learning agree [β= 3.26, CI (0.66, 5.86)] where those agreed instructors to the question "I believe the University does provide adequate IT support for academic staff" increases instructors' perception by 3.26 holding strongly disagree responses constant.

Access of internet that is reliable (available every day) was found significant in predicting the perception of online learning at UoG [β= 3.50, CI (0.86, 6.12)] where those who disagree to the question "There is access to the internet that is reliable (available every day)" increases the expected perception of instructors by 3.5 considering strongly disagree response constant. Speed of internet that is convenient to download course materials at UoG is another predictor significantly associated with instructors' perception where those who disagree [β= -3.18, CI (-5.30, -1.04)], agree [β= -3.18, CI (-5.70, -0.56]   decrease the instructor's perception by 3.18 holding strongly disagree response constant to the idea "The speed of the internet is convenient to download course materials". Instructors perception for the idea of availability of sufficient qualified technical experts who can provide technical support found significant dis agree [β= -

2.96, CI (-4.77, -1.14)], neutral [β= -2.96, CI (-4.87, -0.51]   where those who disagree and agree to the idea "My institution will have sufficient qualified technical" decreases the expected perception of instructor's among disagree, neutral and agree responses by 2.96, 2.69, and 3.13 respectively holding strongly disagree responses constant.

Table 3: Linear regression analysis of instructor's perception towards adoption of online learning and associated factors

Variables	Category	Coef.	Std. Err.	t	P>t	95% Confidence Interval	
Age.	<35	1	1	1	1		
	>35	-0.52	0.95	-0.54	0.59	-2.39	1.35
Gender	Male	1	1	1	1	1	1
	Female	0.46	0.74	0.63	0.53	-0.99	1.92
Campuses	Atse Tewodros	-1.65	0.95	-1.74	0.08	-3.51	0.21
	Maraki	0.72	0.84	0.85	0.39	-0.94	2.37
	Fasil	-0.73	0.10	-0.73	0.46	-2.69	1.23
	Tseda	-2.19	1.22	-1.8	0.07	-4.59	0.19
Teaching experience in higher education (years)	<5	1	1	1	1	1	1
	5-10	0.38	0.72	0.54	0.59	-1.01	1.78
	>10	0.77	1.30	0.59	0.55	-1.79	3.33
Education	Bachelor degree	1	1	1	1	1	1
	MSc Degree	-3.83	5.54	-0.69	0.49	-14.71	7.06
	PhD and Medical doctor	-4.59	5.71	-0.8	0.42	-15.83	6.64
Academic rank	GA-II lecturer	1	1	1	1	1	1
	Assistant Lecturer	3.90	1.84	2.12	**0.03**	0.28	7.52
	Lecturer	7.07	5.34	1.32	0.18	-3.43	17.58
	Assistant professor and above	7.03	5.40	1.3	0.19	-3.59	17.64

Variables	Category	Coef.	Std. Err.	t	P>t	95% Confidence Interval	
I feel competent in using technology in my work	Strongly disagree	ref	ref	ref	ref	Ref	Ref
	Disagree	-0.97	1.46	-0.66	0.50	-3.85	1.91
	Neutral	5.45	1.44	3.79	**.000**	2.61	8.28
	Agree	8.22	1.32	6.23	**.000**	5.62	10.82
	Strongly agree	9.18	1.53	6	**.000**	6.17	12.18
I feel competent using computers to teach/coach my colleagues	Strongly disagree						
	Disagree	1.93	2.46	0.78	0.43	-2.92	6.77
	Neutral	0.65	2.23	0.29	0.76	-3.73	5.04
	Agree	-1.83	1.98	-0.93	0.35	-5.71	2.05
	Strongly agree	-1.52	2.07	-0.73	0.46	-5.58	2.54
I feel confident about my knowledge of working online	Strongly disagree						
	Disagree	-8.21	1.40	-5.87	**.000**	-10.96	-5.46
	Neutral	-9.09	1.56	-5.83	**.000**	-12.15	-6.02
	Agree	-8.90	1.45	-6.13	**.000**	-11.75	-6.04
	Strongly agree	-5.85	1.54	-3.79	**.000**	-8.89	-2.81
I felt confident using Information and Communication Technology (ICT) for my work.	Strongly disagree						
	Disagree	0.76	1.65	0.46	0.64	-2.48	4.00
	Neutral	2.29	1.56	1.47	0.14	-0.77	5.34
	Agree	2.55	1.53	1.67	0.09	-0.46	5.55
	Strongly agree	2.10	1.77	1.19	0.23	-1.36	5.57

Variables	Category	Coef.	Std. Err.	t	P>t	95% Confidence Interval	
I feel working computers or laptops are enough	Strongly disagree						
	Disagree	-1.74	0.93	-1.88	0.06	-3.57	0.08
	Neutral	1.88	1.25	1.51	0.13	-0.57	4.34
	Agree	-2.30	1.11	-2.07	**0.04**	-4.48	-0.10
	Strongly agree	3.80	1.69	2.24	**0.02**	0.46	7.13
I believe the University does provide adequate IT support for academic staff?	Strongly disagree						
	Disagree	1.21	0.96	1.26	0.20	-0.67	3.09
	Neutral	-0.63	1.13	-0.56	0.57	-2.86	1.60
	Agree	3.26	1.32	2.47	**0.01**	0.66	5.86
	Strongly agree	-0.30	1.95	-0.15	0.879	-4.14	3.54
There is access to the internet that is reliable (available every day)	Strongly disagree						
	Disagree	3.50	1.34	2.62	**0.01**	0.86	6.12
	Neutral	2.46	1.61	1.53	0.12	-0.70	5.63
	Agree	1.95	1.56	1.25	0.21	-1.11	5.01
	Strongly agree	-3.56	1.92	-1.86	0.06	-7.33	0.21
The speed of the internet is convenient to download course materials	Strongly disagree						
	Disagree	-3.18	1.08	-2.93	**0.004**	-5.30	-1.04
	Neutral	-2.58	1.32	-1.96	0.051	-5.17	0.01
	Agree	-3.18	1.31	-2.4	**0.017**	-5.70	-0.56
	Strongly agree	1.12	1.61	0.7	0.48	-2.03	4.27

Variables	Category	Coef.	Std. Err.	t	P>t	95% Confidence Interval	
The frequent power outages will interfere with e-Learning	Strongly disagree						
	Disagree	1.40	1.41	0.99	0.32	-1.36	4.16
	Neutral	0.69	1.45	0.47	0.63	-2.17	3.54
	Agree	1.89	1.51	1.25	0.21	-1.09	4.86
	Strongly agree	2.32	1.39	1.67	0.09	-0.41	5.05
My institution will support me to purchase internet	Strongly disagree						
	Disagree	-0.75	0.91	-0.82	0.41	-2.54	1.047
	Neutral	-1.86	1.13	-1.66	0.09	-4.08	0.349
	Agree	1.19	1.16	1.02	0.30	-1.10	3.48
	Strongly agree	2.34	1.94	1.21	0.22	-1.46	6.15
My institution will have sufficient qualified technical experts who can provide technical support	Strongly disagree						
	Disagree	-2.96	0.92	-3.22	**0.001**	-4.77	-1.14
	Neutral	-2.69	1.10	-2.43	**0.015**	-4.87	-0.51
	Agree	-3.13	1.24	-2.52	**0.012**	-5.57	-0.69
	Strongly agree	-2.36	1.90	-1.24	0.21	-6.10	1.38

4.2. Qualitative Results

Thirty higher officials were involved in an in-depth interview from five colleges among the participants, only one was female. All participants involved in leading at least one of the following positions which includes college dean, Academic Director, College quality assurance coordinator, and registrar officer. Five main themes emerged from the in-depth interview analysis. These are perceptions of adopting online learning at UoG, challenges of adopting online learning at UoG, opportunities of adopting online learning, strategies to overcome challenges, and higher officials' willingness and support.

Theme 1: Challenges to adopting online learning at UoG

All participants agreed that there will be a challenge in adopting online learning. Participants are included in the college of medicine and Health sciences, institute of technology, college of veterinary medicine, college of agriculture, and college of business and economics. The challenges mentioned by participants include inadequate infrastructure access in the university, instructors' perceptions, and students' attitudes toward online learning.

Sub-theme: ICT Infrastructure

All participants strongly revealed that great challenges will be faced in terms of the availability of adequate infrastructure like electric power, internet access, and computer access.

One college dean participant explained the challenges of adopting online learning at the University of Gondar as follows:

"… I think there is poor infrastructure access in our university. Internet and electric power interrupt many times a day which makes even checking or opening an email very difficult due to internet access".

Another participant also explained that:

"…I know many instructors in our university have no computer or desktop and those available computers are too old and are not functional. Nowadays electronic materials are very expensive especially in our country due to the rising of dollar exchange which makes buying electronics like computers and smartphones difficult among instructors".

In addition, instructors' poor perception, students' attitudes, and employers' poor attitudes in considering online learning as a platform and giving less credit during hiring employees are the challenges mentioned by the participants.

One participant explained that

"…everybody experienced face-to-face learning and we feel learning can be possible through it when looking at the teacher present physically and writing on the white/blackboard. So, due to this fact many of us might not consider and accept online learning as a way of learning unless we are in a face-to-face class".

Another participant also reported that employers are not believing in online graduates though they had good grades:

"…though online learning is common in the world currently, employers in our country have poor attitudes and give low credit toward hiring those who have diplomas, degrees, or certificates graduated from the online educational system since we still believe in the face-to-face approach".

Furthermore, many participants agreed that the limited capacity of lectures to deliver courses in an online learning platform will be another great challenge to adopting online learning in our university. This is supported by one participant's suggestions as follows: *"…I think the teaching-learning process of online learning is different from face to the face teaching process and in my opinion, we do not have enough instructors trained in online pedagogy".*

Theme 2: Opportunities to adopt online learning at UoG

Many participants mentioned good opportunities in the university, community, and country in general. They reported that there are opportunities in terms of globalization, technology acceptance in the new generation, growth of the network in the country, and the building of the Grand Ethiopian Renaissance Dam which can able to solve electric power access problems.

One participant explained the opportunities of adopting online learning in terms of using and accepting new technology in the following way:

"…I think nowadays instructors are familiar and have good acceptance to use new technologies and platforms as far as appropriate training is given and necessary infrastructures are fulfilled."

Another participant explained the expansion of the network in the country and joining of new internet market as follows:

"…I think Ethio-telecom are expanding their service from 4-G to 5-G networks in our country and other new network options are joining the market like Safaricom which will greatly help online learning by solving internet access challenges.".

Another participant also mentioned the building up of new infrastructures as a good opportunity to adopt online learning at UoG as follows:

"…our university is building a large building named ICT complex which will be used for ICT support team and other related purposes".

Furthermore, another participant mentioned that the COVID-19 pandemic was a good opportunity and he explained in the following way:

"…In my opinion, the COVID-19 pandemic was one great opportunity by helping many instructors and students to experience online learning during teaching face-to-face education stopped because of the pandemic in higher education in Ethiopia".

Theme 3: Overcoming strategies of challenges to adopt online learning

Many participants suggested interventional strategies to overcome the barriers or challenges they will face during adopting online learning. Almost all believed that challenges will be solved gradually if we work on it strongly.

"… I think first we all have to believe that online learning is important, then we have to work as an institution to fulfill the necessary facilities at the university level. In addition, the university has to work in collaboration with the Ethiopian telecommunication corporation, Safaricom, and Ethiopian electric city corporation to solve the main problems of the country which are internet and electric power supply".

Another participant also suggested the overcoming strategies as follows:

"….in my opinion, first capacity building training should be provided for the staff, then necessary facilities and special online classroom have to be ready and we have to be selective like implementing first in the college with the best facilities and postgraduate studies".

"…Another participant reported that selecting the appropriate platform or technology during implementation will be important to avoid unforeseen challenges".

Theme 4: Higher officials' willingness and support

Almost all participants believed that online learning is important and they all agreed that higher officials' support is very crucial for the success and effectiveness of the implementation and development process. They also noticed that challenges will be always there when we start a new system but they will be solved if we work closely. They also remind us that this university started with a single building and without enough lectures, we worked hard and come to this stage. One participant explained his willingness and support in the following way:

"…I will be happy if online learning is adopted in our university. My role as I am a quality coordinator will be, controlling and ensuring the quality of online education and asking the university management for the fulfillment of ICT infrastructures like the internet, computer, and electric power access".

Another participant also explained his role and support as follows:

"…I have experience in online learning so I can share it and also involve in changing the attitude of the instructors towards online learning".

Theme 5: E-learning experiences and advantages of adopting online learning

All participants have experienced online learning both formally and informally. All mentioned that the COVID-19 pandemic was a great opportunity for their experience. All participants mentioned as they were using online learning during the pandemic to finish their courses. One participant explained as follows:

"…we were using an online system to deliver classes and present postgraduate thesis works during the COVID-19 pandemic and we are still using it, especially for Ph.D. dissertation defenses".

In addition, many participants agreed that adopting online learning will be important for many purposes. They reported that e-Learning is helpful for those who can't able to learn in face-to-face education and avail experts from anywhere.

One female participant explained the advantage of adopting online learning in the following way:

"…I think online learning is very important, especially for those who can't attend face-to-face classes due to different reasons like due work and inability to afford house rent and other accommodations".

Another participant also explained the advantage of online learning as follows*:*

"…I can say online learning will save money, time and will help the university to get experts around the world in fields with limited experts".

5. Discussion

This study aimed to investigate the perception, challenges and opportunities of adopting online learning at University of Gondar among instructors and higher officials. Based on multiple linear regression analysis conducted eight predictor variables were found significant at P-value < 0.05 which includes academic rank, competency in using technology in their work, knowledge of working online, presence of adequate working computers or laptops, adequate IT support for academic staff, access to the internet that is reliable (available every day), speed of the internet that is convenient to download course materials, and sufficient qualified technical experts who can provide technical support.

From this study, academic rank significantly predicted instructors' perception of adopting online learning. Specifically, those with the rank of assistant lecturer demonstrated a higher perception of adopting online learning compared to graduate assistant lecturers. This might be due to those who had better experiences in teaching have more experiences in online work than those who newly recruited. Competency in using technology for their work also significantly predicted perception. This might be due to those who had competency in using technology understand the need of technology, importance and applicability of online learning much better than those who doesn't believe in their competency. In addition, knowledge of working online is another predictor where those who believed in their knowledge decreases the predicted perception of adopting online learning. This might be due to those who had knowledge of working online fear the availability of necessary infrastructures for online learning and applicability courses.

The majority of participants, based on both qualitative and quantitative data, indicated that challenges in accessing computers or laptops hinder the adoption of online learning. Those who disagreed access to computer at University of Gondar increases the predicted perception of online learning than those strongly disagreed. This indicates that computer access is very important to rise perception of instructors to adopt online learning. From this study infrastructure like electric power, internet access, and computer access are inadequate and instructors' poor perception, students' attitudes, and employers' poor attitudes in considering online learning as a platform and giving less credit during hiring employees were the challenges. This study is supported by study conducted in Iraq (24). Despite the challenges, expansion of new 5-G network in Ethiopia, additional Safaricom joining the market and good attitude and experiences among new technologies in the current generation will be another good opportunity

to adopt it. There was high higher officials' willingness and support to adopt online learning at the university, which is very crucial part of implementing online learning at the university.

6. Recommendations

Generally, infrastructures are limited and inadequate but it is good to adopt online learning at the University of Gondar. We recommend the university to fulfil the necessary infrastructures like computer access to the instructors, good reliable internet and uninterrupted electric power at the university. In addition, we recommend the university to adjust for capacity building trainings for the instructors.

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