



**St. MARY'S UNIVERSITY**  
**SCHOOL OF GRADUATE STUDIES**

**CHALLENGES AND OPPORTUNITIES OF VIRTUAL  
LEARNING DURING COVID-19 PANDEMIC AND  
BEYOND: -  
IN THE CASE OF St. MARY'S UNIVERSITY, ADDIS  
ABABA**

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**ST. MARY'S UNIVERSITY**  
**SCHOOL OF GRADUATE STUDIES**  
**DEPARTEMENT OF PROJECT MANAGEMENT**  
**MBA PROGRAM**

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**IN THE CASE OF St. MARY'S UNIVERSITY, ADDIS ABABA**

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St. MARY'S UNIVERSITY  
SCHOOL OF GRADUATE STUDIES  
SCHOOL OF BUSINESS

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## Declaration

I, the undersigned, declare that this thesis is my original work, prepared under the guidance of Mosisa Kejela (PhD Candidate). All sources of material used for the thesis have been duly acknowledged. I further confirm that the thesis has not been submitted either in part or in full to any other higher learning institutions for the purpose of earning any degree.

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JUNE,2021

## ENDORSEMENT

This thesis has been submitted to St. Mary's University, School of Business for examination with my approval as university advisor.

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## ***ABSTRACT***

*COVID-19 pandemic is a global disaster which affected humanity immensely in all perspectives. This life-threatening virus took millions of lives already and enforced global closure in most activities of the world. The educational sector was severely harmed by the pandemic by forcing the closure of conventional teaching and learning practice. Virtual learning was the only option to continue education globally. Many of the world educational institutions started using virtual learning without any proper preparation and readiness in many aspects. This paper presents the challenges faced by students and instructors during the covid-19 pandemic and the opportunities of virtual learning for the future use. the research uses Survey research design approach. Primary data source was collected by means of Survey questionnaire from both instructors and students at ST. Mary's university school of graduate studies. Simple random sampling technique was used for the student's participants and seventeen instructors was involved on the research. The data were analyzed in descriptive statistics by using percentage. The result show that most of the challenges of virtual learning was shared by instructors and student's respondents mainly focused on infrastructure and lack of proper readiness Specifically includes Poor internet connection, High cost of internet, Unstable power supply, lack of proper preparation and readiness. Opportunities of virtual learning from instructors and student's respondents consist of convenience and suitability of virtual learning regarding the possibility of taking and giving virtual class from anywhere at any time, educational reachability, and the technological aspect of virtual learning. Virtual learning brings a major opportunity for the future of higher learning institution in Ethiopia if the challenges solved properly. The government and educational institutions must be taken seriously to utilize the potential benefits of VL. Furthermore, virtual learning implementation in Ethiopia higher learning institutions needs further studies from other researchers.*

**Key words: COVID-19, Virtual Learning Conventional Learning.**

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## ***ABBREVIATION***

**SMU:** -ST Mary's University

**ASTU:** -Adama Science and Technology University

**AVU:** -African Virtual University

**CBT:** -Computer-based Training

**COI:** -Community of Inquiry

**COVID-19:** -Corona virus Deasis

**DED:** -Distance Education Department

**EHEIs:** -Ethiopian Higher Educational Institutions

**E-Learning:** -Electronic Learning

**ICT:** -Information Communication Technology

**LMS:** -Learning Management System

**MOOCs:** -Massive Open Online Courses

**MOSHE:** -Ministry of Science and Higher Education

**OCL:** -Online Collaborative Learning

**VL:** -Virtual Learning

**WBE:** -Web-based Education

**WBT:** -Web-based Training

**SPSS:** -Statistical Package for Social Science

**MOODLE:** -Modular Object-Oriented Dynamic Learning Environment

**UN:** -United Nations

**UNESCO:** -United Nations Educational Scientific and Cultural Organization

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## CHAPTER 1: INTRODUCTION

### 1.1. Background Of the Study

COVID-19 pandemic is a global disaster which has continued affecting humanity in all perspectives. This life-threatening virus took millions of lives already and enforced global closure in most activities of the world. The outbreak enforces people to adjust their accustomed and normal way of living into a whole new unfamiliar situation of day-to-day life without any cautionary with the unique and unusual spreading nature of the virus countries in the world take unprecedented measures that never seen before. This measure includes stay-at-home order, restriction of traveling and social gathering, closing of schools, workplace, religious places, restaurant & bars, and other areas. However, the pandemic makes the world to see the potential benefits of internet and became fully reliant on the service. Since then, most of the world activities such as schools, working places, healthcare centers, financial institutions and other sectors relied on the internet to continue their basic operation and give service for the communities. According to UN (2020) report on the assessment of the pandemic internet was not only creating a workable system in delivering basic needs of human lives, but it enables the society to communicate and support each other in this exceptionally hard time. Particularly for the educational system internet was the system by making virtual learning possible in this hard time. The concept of distance education first started in the mid of 19th century in united states where some professors started to meet with their corresponding students through the US postal service to transfer their teaching and instruction. After the invention of television, the first televised teaching-learning practice started in 1953 in the United States. At the time, the channel broadcast several courses from 5 to 13 hours per week. Most of the learners were working during the daytime and they took the courses in the evening. The major revolution in distance learning was created after the invention of computer and predominantly the internet made tremendous impact on the overall

educational system. The first institutions which started virtual learning practice in the world were the University of Phoenix for Bachelor and master's degree Onlineschools.org (2021). As defined by Khan (2005, p.12) E-learning, "an innovative approach for delivering well-designed, learner centered, interactive, and facilitated learning environment to everyone, anyplace, anytime by utilizing the attributes and resources of various digital technologies along with other forms of e-learning materials suited for open, flexible, and distributed learning environment". Through the years with the rapid advancement of information and communication technologies virtual learning become more feasible technologically, economically, and operationally. Institutions can reduce their financial constraints related with infrastructure for classroom, office, cafeterias, dorms, and libraries. Furthermore, virtual learning offers a tremendous opportunity for learners throughout the world by getting education from anywhere in any time by creating a virtual learning environment. According to the description of Dziuban, Picciano, Graham, and Moskal (2016) with the context of USA the evolution of virtual learning has four main chapters. The first in 1990s internet driven distance learning, the second from 2000-2007 increasing use of LMS (Learning management system), 2008-2012 growth of MOOCs (massive open online courses), in the fourth stage virtual learning overtaken enrolment over the traditional one in higher educational system. As per the classification of Raja, R & Nagasubramani, P (2018) technology can be used in educational system in four major areas, as a part of educational curriculum, as instructional delivery system, as an assisting tool for instructions and finally as an enhancing tool for the entire learning system. A report suggests that in US in 2019 around 18.66 billion dollars was invested in educational investment (EDTECH). According to the discussion Cathy Li & Farah Lalani (2020) on economic forum of in the next 5 years the investment in online education will reach around 350 billion dollars. However, many nations fail to fully utilize this potentially useful resource to modernize their educational system which will help in increasing reachability of education for the society and improve quality of education. Most developing nations prioritize reachability of education for their society as their first developmental strategy. But still many countries cannot reach to this strategic goal due to the

costly infrastructure and human resource requirements of the educational systems. Virtual method of learning gives solution for this problem by creating virtual learning environment with a minimum cost compared to the traditional one (Sadia,et al., 2021,p.21). Although with all the advantages of virtual learning, the requirements are more complicated regarding the resource and skills needed unlike the traditional schooling system which uses a particular resource and sets of skills from the school, teachers, and students' perspectives.

The Ethiopia case was the same, higher educational institutions in Ethiopia forced by the pandemics to employ virtual teaching-learning practice for the first time ever. The first COVID-19 case in Ethiopia was reported in March 2020 and subsequently on April 15, 2020, the Ethiopian government declared a state of emergency, which included closing of schools, banning public gatherings, and requiring most employees to work from home.

As of April 2020, most of schools in Ethiopia were closed and suspended education delivery through conventional or face-to-face mode. For elementary and secondary school's education start through broadcasting of different media, but higher learning institutions stopped for a while until the Ministry of Science and Higher Education (MOSHE) gave directions to resume learning using online for post-graduate programs. Subsequently, some governmental and private institutions have started giving education using virtual platform of learning. For most of the institutions this practice was totally new, and it was very difficult transition for all the stakeholders which were involved in the process. Virtual learning in Ethiopian higher learning institutions is not a common practice before COVID-19. Most institutions continue using teaching-learning process for almost three semesters. Although it is a good start for higher learning institutions to use virtual learning but still the challenges are visible in many ways starting from infrastructure, policy, capacity, professionalism, experience, readiness of the educational system. My inspiration to study this topic comes from my experience as a student through virtual learning during the pandemic time. Since virtual learning is a new experience of learning which needs a proper preparation and readiness in many sectors before entering the implementation phase. However, the pandemic creates unusual circumstance for all the stakeholders involved in the education sector and eventually enforces

all parties of the education system to dive into virtual learning practice without any proper preparation. As a result, there were various challenges such as internet connection, power stability, virtual teaching approach, assessments, and evaluation technique. It has also given opportunities first by making things possible to continue education in this hard time, easy accessibility of education. As a student of project management, I tried to identify the problem and the potential opportunity of a specific event, issue, and scenario and analyze the root causes of the problem and design alternative solution to the problems to utilize the opportunities. Therefore, this study examined the challenges and opportunities of virtual teaching- learning during the COVID-19 pandemic and beyond.

## **1.2. Statement Of the Problem**

The Continues advancement of technology and increased accessibility of internet globally has made online education an essential part of higher learning education system Li, C., & Irby, (2008 P.449-458). Moreover, with the increased concern over the affordability of education globally over the years, caused increasing demand of virtual learning by institutions and students globally (Limperos. et al, 2015 P. 83). Recently Technology has become an integral part of educational system. According to Shailendra et.al,(2018,P.253) The changes in educational delivery modes have been rapid and transformational, this change creates a very dynamic educational environment and generate a massive interest among researchers, educators, administrators, policymakers, publishers, and businesses.

The education sector was one of the areas globally affected by the pandemic. Number of educational institutions in the world changes their schooling system to virtual learning (online learning) during these crises. According to UN report on Policy Brief Education during covid-19 and beyond in (2020) around 1.6 billion students have stopped learning using the conventional way globally. This figure estimated around 94% of the overall students' population in the world. Similarly, the report stated that, COVID-19 has created the greatest interruption of educational system in the history of the world. The only possible option to continue education through controlling spreading of the virus was using Virtual

learning. Countries which have the infrastructure and experience smoothly transformed their way of teaching into Virtual. Several countries started to give the necessary support by encouraging schools, teachers, and students to use virtual learning and continue the educational system in the time of pandemic UNESCO (2020). However, the transition was not easy for all nations in the world since most developing countries do not have the infrastructure and experience of using virtual learning. The requirement of online learning is completely different from traditional one. It needs different approach and preparation for the entire stakeholder involved in the educational sector, starting from the nation's infrastructure, school's ICT infrastructure, teachers online teaching experience, student's psychological readiness and other related factors.

The Ethiopia government has a growing interest and awareness over the use of E-learning in higher learning institutions. According to A.Tadesse (2015,P.4-8) Ethiopian higher learning Institutions used ICT for tasks such as course management system, library digitalization and student management systems. Virtual learning in Ethiopia was and is in its early stage even before the pandemic. When we investigate the history of Virtual learning in general the first initiative was taken by the partnership between Addis Ababa University, Curtin University of Technology and African Virtual University in 2003 the practice was a good start at the time, but it only lasts for 5 years and ended up only graduating 190 students. A year later in 2009 Adama Science and Technology University (ASTU) started to use Learning management system called MOODLE to give education using online method. After 6 years more than 72 courses were given using this system and more than 5000 students and 108 instructors involved in the process Ketema.T & Nirmala.M., (2015,P. 155-162). Eventually other higher learning institutions in Ethiopia started to use virtual learning to some extent, but still counting virtual learning as a new form of teaching and learning process was very challenging and it impacted on the sustainability of using virtual learning. according to Beyene (2006, 2010). Similarly, Yonas (2019) stressed that the obvious challenges facing virtual learning in Ethiopia are the high cost of using internet in the country, the ICT policy, cultural perspective, existence of complex network of actors in the

educational sector and low-level of IT diffusion as compared to higher education institutions of developed nations. Additionally, Beyene.B (2006,2010) mentioned that the challenges of virtual learning are not only related to the technological and resource issue, but he also stressed that There is no clear understanding of the problem from all the stakeholder in the education system about the learning system in general this result the ineffective utilization of virtual learning system and impact on the sustainability of using virtual learning in Ethiopia higher learning institutions.

The Covid -19 pandemic has changed all the hesitation and reluctance by enforcing the closure of school globally. Even if COVID-19 brought a great threat to humanity but it still enables the educational institutions to think and to see the Potential of virtual learning in the educational system. However, some believe that emergency migration of remote teaching and learning practice without any proper training, mental readiness and preparation can result in poor educational quality and poor user experience for the future use of Virtual learning. But still others think this change can be the starting point of a new “HYBRID” model of educational system which will solve the limitation of traditional learning practice (Cathy.L & Farah.L, 2020). The outbreak forced some higher learning institutions in Ethiopia to change their teaching method into virtual in a very short period without any proper preparation and readiness in all aspects.

This situation creates many challenges on the learning process, but still creates an opportunity to continue schooling and finish the academic year in this very challenging time. nevertheless, this new practice of learning needs to have a proper study on the challenges faced during the learning process from the students and instructor’s side. furthermore, the opportunity of virtual learning must be identified properly for the future use in higher learning institutions. Therefore, this study will assess the main challenges of virtual teaching and learning process in the time of pandemic from students and instructor’s perspective. Additionally, the research will examine the potential opportunities of using virtual learning in Ethiopian higher learning institutions focusing on post-graduate programs at St. Mary’s University. Furthermore, the research will examine the experiences of instructors and

students on using virtual learning. This study can be used as an input for different educational stakeholders and researchers about virtual learning experience in higher learning institution during the pandemic, in return it will identify what was the main challenges and opportunities of using virtual learning.

### **1.3. Research Questions**

- What does the existing practice of Virtual learning look like?
- What are the challenges faced by instructors and students during virtual teaching and learning practice at SMU in the time of COVID-19 pandemic?
- What are the prospects of Virtual learning for the future in Ethiopian higher learning institutions?

### **1.4. Objective Of the Study**

#### **1.4.1. Major Objective**

- ❖ To explore the challenges and opportunities of virtual learning during COVID-19 Pandmic and beyond at St. MARY’S UNIVERSITY, ADDIS ABABA.

### **1.4.2. Specific Objectives**

The specific objectives of this study are:

- ❖ To understand the existing practice of virtual learning at SMU during the pandemic.
- ❖ To identify the challenges faced by instructors and students during Virtual teaching and learning process in the time of pandemic.
- ❖ To explore the prospects of virtual learning for the future use in Ethiopian higher learning institutions.

### **1.5. Significance of the Study**

The educational system has already entered a new era with the rise of technological innovation and surge of internet accessibility throughout the world. Being physically present in a classroom is not the only learning option anymore. Most developing nation already involved virtual learning in their educational system and conducts many studies over the challenges and opportunities faced during virtual class. Virtual learning is not common practice in Ethiopia higher learning institutions before the pandemic and there is no clear understanding over the challenge and opportunities of virtual learning. COVID-19 forced the educational system to go to virtual teaching learning practice without any proper preparation in every aspect. Even though the move is a good opening for the educational system in general but still needs to identify the challenges faced during the implementation of virtual class in this pandemic period also proper opportunities needs to be identified accordingly. This study will explore virtual learning practices during the pandemic, identify the challenges and opportunities of virtual learning, also will explore the experience of students and instructors during virtual learning class. The study will also give concert findings on what



were the challenges of using virtual learning as the teaching learning approach or means of delivering mechanisms as institute and what are the potentials opportunities of virtual learning for the future. In addition to this, it will make the students, teachers, and educational stakeholders to be aware of the challenges and prospects of Virtual learning in higher learning institutes. Similarly, since virtual learning is a new approach of learning for higher learning institutions in Ethiopia, there are few studies conducted over virtual learning this study will fill the research Gaps around virtual learning practices. Furthermore, this research can serve as an input for policy makers in the future use of virtual learning.

## **1.6. Scope And Limitations of The Study**

### **1.6.1. Scope of the Study**

The purpose of the study mainly focuses on the challenges and opportunities of virtual learning in higher learning institutions during the pandemic and beyond in case of St. MARY'S UNIVERSITY school of graduate. The research is a survey research design. Since the pandemic still not controlled the data collection method will involve survey questioners using online google form. The research categorizes the population into two groups which includes students Batch of 2012A who took virtual class with the sample size of 224, 17 instructors who give virtual class during the pandemic. The research will take place in Addis Ababa Ethiopia at St. MARY'S UNIVERSITY school of graduate.

### **1.6.2. Limitations of the study**

Since the pandemic is still a major treat for the society it has majorly impacted the study data collection process and the research design. First the study was planned to use different data collection method like questioners, interview, and observation. Unfortunately, the pandemic forced to use only survey online questioner using google form This constraint leads to limitations of employing diverse methods of data collection that have significant contribution

for validity and reliability of the result of the study. Similarly, the study sampling technique was another limitation of the research since different courses have different teaching and learning approach in this case stratified sampling technique was more suitable but instead Simple random sampling technique was used. Additionally, time constraint was also one of the limitations, limited responsiveness of the respondents was also observed throughout the data collection process and lastly the overall impact of Covid-19 in the educational world has also influenced seriously on the researcher and respondents.

### 1.7. Definition of Operational Terms

- ***Virtual Learning:*** - is a learning experience that is enhanced through utilizing computers and/or the internet both outside and inside the facilities of the educational organization. The instruction most commonly takes place in an online environment (Racheva&Veronica, 2017).
- ***Conventional Learning:*** - This term will be used in this study to refer to the teaching using chalk and board for teachers; pen and paper for students. Rather the teacher uses other methods such as demonstration using examples, lecture methods, question answer methods among others (Mukiri, 2018).
- ***E-Learning:*** - A learning system based on formalized teaching but with the help of electronic resources is known as E-learning. While teaching can be based in or out of the classrooms, the use of computers and the Internet forms the major component of E-learning (Economic Times, 2021).
- ***Blended Learning:*** -The Definition of Blended Learning: Blended learning is an approach to learning that combines face-to-face and online learning experiences.

Ideally, each (both online and off) will complement the other by using its strength (Thought Teach, 2015).

- ***Covid-19:*** - The COVID-19 pandemic, also known as the coronavirus pandemic, is an ongoing global pandemic of coronavirus disease 2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The virus was first identified in December 2019 in Wuhan, China. (WHO, 2019)

## **1.8. Organization of the Study**

This thesis is organized into five chapters. Chapter one deals with the background of the study, research problem, research question, objective of the study, significance, and scope of the study. The emphasis of this chapter is to present main issues to be addressed in the study. Chapter two reviews relevant literature for the research in line with the study objectives which includes Learning Theories, challenges and opportunities of virtual learning, The pandemic and education, virtual learning in Ethiopia higher educational institute, St. Mary's University distance and Virtual learning experience. Chapter three deals with the overall research methodology of the study which discusses the research design, approaches, methods employed to achieve the overall research objectives. The main objective of this chapter is to select the most appropriate research methods for the research objectives. Chapter four show the study interpretations and analysis of the data. The final chapter includes summary, conclusion, and recommendation of the study.

## CHAPTER 2: REVIEW OF RELATED LITERATURE

### 2.1 Conceptual Review

#### 2.1.1 Overview of Virtual Learning

The terms online learning, virtual learning, e-learning, distance learning, and blended learning are unique; each refers to the act of using technology in learning. The history of using technology for teaching and learning purpose is not that much have long history comparing with the teaching learning practice of humanity. After the creation of full processing computer system in late 1960-1970 the usefulness of this innovation for the education sector was visible. The first form of e-learning which was Computer-based Training (CBT) was born in late eighties and nineties of the 19<sup>th</sup> century, this invention was considered as the foundation of today's Online learning (Eger, 2005.p-68). The CBT use CD-ROM to transfer educational material. Hubackova, (2015, p-1187-1190) Stressed that even if the CBT has a limitation of time and space comparing with the later products of E-learning system but still the progress is a great achievement in the educational system. The advancement of E-learning has relation with the development of technical capacity in technology and with the affordability of computers. The rise of internet and the development of web system in parallel with the continues development of CBT system lead into the birth of WBT (web-based training) (Hubackova, 2015, p-1187-1190). According to (Eger, 2005.p-78), at the beginning of the new millennium the prospect of WBT (web-based training) start to get attention from so many universities across the world and they started to use not only for the distance learning practice but most of them start to mix with the traditional educational system and create a blended learning. Similarly, Darbhamulla & Lawhead, (2004. P.422-433) emphasized that Web Based Education (WBE) solve many limitations of

traditional way of teaching-learning practice making student and teachers less dependent on textbook and paving the way in creating communication line with the actual experts in each field. Likewise, Burniske, R. W. & Monke, L.(2001) claim that teachers started viewing internet as a tool of learning and teaching and not just a container of information. Here is the comparison made by Dolence & Norris. (1995, p-4) *between* the industrial age learning and information age learning practices.

**Table 2-1:- Industrial and Information age Learning comparison**

<b><i>Industrial Age</i></b>	<b><i>Information Age</i></b>
Instructor centered	Learner Centered
Set times and places for Learning	Individualized self-paced learning that could take place anytime,
Information infrastructure as a support tool	Information infrastructure as a fundamental instrument of
Technologies used independent of each other	Integrated technologies in a dove-tailed approach
Traditional programs and course structures	Pick and choose learning as needed
Continuing education	Life-long learning
Fragmented learning	Fused and integrated learning

**(Source: Adapted from Dolence and Norrice,1995, p. 4)**

As mentioned in the above table Virtual learning has changed its center from instructor focused to student in return give the student an active role in the learning process in contrast with the passive role in the traditional way. Active learning is any approach for instruction in which all students are asked to engage in the learning process. Active learning stands in contrast to "traditional" modes of instruction in which students are passive recipients of knowledge from the instructor. According to Doubler,S,Grisham,L&Paget,K, (2005,p-50-78) the role of teachers in virtual learning environment shift from “delivering” to “listening and supporting”. Unlike traditional learning use ICT as a support tool but in virtual learning ICT infrastructure is the fundamental instrument of teaching and learning process.

Generally, with the growing number of internet user and increasing technological advancement E-learning become more popular and significant throughout the world. According to shih.T et el., (2003, p-1-20) survey some of the main advantage of virtual learning over traditional one is convenience and flexibility. Furthermore, they stressed on the capability of virtual learning for many students at a time additionally timely update of courses content and create a discussion ground for student with other students and teachers. however, there are also challenges and difficulties which are related with sociological, policy and technical issues (shih.T et el., (2003, p-1-20).

## **2.2 Theoretical Review**

### **2.2.1 Learning Theories**

According to (Skinner, 1974) People have been trying to understand learning for over 2000 years but still how an individual learn is a controversial concept. As per the definition of R.M. smith the word “learning” has so many concepts in it and difficult to give one definition and he define learning in three ways (1). The acquisition and mastery of what is already known (2). Learning is a process of explanation and addition of one’s experience (3) Learning is a formally organized process to examine concepts of related with a particular problem. Similarly (Susan,A et.el, 2010) defines Learning as “A process that leads to change, which occurs as a result of experience and increases the potential of improved performance and future learning.”. When I explore the definition of “THEORY” Anthony, (2017 P.166-190) define theory as a set of statement, principles and idea that relate to a particular subject. Also, he adds that Theory clarifies, define, and predict a specific phenomenon. Therefore, learning theories is a process of developing hypotheses to describe how we come to know and how we acquire knowledge. Over the years many psychologists and educational theorist do not agree on to a specific learning theory however most of them agree that many of the

learning theories derived from the following three widespread models Behavioralist, Cognitivist, and social constructivist model of learning (Hadjerrouit, 2008). Now before looking into virtual learning theories the researcher will explain about the well-known theories of learning separately.

### ***I) Behavioralist***

As its name implies, behaviorism focuses on how people behave. It evolved from rationalist worldview which relates cause and effect. According to Anthony G. (2017) behaviorism study how student behave while learning further he describe that behaviorism focuses on perceiving on how learners respond to a certain stimulus when repeated, can be evaluated, quantified, and eventually controlled for everyone. He also stressed that the main idea of behavioralist is that learning can be achieved by only observation and by not any cognitive process in mind and he sum up “if you cannot observe it you cannot studied”. Also, John B. Watson argued that in a learning process mind and consciousness are irrelevant rather learning can be acquired in terms of stimulus and response. The concept of behavioralist theory imitated from Pavlov dog, food, and bell experiment in 1900s. In his experimentation he found that dogs associate time of feeding with the sound of the bell and when they hear the bell they immediately salivate. Through the years different researchers and psychologist use this theory and start to adapt for human learning process. However, many researchers oppose with Pavlov that his theories simply focused on the reflexive response to a specific stimulus (Skinner, 1977). Yet Skinner and Pavlov agree that repetitive actions can leads to habit formation.

### ***II) Cognitivism***

For a long period of time behaviorist school of thought was the only theory regarding learning however psychologists became increasingly frustrated with the limitations of behavioral theory and methods. According to Harasim (2012,P.58) cognitivism was the reaction of the “strict” perspective of behaviorists’ predictive stimulus and reflexive

response. Another major factor for the birth of cognitivism was the introduction of computer (Baars, 1986). Which provides a convincing comparison for human information processing procedure and become a significant tool for understanding human cognitive nature and process. Similarly, one major group of cognitive theories called cognitive information processing theories (CIP) explain that the human learner is conceived to be a processor of information, in much the same way a computer is. When learning occurs, information is input from the environment, processed, and stored in memory, and output in the form of a learned capability. Likewise, Anthony. G (2017.p. 166-190) mentioned that Cognitive theorists supported the idea that mind has a critical role in learning, and They say that the cognitive process of the mind, such as motivation and imagination, is the critical bridging element which connect the environmental stimulus and learner response. Cognitivism theories reflect that learning is an internal process in which a person process of acquiring knowledge depends on the person capacity of processing, the degree of energies employed in the learning process and the depth of the processing (Craik, F. I., & Lockhart, 1972).

### ***III ) Social Constructivism***

This school of thought explain that learning is a social interaction of student and teacher. According to Vygotsky description the learning process as the establishment of a “zone of proximal development” in which the teacher, the learner, and a problem to be solved exist. Similarly, Anthony, G (2017.p. 166-190) explain that in social- Constructivism theory the teacher’s responsibility is to create a social environment in which the learner can assemble of construct with others knowledge required to solve the problem. Likewise, the well-known psychologist and educational reformer john Dewey explain that learning as a social experience in which a learner learn by doing, collaborating, and reflecting with others.

#### **2.2.2 Virtual learning theory**

For many years, the discussion was mostly focused on whether virtual learning is as effective as conventional way of learning as on the model of learning. However, with the



increased usage of virtual learning educational psychologist and other scholar start to think about the approach of learning for virtual learning. According to Anthony, G (2017.p. 166-190) the fundamental theories of learning such as behaviorism, Cognitivism, social constructivism has contributed for the most theories of virtual learning. Also, he stressed that as no single model of learning emerged for teaching-learning practice in general the same is true for virtual education. Here are some virtual learning theories.

#### ***IV) Online Collaborative Learning (OCL)***

Online collaborative learning (OCL) is a theory proposed by Linda Harasim that focuses on the facilities of the Internet to provide learning environments that foster collaboration and knowledge building. She describes OCL as follows Harasim, (2012)

***“OCL theory provides a model of learning in which students are encouraged and supported to work together to create knowledge: to invent, to explore ways to innovate, and, by so doing, to seek the conceptual knowledge needed to solve problems rather than recite what they think is the right answer. While OCL theory does encourage the learner to be active and engaged, this is not considered to be sufficient for learning or knowledge construction. In the OCL theory, the teacher plays a key role not as a fellow-learner, but as the link to the knowledge community, or state of the art in that discipline. Learning is defined as conceptual change and is the key to building knowledge. Learning activity needs to be informed and guided by the norms of the discipline and a discourse process that emphasizes conceptual learning and builds knowledge.”***

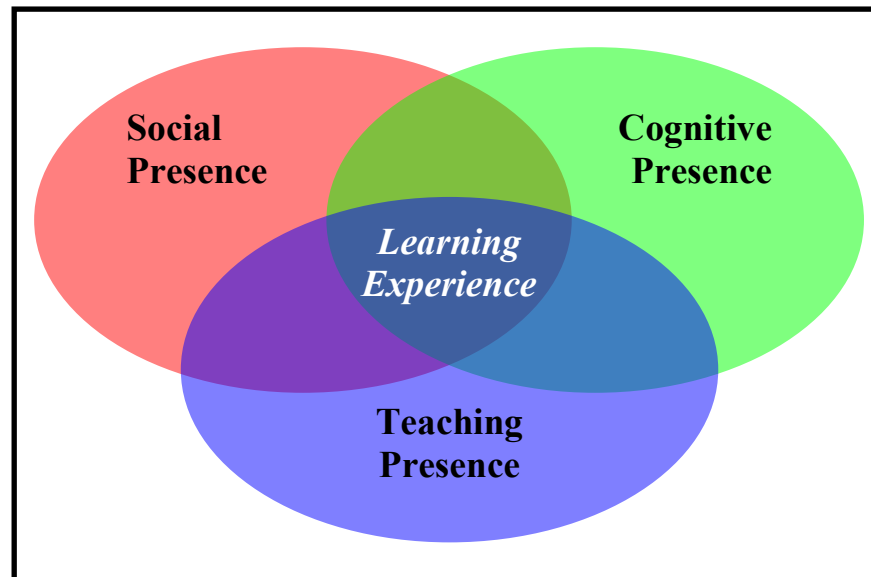
The aim of online collaborative learning is to use technology primarily to increase and improve communication between teachers and learners. The learning approach based on knowledge construction aided by social discourse. Anthony, G (2017.p. 166-190) claims that

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OCL theory derives from constructivism since the teacher act as a facilitator and a learning community member and encourage student to team up with other learners and teacher through social interaction to solve a problem. In OCL Teachers have an active role as a facilitator and as major knowledge building part because of this OCL is not easy to increase the participant like other theories of virtual learning is best suited in smaller instructional environment.

### ***V) Community of Inquiry (COI)***

The “community of inquiry” model for online learning environments is developed by Anderson, T., Garrison, D.R, & Archer, W, (2001) is based on the concept of three distinct “presences”: cognitive, social, and teaching. According to Randy Garrison (2009) the COI theory recognizes the importance environment in shaping the educational experience. He also added that Community of Inquiry (COI) environment based on open but purposeful communication and the foundation of this process are social, cognitive, and teaching presence. Similarly, Anthony, G (2017.p. 166-190) claim that COI support virtual learning as active learning environments between instructors and students sharing ideas and opinions. According to the Developer of COI the definition of “PRESENCE” says that it is a social phenomenon and demonstrates the teaching and learning process through communications of learners and teachers. Additionally Randy Garrison (2009) claim that COI is not only accessing information but it objective is to facilitate educational experience through creation of communities of learners that actively and cooperatively engaged in discovering , establishing meaning and enhancing understanding. Similarly, Randy garrison (2009) claim that community of inquiry crated when the three-presence social, cognitive, and teaching overlap each other and in the process, there will be meaning full learning experience.



**Figure 2.1: Community Inquiry Learning Theories**  
 (Source: -Garrison, Anderson, Garrison, and Archer, 2000)

## **VI) Connectivism**

This theory of learning emphasizes on the utilization of massive information and knowledge flow through the internet and change the way of learning from individualistic to group, community and ever a large crowd. According to Siemens (2004) has been the main advocate of connectivism think that connectivism is a learning model that recognizes the major shift in the way knowledge and information flows cultivates, and transfer because of vast data communications networks.

Siemens describes connectivism as: `

*“The integration of principles explored by chaos, network, and complexity and self-organization theories [where] learning is a process that occurs within nebulous environments of shifting core elements – not entirely under the control of the individual. Learning (defined as actionable knowledge) can reside outside of ourselves*

*(within an organization or a database), is focused on connecting specialized information sets, and the connections that enable us to learn more and are more important than our current state of knowing” (Siemens, 2004). Also, Siemens stressed that Connectivism theory is mostly suitable for courses that has been taken by high number of learners and the objective learning in connectivism is focused mainly on formation of knowledge rather than delivering it. However, the role of teachers or instructors in connectivism is somehow vague this theory mainly focuses on individual participation and on the flow of information through internet and in return the creation of knowledge. So, in this context the main purpose of the teacher is creating the initial learning environment and bring learners together. The main assumption is that learning will automatically occur as a result, through exposure to the flow of information and the individual’s autonomous reflection on its meaning.*

The above Theories are some of virtual learning theories since VL is a new form of learning many theories are still emerging however from the above theories Community of learning (COI) is more suitable for our way of teaching and learning practice since the basic concept of COI is to have cognitive, social, and teaching presence. Unlike the conventional learning virtual learning is active learning environments which is created between instructors and students sharing ideas and opinions. COI theories of learning give more social interaction between the student and instructor by creating active learning environment.

## 2.3 Empirical Review

### 2.3.1 The Pandemic and Education

In the history of world educational system, the largest disruption has caused by COVID-19 disaster. This global phenomenon has impacted all stakeholder involved in the system in all levels of educational structure globally. According to the UN report the pandemic has enforced more than 1.58 billion students to stop face to face learning methodology throughout the world. These situations enforce countries to move to virtual learning mode (UN, Policy Brief Education DURING covid-19 and beyond, 2020).

With the technological advancement and continues innovation there is a growing demand to have alternative in the educational system globally. Over the past decade Virtual learning has shown a significant growth with the increased accessibility of internet, people start to learn online and get knowledge and new skills in the process. Even before the pandemic, Research and Markets forecast the online education market as \$350 Billion by 2025, this numbers might be updated after the growing impacts of COVID-19 on the educational sector. However the world still not fully utilized the potential of Virtual-learning specially the developing Nation the pandemic has given a chance in paving the way for the introduction of online learning throughout the world (Dhawan, 2020). During this hard time online learning has played a vital role by making things possible to continue schooling for many universities and schools throughout the world (Sumitra,P & Roshan,C, 2021). According to some report in China Zhejiang University which have seven campuses across east-China they made available more 5000 online-courses within just two weeks after the national lockdown in China. This online learning was visited by more than 570,000 students and around 2500 graduate students have defended their thesis using online (Yang,

2020). However, the sudden transition of online learning will have a significant impact on the quality of education. Since there are already identified challenges of online learning which are related with the technological aspect of the system before the pandemic like accessibility, affordability, flexibility, teaching pedagogy, and educational policy (Murgatroid, 2020). Also many developing nations have significant issue with the reliable internet connection and access to the learning materials. Similarly With the complicated nature of online learning there is no standard way of teaching approach for all subject, every course and teaching lesson must be designed specifically. According to (Doucet et al., 2020) While making this transformation, teachers and student readiness must be evaluated and get the necessary support accordingly.

### **2.3.2 E-Learning In Ethiopia Higher Educational Institute**

Several developing countries have been constrained in managing and sustaining significant strategies aimed at integrating ICT in education (Mikre, 2012). The use of E-learning in developing country like Ethiopia is very low comparing with the developed countries. E-learning (using ICT in general for education) has been promoted as ways to overcome physical distance, availability problems and teacher shortages especially in low-income countries (UNESCO, 2006). Nicoleta and Maria-Loredana (2012), strongly propose that E-learning is one of the most efficient way to reach education at all levels, especially for higher education systems. Low-income countries have failed to take advantage of e-learning as an educational modality (DeRouin, Fritzsche & Salas, 2005). According to Yonas. H(2018) the first initiative taken regarding e-learning practice in Ethiopia was the partnership between Addis Ababa University, Curtin University of Technology and African Virtual University in 2003. The Australian based Curtin University of Technology launched an e-learning project in Ethiopia, Kenya, Rwanda, and Tanzania with an investment of \$5 million in partnership with the African Virtual University (AVU) offering under-graduate level business degree programs customized to local needs of African institutions' educational curriculums. Unfortunately, this program was failed in 2008 by only graduating 190 undergraduate

students (Belwal et al., 2010). After some years later According to Ketema& Nirmala (2015), Adama science and technology university (ASTU)start using e-learning system to support its teaching and learning process on October 15, 2009, The University uses MOODLE as its Learning Management System. As of 2015, a total of 72 courses were uploaded over the LMS and 5,356 users are registered out of which 3461 are students, 108 are course instructors, 5 are system administrators and the rest are guests. The center delivered 32 online trial examinations, 20 online quizzes, 15 online final examinations, 57 forums and 15 assignments (information obtained from ASTU's e-learning center, 2018).However, according Ketema & Nirmala e-learning implementations and its sustained usages are mainly challenged by poor ICT infrastructure and resistance by traditionalists (those in favor of the traditional teaching and learning process).Other EHEIs such as Jimma University, Hawassa University, Bahirdar University, Addis Ababa University, Arbaminch University, AMBO University, Ethiopian Civil Service University, Haramaya University, and PESC Information Systems College are some of the higher education institutions adopting MOODLE as their LMS in using e-learning to support their teaching and learning process (information obtained from ministry of education of Ethiopia and concerned e-learning offices of the HEIs). However, the implementation of e-learning to support the teaching and learning process still poses many challenges. Beyene (2010; 2006) explained that the implementation of e-learning systems in EHEIs is characterized by various failure factors and there are also limited studies conducted to infer about the practices of e-learning at EHEIs.

### **2.3.3 St. Mary's University Distance and Virtual Learning Experience**

The history of St. Mary's University began in the year of 1998 in Ethiopia. According to the university official website the university started education in the same year with 33 and 37 students in Awassa and Addis Abeba campus respectively in department of Departments of Accounting, Marketing, and Law. Later the same year, 49 students joined the Dilla Branch, 90 kilometers from Awassa, which is found in the southern part of Ethiopia. In the last quarter of 1998, it admitted more than 300 students in Addis Ababa (Lideta Campus

located opposite the Federal High Court) and 25 students in Dilla. After fifteen years of service as a college first and a university college since 2008, it earned university status from the Ethiopian Ministry of Education in September 2013. Currently the university has four campuses in Addis Ababa, 13 Distance Education Regional Centers, and 160 Coordination Offices throughout the country. It has 200 full-time academic staff and 1000 employees. It caters to the needs of six thousand undergraduate students, twenty thousand students enrolled in distance education programs, and two thousand students in graduate programs. The university has a reach history in Distance learning over the years in Ethiopia according to the university official web site the university DED (Distance Education department offers a total of 22 degree and vocational programs through its 154 coordinating centers, which are located throughout the country catering to the needs of close to 30.000 students. However, St. Mary's University do not have much history on virtual learning before the COVID-19 pandemic.

### **2.3.4 Challenges and Opportunities Of Virtual Learning (VL)**

The primary challenges in developing countries lack basic components which are crucial to implement VL such as computers and internet access (Kenan, 2015). He also added that lack of technical skills for necessary installations, funds to acquire all the essential infrastructure, and poor planning are other factors, coupled with the previous, that delayed and still are hindering the adoption of VL in these countries. In his premises he categorized the challenges as below.

- ❖ Individual factors
  - Students: Motivation; Conflicting priorities; Economy; Academic confidence; Technological confidence; Social support; the gender and Age



- Lecturers: Technological confidence; Motivation and commitment; Qualification and competence also, the Time
- ❖ Pedagogical factors
  - Course design: Curriculum & Pedagogical model & Subject content & Teaching; Learning Activities & Localization and Flexibility
  - Support provided: The support for students from faculty & Support for instructors.
- ❖ Contextual factors
  - Organizational: Knowledge management; Economy and funding and Training of teachers and all staff
  - Societal/ Cultural: Role of teacher and student, and attitudes towards e-learning; and the rules and regulations
- ❖ Technological factors: The access & cost & Software and interface design, also, Localization

In his SWOT analysis of the data collected, the challenges he identified are:

- ❖ Lack of training courses for the students, technical and academic staff.
- ❖ Lack of technological support and periodic maintenance of computers.
- ❖ Lack of online library catalogues in the LHEIs
- ❖ The mismanagement and corruption.
- ❖ Users' lack of awareness and fear of negative
- ❖ consequences of using technology in education processes.
- ❖ The higher teaching load of lecturers
- ❖ Preference of using only academic traditional methods in education.

- ❖ Lack of support from the government.
- ❖ Increased migration of skilled and intelligent people from Libya.
- ❖ Lack of the strategic resources and the knowledge research for the future education vision in Libya.

While the Opportunities identified in this paper are:

- ❖ Official recognition of education certificates holders of e-learning or distance education.
- ❖ Create new business strategies to attract students from other African countries that still lack the basics of e-learning in their Higher Education Institutes.
- ❖ An increased number of students can access the online course materials without attending the face-to-face lectures.
- ❖ Reduce the migration of skilled and intelligent people from Libya.
- ❖ Create techno-education competitive environment with the neighboring countries.
- ❖ Development of new courses in foreign languages (English, French, etc.) in LHEIs.
- ❖ Gradual change of culture including more acceptances to E-learning systems.
- ❖ Geographical position of Libya in Africa plays strategic role in the successful and the necessary need to implementation of e-learning system in LHEIs.

In another paper on the impact of COVID-19 on the teaching and learning forcing the transition to VL (Pokhrel & Chhetri, 2021), the researchers identified that the challenges were accessibility, affordability, flexibility, learning pedagogy, life-long learning, and educational policy. The researchers also mentioned that VL has forged a strong connection between the instructors and students. They also added that virtual classes created an opportunity for students that were not able to attend face-to-face classes even before the pandemic, like the disabled, to attend classes without getting out of their homes.

## **2.4 Synthesis of Literatures**

The pandemic help people to see the potential of internet in general. Specifically, the educational sector was mostly dependent on the service of internet. Even if COVID-19 brought a great threat to humanity but it still enables the educational institutions to think and to see the Potential of virtual learning in the educational system. However, some believe that emergency migration of remote teaching and learning practice without any proper training, mental readiness and preparation can result in poor educational quality and poor user experience for the future use of Virtual learning. But still others think this change can be the starting point of a new “HYBRID” model of educational system which will solve the limitation of traditional learning practice (Cathy.L & Farah.L, 2020). One of the major issues raised on the practice of virtual learning is about the theories of virtual learning and still many theories are emerging about virtual learning however, from the above mentioned online learning theories Community of learning (COI) is more suitable for countries like Ethiopia which are in early stages of online learning practice. According to Randy Garrison (2009) the COI theory recognizes the importance environment in shaping the educational experience. He also added that Community of Inquiry (COI) environment based on open but purposeful communication and the foundation of this process are social, cognitive, and teaching presence. Similarly, Anthony, G (2017.p. 166-190) claim that COI support virtual learning as active learning environments between instructors and students sharing ideas and opinions. According to Kenan (2015) The primary challenges in developing countries lack basic

components which are crucial to implement VL such as computers and internet access. Similarly, Pokhrel and Chhetri (2020) mentioned that the challenge of virtual learning include accessibility, affordability, flexibility, learning pedagogy, life-long learning, and educational policy.

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## CHAPTER 3: RESEARCH METHODOLOGY

This chapter discusses the methodologies that were followed in the study. Which include the research Design, data source, sampling procedures, sampling design, data collection procedure, analysis and interpretation, ethical consideration and reliability and consistency of the study discussed.

### 3.1. Research Design and Approach

#### 3.1.1. Research Design

The research design implemented in this study was survey research design. Survey research is defined as "the collection of information from a sample of individuals through their responses to questions" (Check & Schutt, 2012, p. 160). Survey is primarily used to generalize a given population based on a representative of the whole population (Bhattacharjee, 2012.P.73). Moreover, according to Williamson, (2000) the data collected using survey type of research design can be analyzed using descriptive statistics to explain cause and effect relationships of the studied subject. Survey research design have two major importance, primarily in survey type of research respondents give their own thoughts, feelings, and experience more openly than other data collection method, the second importance to employ survey was its advantage over getting accurate estimation of what a population truly think in case of large sample population. Survey based research design usually used to understand and analyze new trends, and opinions. Since Virtual learning was a new learning approach, survey research design was more appropriate for the study. Cross sectional survey design type was used since data were collected from the sample at a specific time.

## **3.2. Data Source**

Data are the major part in any research. Data source is the location where the data being used derived from. According to Douglas (2015) study there are two major types of data source Primary and secondary data source. The data collected by the researcher for the first time is called primary data whereas data already collected or used by a researcher for other kind of research is secondary data source. The data used for this research was primary data source since virtual learning practice was new approach of learning getting secondary data was impossible. To examine the challenges and opportunities of virtual learning during the pandemic in the case of St. MARY'S UNIVERSITY. The research used survey method of data collection for both students and instructor's respondents.

## **3.3. Population and Sample**

### **3.3.1. Population**

The target population for this study were students at St. MARY'S UNIVERSITY school of graduate studies Batch of 2012 A. The target population were continuing their learning using online in the time of pandemic and instructors which gave virtual class during the pandemic. According to St. MARY'S UNIVERSITY school of graduate studies registrar office there were sixteen (16) masters' programs out of these eight (8) programs used virtual learning as the main teaching-learning platform during the pandemic and in this program, for the 2012 A batch there were five hundred thirty-four (534) students. Similarly, 17 instructors were involved in the research.

### 3.3.2. Inclusive Criteria

This study intended to get in-depth information about the challenges and opportunities of online-learning during COVID-19 pandemic. The participants that were included in this research were selected based on the following criteria.

- The participants were a regular Post graduate student in St. MARY'S UNIVERSITY for the Batch 2012A.
- The participants were instructors of St. MARY'S UNIVERSITY.
- Participants (students and instructors) who were willing to participate in the study.

### 3.4. Sample and Sampling Technique

Sample is a selected group of some elements/people from the totality of the given population and Sampling is a technique used to select a group of individuals from a given population size to assess the attributes of the whole population. Sampling will make data collection process easier, faster, and lower cost (Singh, Ajay S & Masuku, Micah B , 2014). According to Salant & Dillman, (1994, p.54) in survey research design the Sample selection depends on the population size, its homogeneity, the sample media, and it is cost of use, and the degree of precision required. Also, they stressed that the sample must be selected randomly to give equal chance of selection from the target population. The research used simple random sampling technique for the student data. Since the practice of Virtual learning were new for most students from the different department the experience was mostly identical regardless of their department. Additionally, most of the courses given in different departments were related with social science studies which give resemblance among the experience of students irrespective of their departments. Since Simple random sampling is recommended when the population are homogeneous and gives equal chance for each member of the population in the selected subject. Using simple random sampling was most appropriate sampling technique for the study.

Sample size determination is basic in a research process. It is being determined by considering some factors like nature of the universe, number of classes propose, nature of the study, type of sampling, acceptable confidence level, available of finance, and other issues (Kothari, 2004).

The sample size was estimated based on single population proportion (p). Using the formula (Hamed.T, 2017,P.237)

$$N = \frac{p(100-p)Z^2}{E^2}$$

- N: - is the required sample size
- P is the percentage occurrence of a state or condition. (50%)
- E is the percentage maximum error required. (5%)
- Z is the value corresponding to level of confidence required (95%)

Considering the value P before conducting a survey research is important according to Bartlett et al. (2001) researchers should use 50% as an estimate of P, as this will result in the maximization of variance and produce the maximum sample size. The assumption that 5% margin of error, and 95% confidence level, the required sample size N for the students had been 224 and seventeen instructors were involved in the research.

### 3.5. Data Collection Method

Data collection is the process of collecting and evaluating information on variables of significance, in a proven systematic way that enables to answer the specified research questions. This study collected data from the primary source through survey. This study used survey questionnaires for all student, and lecturers. Since the pandemic is still not controlled, the data collection was managed mostly by using Google form.



### **3.5.1. Survey Questioners**

The survey questionnaires were presented for students and lecturers. The questioner includes closed and open-ended questions for both instructors and students. The student part of the questioners included about their profile, about learning material accessibility and learning environment condition, about the support they get from SMU, instructors, SMU ICT staff and family or colleague, about their experience on using internet for education purpose, how the learning process was during the pandemic, what kinds of difficulties they faced during the process, what are the main opportunities of virtual learning. For the instructor questioners included questions about, online teaching experience, about teaching material accessibility, about teaching environment situation, about the support they get from the universities and ICT staff during the teaching period. The survey questionnaire was maintained using online method by GOOGLE FORMS.

### **3.6. Data Analysis Method**

Data Analysis is the process of systematically applying statistical and/or logical techniques to describe and illustrate, condense, and recap, and evaluate data (Shamoo, Resnik, 2003). The study made the analysis mainly by considering the research questions the analysis step taken to answer the research question was divided into three section The first part was related with challenges it has three sub-section Accessibility, Support and Teaching Approach. Secondly The opportunity of VL was analyzed using both open and closed ended questions. Lastly The existing practice of virtual learning was also analyzed accordingly. SPSS and Microsoft excel software was used to analyze data and presented using percentage. Finally, the findings are summarized and presented in Tables and Figures with further descriptions.

### **3.7. Ethical Considerations**

The research work was conducted based on professional principles and ethics. The purpose of this research is for academic reason the researcher follows the formal procedure to clear the ethical issue. Based on the approval from St. Mary University School of graduate studies the aim is to conduct the research. The data collection process was done after getting the participants agreement. All the information agreed about the confidentiality and anonymity of the study subjects during the study was be acknowledged to all participants and the selection totally rely on their willingness to participate on the study. All participants were treated as anonymous and that participants who have joined the study have full right to withdraw the study at any time they want. All participants were treated in any way persuaded to take part in the survey or even asked to respond to questions in a particular way.

### **3.8. Reliability and Consistency**

Reliability and validity are essential observations related to assessing research meets standards to produce results that is valid and consistent. One of the most used indicators of internal consistency is Cronbach's Alpha Coefficient. The Cronbach's Alpha is 0.7 or higher value indicates the reliability of the scale (Palant, 2007.P-20). Reliability test during pilot study checked using Cronbach's Alpha Coefficient to measure the internal consistency of the instrument. Table-3.1 and table-3.2 shows the Cronbach's Alpha value for the questioner asked on challenges and opportunities of VL the result show 0.89 and 081 respectively which are greater than 0.7 and indicates the internal consistency and reliability of the of the data.

*Table 3-1:-Reliability and Consistency of Challenge Data*

<b>Reliability Statistics</b>		
<b>Cronbach's Alpha</b>	<b>Cronbach's Alpha Based on Standardized Items</b>	<b>N of Items</b>
.893	.894	10

(Source: Data collected from Primary Survey)

*Table 3-2:- Reliability and Consistency of Opportunity Data*

<b>Reliability Statistics</b>		
<b>Cronbach's Alpha</b>	<b>Cronbach's Alpha Based on Standardized Items</b>	<b>N of Items</b>
.812	.814	8

(Source: Data collected from Primary Survey)

## **CHAPTER 4: DATA PRESENTATION, ANALYSIS, AND INTERPRETATION**

This section presents the result and analysis part of the research. The questionnaires which were analyzed to look for patterns of the responses from respondents using descriptive statistics such as, tabulation, charts, and percentage distribution followed by detail analysis in line with the challenge and opportunities of virtual learning during the pandemic. In this section, to confirm the validity of data analysis between variables the data was measured using SPSS. The first section will briefly present the demographic characteristics of respondents and summarizing the main information that were directly related to these questions. The next section divided into three parts Technological using Skill and current practices, challenges, and opportunities of virtual learning during the pandemic. These data will be subsequently expanded upon and presented in more detail in the concluding sections of the research.

## 4.1. Demographic Data of the Respondents

This section states the demographic data such as gender and age of both instructors and student's respondents, Department and employment status of the students and the overall teaching experience of the instructors.

**Table 4-1: Demographic data of the Respondents**

		Students	Instructors
Gender	Female	42.31%	0.00%
	Male	57.69%	100.00%
	<i>Total</i>	100.00%	100.00%
Age	Less than 30	39.13%	0.00%
	30-40	52.17%	25.00%
	40-50	6.21%	31.25%
	50-60	1.24%	25.00%
	Above 60	1.24%	18.75%
	<i>Total</i>	100.00%	100.00%
Department	Computer Science	9.82%	N/A
	Development Economics	1.84%	N/A
	Development Management	1.84%	N/A
	Marketing Management	11.66%	N/A
	Masters of Business Administration	21.47%	N/A
	MBA in Accounting and Finance	14.72%	N/A
	MSC in Quality and Productivity Management	3.07%	N/A
	Msc in social work	3.07%	N/A
	Project Managemnt	32.52%	N/A
	<i>Total</i>	100.00%	N/A
Current Employment Status	Employed(Full Time)	76.73%	N/A
	Employed(Part Time)	13.21%	N/A
	Unemployed	10.06%	N/A
	<i>Total</i>	100.00%	N/A
Teaching experience	Less than 5 years	N/A	25.00%
	5 to 10 years	N/A	25.00%
	10 to 15 years	N/A	25.00%
	More than 15 years	N/A	25.00%
	<i>Total</i>	N/A	100.00%

*(Source: Data collected from Primary Survey)*

The demographic table 4.1 shows that the basic information of the respondents. The gender of the respondents from the Table 4.1 show that the gender of the students was evenly distributed i.e., 60 percent of the respondents were male, and the rest were female. All the instructor's respondents were male. Most of the student's respondents, about 93 percent, were below 40 years of age this implies that the respondents were closer to technologies since virtual learning is a technologically aided learning mechanism this could have helped in the familiarity of technologies. The instructor's ages were evenly distributed among the age groups. The table also state about employment statues of the students, about 90 percent of the students were employees furthermore, 78 percent of them were full time employees this can implies that most of the student's respondents had a time constraint. As discussed in background and literature review sections of the research, the major advantage of virtual learning over the conventional one is the accessibility of learning from anywhere at any time. The teaching experience of the instructor's respondents shows that 81 percent have more than 5 years of teaching experience. This shows that most instructors were more familiar with the conventional teaching approaches as we can see from different literatures that were discussed in the literature review, most experienced instructors were reluctant when it comes to adopting virtual learning as way of teaching and learning.

## 4.2. Technological Skill and Current practices

This section presented the result data and discussed about the practice of virtual learning during the pandemic.

### 4.2.1. Results and Discussion of Students Technological skill and Current Practices

This section presents the practice of virtual learning from respondents' point of view the section divided into skill of using virtual learning teaching material and the experience of instructors on virtual learning practice during the pandemic.

*Table 4-2: Technological skill and Current Practices from Students Perspective*

No	Question	SD	D	N	A	SA
<b>1</b>	<b>Skill</b>					
1.1	You have enough computer knowledge and IT skills to take virtual class?	5%	6%	7%	36%	46%
1.2	You are familiar with the technology and software you are using for online learning?	6%	14%	31%	39%	10%
<b>2</b>	<b>Experience</b>					
2.1	The Covid-19 pandemic has impacted your interest of learning.	6%	8%	13%	42%	30%
2.2	The sudden move from conventional class to virtual class has affected the quality of education.	0%	11%	8%	47%	35%

*(Source: Data collected from Primary Survey)*

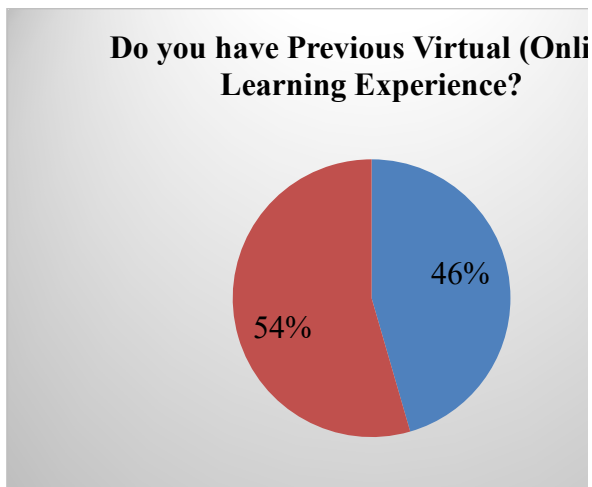
Virtual learning needs unique sets of skills from the students and instructors unlike the conventional way of learning. These skills mostly related with the capability of using technological devices and application/software(s) the following section describe the respondents' technological using skill. The table 4.2 summarized the skills of student's

respondents on using the virtual learning materials most of them, around 82 percent of the respondents have the required skills on using computers, smart-phone, and other related technological products. However, only 49 percent of the respondents were familiar with the learning application/software. This data shows that most of the respondents have computer and IT skills to use virtual learning; this can be an indication that the student respondents had the required sets of skills on using technological products. Contrary to this, only 48 percent of the respondents were familiar with the learning application/software this can be related with lack of experience of respondents on using virtual learning previously and lack of proper training before enrolling virtual class.

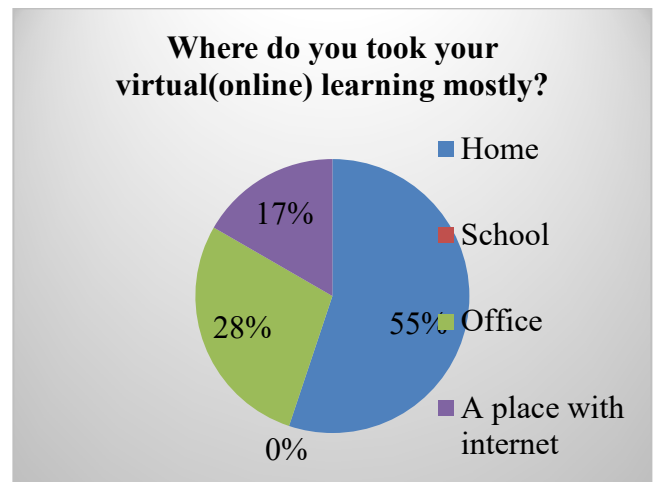
The experience section figure 4.1 shows that 54 percent of the respondents, which were more than half of the respondents, had no previous experience with virtual learning. This shows that student respondents need to have a proper training on how to use virtual learning before the implementation phase. The data in figure 4.1 shows that 55 percent of the respondents take virtual lectures at home. This can be related with the pandemic. And 28 percent of these students take the classes at office and the remaining 17 percent take them at places with the internet. The Table 4.2 also summarizes the student experience on using virtual learning. As mentioned in the table 4.2, most of the respondent about 72 percent replied that Covid-19 pandemic had negatively impacted their interest of learning in general. This had affected the readiness and motivation of the students on learning. Similarly, most of the respondents around 81 percent think that the sudden move of learning from conventional way to virtual had seriously affected the quality of education. Since COVID-19 had created a difficult situation to all stakeholder involved in the educational system globally.

Most of the respondents agreed that they had gained a good experience from VL practices. This can be taken as an opportunity for the future of education.





*Figure 4.1: Students previous Experience with Virtual Learning (Source: Data collected from Primary Survey)*



*Figure 4.2: Where the students take their Virtual Classes. (Source: Data collected from Primary Survey)*

#### 4.2.1. Results and Discussion of instructors Technological skill and Current Practices

This section presents the practice of virtual learning from instructors' point of view the section divided into skill of using virtual learning teaching material and the experience of instructors on virtual learning practice during the pandemic.

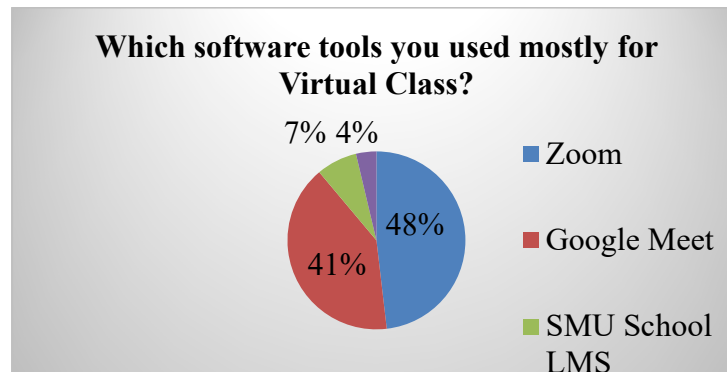
**Table 4-3:-Technological skill and Current Practices from instructors Perspective.**

N	Question	SI	D	N	A	SA
<b>1</b>	<b>Skill</b>					
1.1	You have the necessary computer knowledge and IT skills to give virtual lectures?	0%	7%	0%	50%	43%
1.2	Are you familiar with the technology and software you are using for online learning?	0%	38%	0%	50%	13%
<b>2</b>	<b>Experience</b>					
2.1	The sudden move from conventional class to virtual class has affected the quality of education.	13%	25%	0%	38%	25%
2.2	You have Gained a good experience of giving Virtual lectures?	0%	0%	0%	75%	25%

*(Source: Data collected from Primary Survey)*

Table 4.3 shows that instructor's skills on using virtual teaching tools. Most of the respondents, around 93 percent, have the required computer skills to give virtual class. This was so because; computers were the major tool in teaching process at the post graduate level Now days. Similarly, to the student's data 38 percent of the instructor respondents were not familiar with the virtual learning applications/software. This can be supported by the data from figure 4.3 which shows that 89 percent of the instructors use applications like Zoom and Google meet. Since Zoom and Google Meet were not specifically designed for virtual learning, they lack specialized features that needed by and favors virtual learning. As been discussed in chapter two the experience of most higher learning institutes in developed

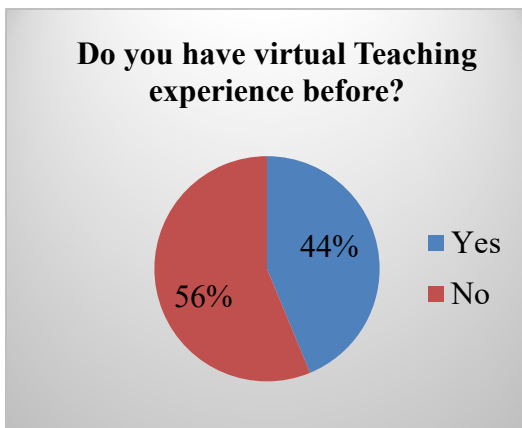
countries shows that they use their own virtual learning applications, which were specifically designed by the requirements of instructors and students this can increase the familiarity of using the application. As indicated by the result in table 4.3 only 7 percent of the respondents use the university LMS system.



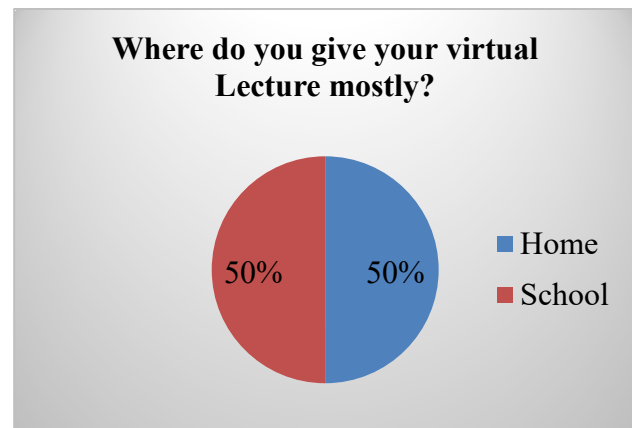
**Figure 4.3:- Applications and Software Tools used  
(Source: Data collected from Primary Survey)**

Figure 4.4 shows the result of respondents about their previous virtual teaching experience. From the figure-4.4 about 54 percent of the respondents did not have virtual teaching experience and the rest have experience of virtual teaching before. Since virtual learning was a new practice in Ethiopia, a fewer percent of the respondents had experience. Similarly, this data implies that the inexperienced instructors need a proper training on how to give virtual lecture. Figure 4.5 show that 50 percent of the respondents give their lecture from home and the other 50 from university. Normally, the instructors gave their lectures from the university, but the data shows only half of them give This can be related with the pandemic and additionally the advantages of VL by giving lectures from anywhere. Correspondingly Table 4.3 show that more than 62 percent think that the sudden move of learning and teaching practice from the traditional way to the virtual had affected the quality of education. This can be related with lack of proper preparation and readiness for virtual

learning because of the pandemic. All the respondents think they had gained good experience of giving virtual learning. This can be an indication that virtual learning and teaching is still a good experience for the future even if it had limitation on quality of education since it needs proper plan and preparation before implementation.



**Figure 4.4:- Instructors previous Experience with Virtual Learning**  
(Source: Data collected from Primary Survey)



**Figure 4.5:- Where the instructors give their Virtual Classes.**  
(Source: Data collected from Primary Survey)

## **4.1. Challenges of virtual learning**

This section presented the result data and discussed about the challenges faced by instructors and students in using virtual learning and teaching process.

### **4.1.1. Results and Discussion of Students Challenges on Virtual Learning**

#### **Practices**

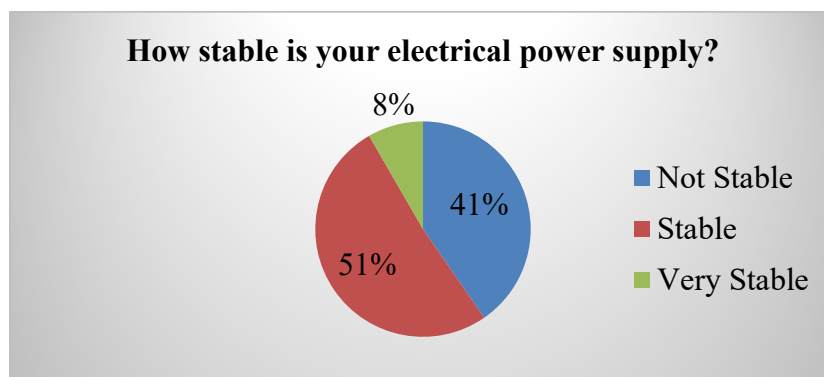
This section present table and figures to discuss about the challenge of virtual learning from instructors' point of view. The table divided into three parts the first part was related with Access of learning material, environment, and other related factors from student point of view, the second part related with the Support given for students during virtual class and the last part related with the teaching approach used by the instructors for virtual learning Approach. Additionally, this section includes the result and discussion part for the open-ended questions.

Table 4-4:- Summary Result of Challenges from Students Perspective

N	Question	SI	D	N	A	SA
<b>1</b>	<b>Access</b>					
1.1	You have suitable learning environment for Virtual(online) learning?	6%	28%	26%	31%	9%
1.2	You have the necessary learning material and facilities (computer/laptop/Internet/software) to participate for online lectures?	4%	10%	17%	46%	23%
1.3	Your place has the required internet speed to have virtual class?	8%	17%	23%	44%	8%
1.4	The cost of internet restrict you to join virtual class	8%	24%	14%	34%	20%
<b>2</b>	<b>Support</b>					
2.1	You get the Necessary Guidelines (ex. how to use online tools) from the university and your lecturer before starting online class?	12%	28%	18%	35%	8%
2.2	The university was helpful in offering the required resources and assistance on virtual teaching and learning process?	7%	24%	22%	42%	6%
2.3	Instructors were helpful enough during virtual class?	5%	11%	33%	43%	8%
2.4	The university ICT support team give all the necessary support for virtual class?	6%	29%	31%	30%	4%
2.5	Your family/colleague/friends/workplace was helpful during virtual class?	4%	7%	18%	50%	21%
2.6	Instructors give you the proper support and response for your question during virtual class?	3%	7%	22%	63%	5%
<b>3</b>	<b>Approach</b>					
3.1	Instructors use different teaching approach for virtual and traditional face to face class?	5%	17%	22%	52%	3%
3.2	Instructors make enough preparation and readiness before virtual class?	7%	20%	32%	36%	5%
3.3	Instructors have the necessary teaching skill to give virtual Class?	6%	20%	28%	43%	3%
3.4	Instructors present on time for virtual class?	3%	6%	20%	58%	12%
3.5	The university use proper assessment and evaluation method for the virtual learning?	11%	24%	39%	20%	7%

*(Source: Data collected from Primary Survey)*

The access section of the Table 4.4 shows that only 48 percent of the respondents had suitable learning environment to take virtual learning. About 35 percent of the respondents replied that they do not had proper learning environment this can be a major challenge for virtual learning Since suitable learning environment is the first requirement for any form of learning. For the question about learning material like computer and internet most of the respondents about 69 percent replied they had the required learning material for virtual class. Table 4.4 also mentioned about internet connection speed about 52 percent of the respondents had the required internet connection speed to have virtual class and a significant number of respondents about 48 percent replied that they do not had the required internet connection speed. Similarly, most of the student respondents around 53 percent said that the high cost of internet connection restricts them to join virtual class. Internet connection speed and cost had imposed a major challenge for virtual learning during the pandemic. Figure 4.6 show about power supply since One of the major requirements in virtual learning is electrical power supply stability. The summarized response of the student respondents concerning this requirement were shown that 40 percent of the students had unstable power source. Even though more than half of the respondents had a stable power supply, a considerable portion of the student respondents face problem with their power supply. In turn, this can have a major negative impact in virtual learning processes.



***Figure 4.6:- Power stability from student respondents***

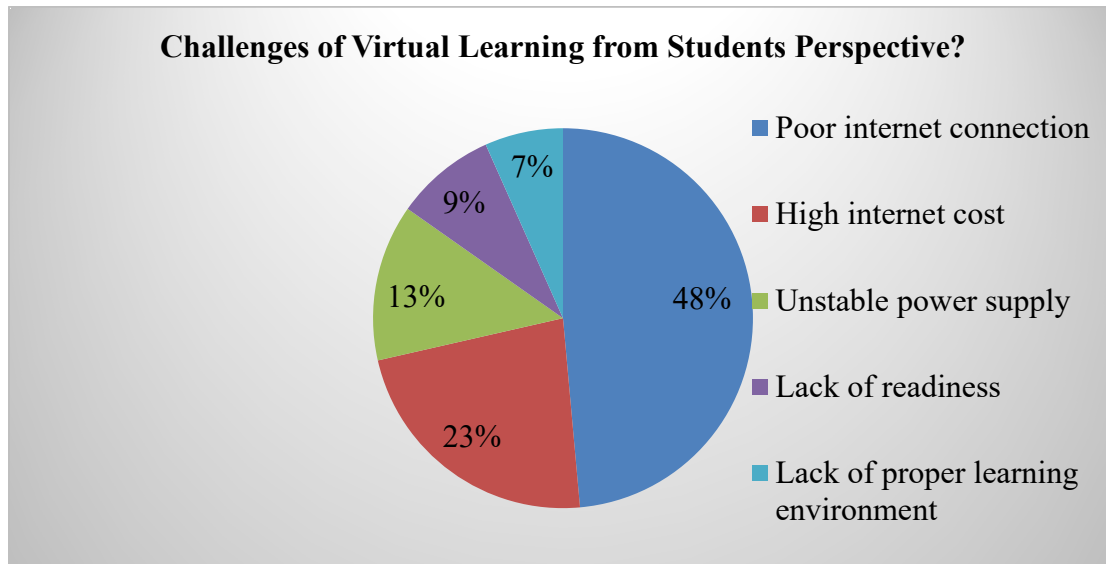
*(Source: Data collected from Primary Survey, 2021)*

The support section of the table show that 40 percent of the respondent think they did not get the necessary guidelines on how to use virtual learning tools and material. From the experience figure about 56 percent of the respondent do not have previous virtual learning experience. This implies that most of the students need a proper guidelines and training on how to use VL however significant number of students do not get guidelines in return it created a challenge during Virtual class. About 48 percent of the respondents think the university was helpful in offering the required material and assistance during virtual class and 30 percent of the respondents think SMU was not helpful in assisting and offering the required resource. From the table 4.4 about 50 percent of the student's respondents think instructors were helpful and 15 percent of the respondent think instructors were not supportive enough. Regarding the support given from the ICT department of SMU only 35 percent of the students get the necessary support during virtual class since virtual learning is highly related with ICT. It needs a proper support from the school ICT support team. About 70 percent of the respondents think families, work colleagues were supportive enough during virtual class.

The approach section of the table 4.4 shows that most of the students agreed on the punctualities of their instructors and use of different teaching approach from the conventional way of teaching, a significant amount of these students disagrees on other aspects. When the instructor's preparation was considered, 27 percent of the students disagree on the adequacy of preparation for virtual class while the other 42 percent agrees. In case of having the required teaching skills 26 percent disagrees and 46 percent agrees. The students answer to assessment and evaluation method showed About 34 percent of the student's respondents think the evaluation technique was bad and about 26 presents of the respondents think the



assessment and evaluation was good. From the approach table it can be summarized that most of the student's respondents had a neutral view on the teaching approach of instructors for virtual learning.



**Figure 4.7:- : Summary of Challenges from Students Open-end Questions Response  
(Source: Data collected from Primary Survey, 2021)**

The above figure 4.7 shows the students response for the open-ended questionnaires to identify the challenges they faced in attending virtual class the result indicates that about 49 percent think that poor internet connection was the major challenge they faced during virtual learning practice. Correspondingly from the quantitative result and data analysis section showed that about 48 percent of the respondent do not have the required internet connection speed to have virtual class. This indicate that internet connection speed was the main challenge of virtual learning during the pandemic. As indicated by figure 4.7 about 23 percent of the student respondent agreed that the high cost of internet was the second major

challenge to attend virtual class similarly the quantitative data analysis section mentioned that around 53 percent of the students think the high cost of internet restrict them from joining virtual class. The third challenge faced by the respondents indicate that about 13 percent of the respondent think power was the main challenge during virtual class likewise the quantitative data showed that around 40 percent of the respondent do not have stable power supply during virtual class. This implies that power stability was a challenge during virtual learning practice. figure 4.7 show that about 9 percent of the respondent think lack of readiness from them, and the school was the main challenge of virtual learning similarly from the quantitative data and analysis section show that about 72 percent think that Covid-19 had negatively impacted their interest of learning this can result lack of motivation and impact on the readiness of the students for virtual learning. This shows that Lack of readiness was one of the challenges of virtual learning during the pandemic. Finally, around 7 percent of the respondent think that lack of suitable learning environment was the major challenge of virtual learning correspondingly the quantitative data showed that about 35 percent of the respondent do not have proper learning environment. This implies that not having suitable learning environment was the challenge of virtual learning.

#### **4.1.2. Results and Discussion of Instructors Challenges on virtual Teaching**

##### **Practices**

This section present table and figures to discuss about the challenge of virtual learning from instructors' point of view. The table divided into three parts the first part was related with Access of teaching material, environment, and other related factors from instructors, the second part related with the Support given for instructors during virtual class and the last part related with the teaching approach used by the instructors for virtual learning

Approach. Additionally, this section includes the result and discussion part for the open-ended questions.

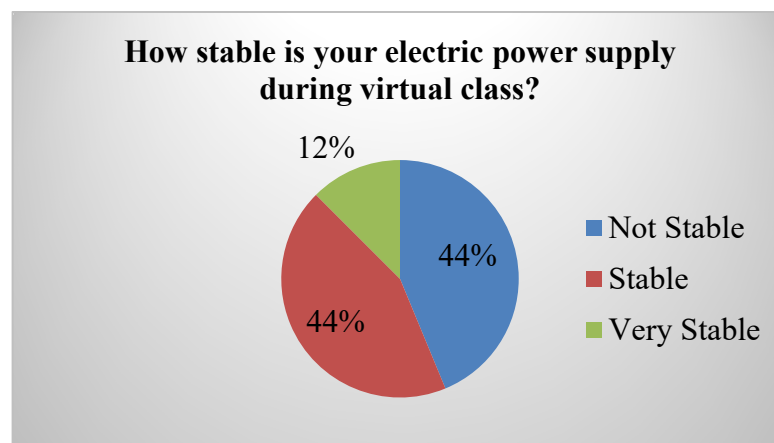
**Table 4-5:- Summary Result of Challenges from Instructors Perspective**

<b>N</b>	<b>Question</b>	<b>SI</b>	<b>D</b>	<b>N</b>	<b>A</b>	<b>SA</b>
<b>1</b>	<b>Access</b>					
1.1	You have suitable teaching environment for virtual class?	6%	25%	25%	38%	6%
1.2	Your place has the required internet speed to give virtual lectures?	6%	31%	19%	31%	13%
<b>2</b>	<b>Support</b>					
2.1	The University was helpful in offering the resources and the required assistance on virtual teaching and learning process?	25%	19%	19%	19%	19%
2.2	The University ICT support team was helpful in assisting virtual class.	25%	19%	6%	31%	19%
2.3	Your family/colleague/friends were helpful during virtual lectures in the time of pandemic?	0%	25%	0%	50%	25%
<b>3</b>	<b>Approach</b>					
3.1	How satisfied are you with your preparation and readiness for virtual class?	0%	31%	19%	38%	13%
3.2	How satisfied are you on your teaching skill for virtual class?	6%	6%	38%	38%	13%
3.3	How satisfied are you with your punctuality for virtual class?	0%	6%	25%	56%	13%
3.4	How satisfied are you with the assessment and evaluation method of virtual learning	13%	38%	13%	31%	6%
3.5	You use a different teaching approach for virtual class and for conventional face-to-face class?	0%	13%	19%	69%	0%

*(Source: Data collected from Primary Survey)*

The access section of the Table 4.5 show that only 44 percent of the respondent agreed that they had the required internet connection speed the rest replied that they had poor internet connection during virtual class. In addition to power supply internet connection was the major challenge during virtual learning process. The other question presented for

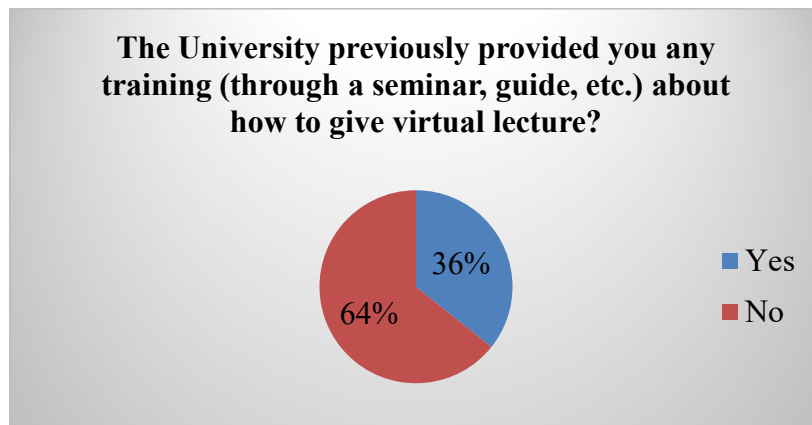
instructor was about the teaching environment only 43 percent of the respondents agreed that they had proper learning condition and the remaining respondent think the learning environment was not suitable this result can be related with the power supply condition and the poor internet connection had impacted negatively virtual learning practice. Figure 4.8 shows that about 44 percent of respondents do not have stable power condition during virtual class similar to the student data power was major challenge of virtual learning practice.



**Figure 4.8: - Pre-training of Virtual Teaching for Instructors**  
(Source: Data collected from Primary Survey, 2021)

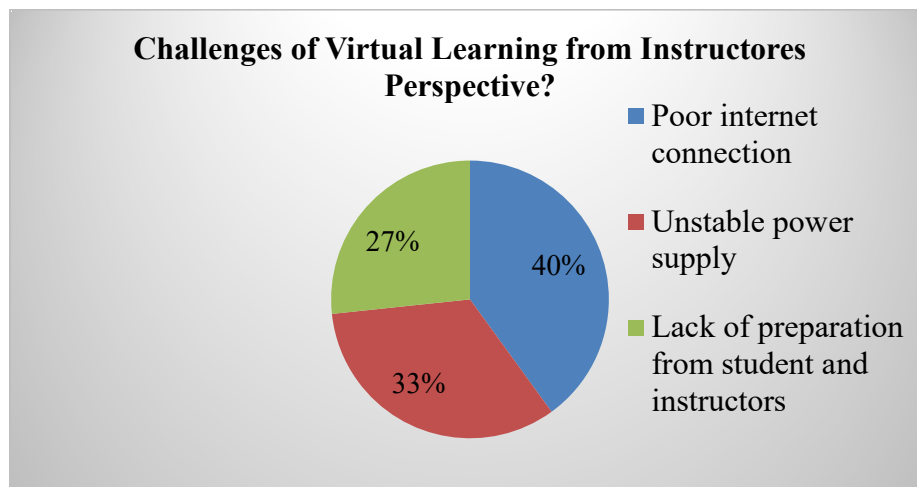
The instructors support section in table 4.5 shows that 45 percent of the respondent did not think SMU was supportive enough in offering the resource and assistance since virtual learning is a new practice of learning it needs support and help from the university. Not getting the required support can be a challenge likewise 45 percent did not get the required assistance from the university ICT support team. Since ICT is the backbone of virtual learning it needs a professional support. Most of the instructor's respondents about 75 percent said that they get the proper support from their families and work colleague during

virtual class. One of the questions asked in the questionnaire of the instructors was whether a training was provided or not before the implementation of virtual learning. From the responses, which were summarized in figure 4.8, states that only 36 percent of the respondents get training, leaving the rest 64 percent without any training from the university on how to conduct virtual lecture. This could affect virtual learning process seriously.



*Figure 4.8:- Pre-training of Virtual Teaching for Instructors  
(Source: Data collected from Primary Survey, 2021)*

The result obtained from the teaching approach of instructor's respondents questionnaire shows a similar result with the students' response concerning the overall approach adopted. The aggregate result of both students and instructors indicates that the current approach adopted was not fully equipped to successfully conduct virtual learning.



**Figure 4.9:- Summary of Challenges from Instructors Open-end Questions Response**  
(Source: Data collected from Primary Survey, 2021)

The above figure 4.9 shows the instructors response for the open-ended questionnaires to identify the challenges they faced during virtual class the figure show that 40 percent of the respondent faced a challenge from poor internet connection speed during virtual class. Correspondingly from the quantitative data result and analysis section showed that about 39 percent of the respondent do not have the required internet connection to have virtual lecture. This indicates that internet connection speed was the challenges of virtual learning. Likewise unstable power condition was the second major challenge faced by the instructors which cover around 33 percent of the respondent. Similarly in quantitative data result and analysis section show that about 44 percent of the respondents have unstable power supply. This can be an indication that power instability was challenge for virtual learning. Finally, about 12 percent of the respondent think that lack of readiness from all stakeholders was the major challenges of virtual class. Similarly form the quantitative data result and analysis section mentioned that about 64 percent of the instructors do not get any training on how to give virtual lecture since 54 percent of the respondent do not have previous teaching experience

however, they do not get any training. this implies that lack of readiness was challenges of virtual learning practice.

### ***I) Challenges of virtual learning summarization***

The result from the students and instructors suggested that virtual learning is full of possibilities. These benefits of virtual learning can be concluded:

- ❖ Poor internet connection
- ❖ High cost of Internet
- ❖ Unstable power supply
- ❖ Lack of adequate preparation and trainings

## **4.2. Opportunities of Virtual learning**

As it were described in the literature review, virtual learning is full of opportunities that suitable at present and expected future. This research tried to identify these opportunities from St. Mary's University post-graduate students and instructors' point of view. The detail listed below.

#### 4.2.1. Results and Discussion of virtual learning Opportunities From Students perspective

This section presents the opportunities of virtual learning from student point of view.

**Table 4-6:- Summary Result of Opportunities from Students Perspective**

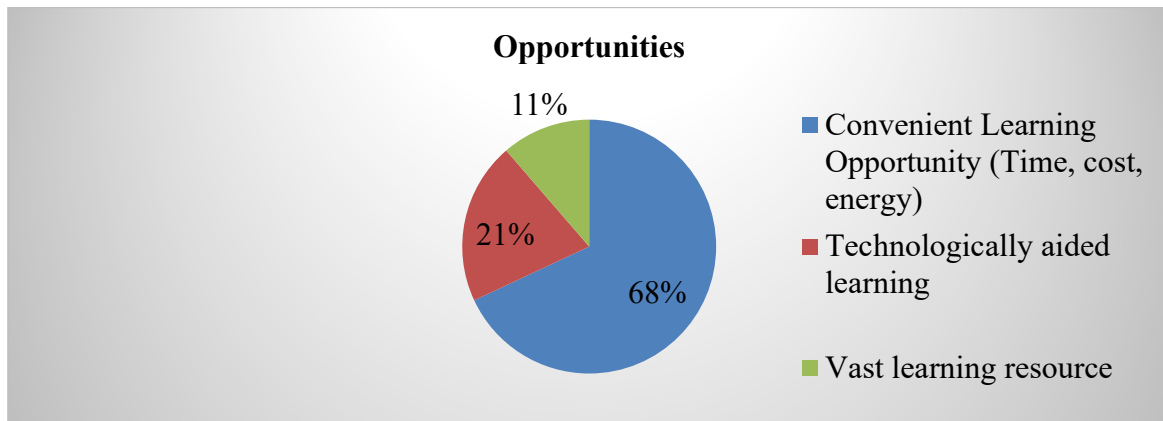
No	Question	SD	D	N	A	SA
1	Virtual learning was better for my work and personal situation than conventional learning?	13%	24%	11%	26%	26%
2	You feel more freely to participate during virtual class than the conventional face-to-face class?	14%	23%	21%	29%	12%
3	Virtual class create a better discussion environment for students to do group assignment than face-to-face class?	23%	39%	12%	22%	4%
4	Virtual learning is more effective in time management than conventional classroom learning?	10%	10%	14%	44%	23%
5	Do you agree to have blended learning (mixing virtual with conventional learning) for the future?	3%	6%	7%	40%	44%

*(Source: Data collected from Primary Survey)*

The opportunities from the student's perspective were summarized in table 4.6. The students were asked if virtual learning is more suitable for the work environment. More than 51 percent of them agreed that it is better than the conventional way while only 27 percent disagreed. Most students, about 67 percent, agreed it is better for time managements and only 19 percent of them disagreed. Even though more students agreed on the above opportunities of virtual learning, majority of the students respondent about 62 percent of them think that virtual learning do not created a better discussion environment than the conventional learning mode similarly about 42 percent of the respondents do not think virtual learning make them free to participate but in other studies the major advantage of virtual learning is making



student to participate more and engage in the learning process since virtual learning is active learning place rather passive like conventional learning. Regarding the question of adopting a blended learning approach for the future, majority of respondents about 84 percent agreed to have mixed learning mode or blended learning for the future.



**Figure 4.10:- Summary of Opportunities from Students Open- end Questions Response. (Source: Data collected from Primary Survey, 2021)**

In this section open ended question about the opportunities of virtual learning are discussed. Since, most of the respondents were full time employees the issue of convenience regarding time and resource were major factors according to the respondents about 68 percent of them think convenience and accessibility of Virtual learning is the major advantage of virtual learning. Similarly, this result was supported by the quantitative data analysis where 67 percent of the respondents think virtual learning is better for time management. In their answers the students also added that technological aided nature of virtual learning and existence of vast learning materials resource made it favorable.

#### 4.2.1. Results and Discussion of virtual learning Opportunities From Instructors Perspective

This section presents the opportunities of virtual learning from student point of view.

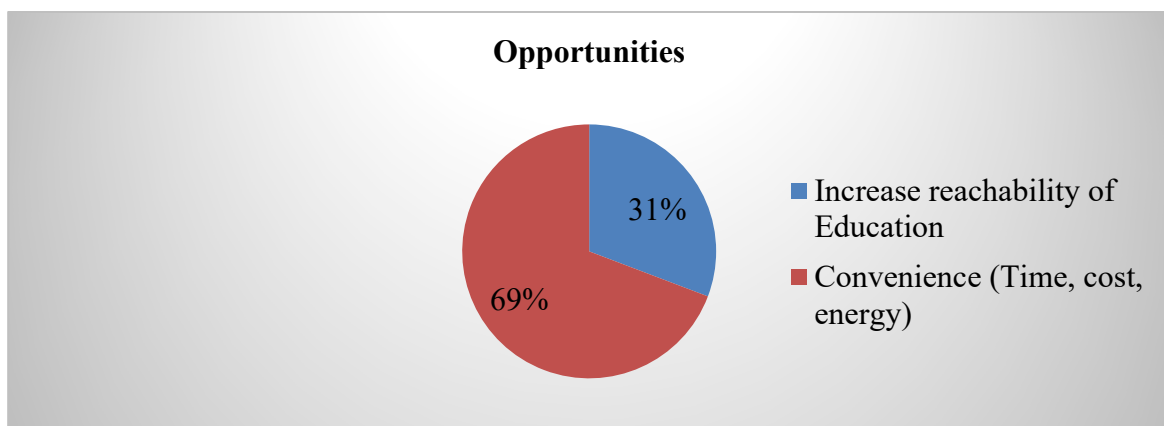
*Table 4-7: Summary Result of Opportunities from Instructors Perspective*

No	Question	SD	D	N	A	SA
1	How satisfied are you with your preparation and readiness for virtual class?	0%	31%	19%	38%	13%
2	Students have more motivation for learning in virtual class than in conventional class	25%	38%	19%	19%	0%
3	Student-teacher communication was better during virtual class than the conventional face to face class?	31%	56%	6%	6%	0%
4	Students have better participation in virtual class than in the conventional face to face class?	25%	38%	13%	25%	0%
5	Do you prefer to have a blended class (mixing virtual and face-to-face class) for the future after COVID-19 pandemic?	6%	0%	0%	19%	75%

*(Source: Data collected from Primary Survey)*

The result found from the instructor respondents were also more of the same to the student's table. 88 percent of these instructor respondents disagree to the teacher-student communication was better during virtual classes. Similarly, 62 percent of instructors respondents think student participation were less during virtual class. The result of these two questions also had similar response with the student's respondents since 62 percent of the

student respondents think class participation were less during virtual class and 37 percent of these students' respondents think VL do not create better discussion environment. 62 percent of the instructors also agreed on the lack of motivation in their students. Additionally, 56 percent of them expressed their dissatisfaction on the effect VL had made on students. Similarly, as the students answer, 94 percent of the instructors suggested a blended teaching/learning mechanism for future use.



**Figure 4.11:- Summary of Opportunities from Instructors Open- end Questions Response.**

*(Source: Data collected from Primary Survey, 2021)*

the response from instructors for the open-ended questions summarized in figure 4.11, 69 percent of the instructors stated that the main opportunity of virtual learning is Reachability of education. 31 percent of them also added that VL was convenient in saving resources like time and energy which also supported by 68 percent of the student respondents. In their testimony, they wrote that virtual classes can be given to any student with a suitable internet connection.

### ***1) Opportunities virtual learning summarization***

The result from the students and instructors suggested that virtual learning is full of possibilities. These benefits of virtual learning can be concluded:

- ❖ Reachability of education.
- ❖ Convenience and accessibility
- ❖ Incorporates technology and has vast learning materials.

## **CHAPTER 5: SUMMARY, CONCLUSION AND RECOMMENDATIONS**

### **5.1. Summary of Major Findings**

This paper examines the challenges and opportunities of virtual learning during the pandemic and beyond. The purpose of this study was to identify and assess the challenges faced by students and instructors, to identify opportunities of virtual learning from student and instructor's perspective also the study observes the existing practice of virtual learning from the students and instructors. This chapter summarizes the major results from the study. As the primary objective, the research tries to find what were the major challenges and opportunities of virtual learning at St MARY'S UNIVERSITY. Accordingly basic question was presented for both instructors and students through survey questionnaires. Therefore, the following are the brief summaries of result: The major challenges of virtual learning from student viewpoints were lack of proper preparation and readiness from all side, high cost of internet service, poor internet connection speed, unstable power supply, Lack of proper learning environment. From the instructor's point of view the challenges were poor internet connection speed, unstable power supply and lack of readiness from the student and instructors. The opportunities of virtual learning from the student perspective are convenience of virtual learning, the modern way of learning, and vast amount of learning option and resource. From instructor's perspective opportunities of virtual learning are increasing educational reachability and its flexibility of teaching and learning process. the experience of virtual learning from student perspective show that they have gained a good experience from virtual learning practice during the pandemic, most of the respondent from

both students and instructors prefer to have blended(mixed) way of teaching and learning practice for the future.

## **5.2. Conclusions**

The findings of this study imply that the challenges and opportunities of virtual learning was predictable and visible since the pandemic enforce the educational system to simply engage in virtual learning process without any proper preparation and readiness from all stakeholders involved in the educational system. This situation creates immense challenges for student and instructors during virtual learning process. Regarding the opportunities of VL the study show that virtual learning has the potential to solve limitation of conventional learning by creating a suitable way of learning regarding time, cost and energy since student and instructors can take/give virtual class from everywhere and at any time. But still it needs a lot of work in solving the major Challenges related with infrastructure issue like internet and power issue from the government side similarly educational institutions must have a proper curriculum and approach on how to conduct virtual learning and teaching practice. Most students and instructors prefer to have blended (mixing virtual and conventional learning) even after the pandemic this shows that virtual learning has a potential for the future of education.

### 5.3. Recommendations

The study shows into the glimpse of virtual learning practice during the pandemic in St Mary's University. Through the process it identifies the challenges and opportunities of virtual learning. The challenges were mostly related with infrastructure and lack of proper readiness from all stakeholders involved in the educational system and the opportunities were convenience and suitability of VL for learning and teaching practice, increased educational reachability and technological aspect of virtual learning. The following actions are recommended for higher learning institutions in Ethiopia over the use of Virtual learning for the future.

- Internet connection and power supply are the major factors which hinder the implementation of virtual learning. This matter needs to be solved by the government side to acquire the potential opportunities of VL.
- The Government needs to take virtual learning seriously and have a proper strategic approach on how to implement VL as a new way of learning in higher learning institutions.
- Different research needs to be done for the future over the practice of virtual learning in Ethiopian higher learning institutions to understand the overall problem and opportunities of VL.
- Depending on the finding of the research different projects needs to be designed and implemented on virtual learning for the future use in Ethiopian higher learning institutions.
- Similarly higher learning institution must take virtual learning seriously and utilize the potential opportunities. By putting strategic plan on the implementation, giving proper training for instructors on ways of teaching approach for virtual learning,

putting in place the required ICT infrastructure and professionals for assisting virtual class.

- Instructors needs to upgrade and update themselves with the technological aspect and learn new ways of teaching approach for virtual learning.
- Learners/students should have to consider virtual learning as one way of learning for the future since virtual learning solve many limitations of conventional learning.

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## APPENDICES: - QUESTIONNAIRE

### Demographic Data

1. Gender

- Male    Female

2. Age

- Less than 30    31-35    36-40    Above 40

3. Department

- |  |   |
|--|---|
| <input type="checkbox"/> Computer Science                  | <input type="checkbox"/> MBA in Accounting and Finance              |
| <input type="checkbox"/> Development Economics             | <input type="checkbox"/> MSC in Quality and Productivity Management |
| <input type="checkbox"/> Development Management            | <input type="checkbox"/> MSc in social work                         |
| <input type="checkbox"/> Marketing Management              | <input type="checkbox"/> Project Management                         |
| <input type="checkbox"/> Master of Business Administration |   |

4. Current Employment Status

- Employed (Full Time)    Employed (Part Time)    Unemployed

### Experience

5. Do you have Previous Virtual (Online) Learning Experience?

- Yes    No

6. The Covid-19 pandemic has impacted your interest of learning.

- Strongly Disagree    Disagree    Neutral    Agree    Strongly Agree.

7. Which tool do you use for Virtual (Online) learning?

Laptop    Desktop    Tablet    Smartphone

8. Which Internet Technology you use for Virtual class

3G    4G    Broadband(1-2mbps)    Wi-fi

9. Where do you took your virtual(online) learning mostly?

Home    Office    School    A place with internet

#### Access

10. How stable is your electrical power supply?

Yes    No

11. Your place has the required internet speed to have virtual class?

Strongly Disagree    Disagree    Neutral    Agree    Strongly Agree

12. The cost of internet restricts you to join virtual class

Strongly Disagree    Disagree    Neutral    Agree    Strongly Agree

13. You have enough computer knowledge and IT skills to take virtual class?

Strongly Disagree    Disagree    Neutral    Agree    Strongly Agree

14. You have the necessary learning material and facilities

(computer/laptop/Internet/software) to participate for online lectures?

Strongly Disagree    Disagree    Neutral    Agree    Strongly Agree

15. You have suitable learning environment for Virtual(online) learning?

Strongly Disagree    Disagree    Neutral    Agree    Strongly Agree

16. You are familiar with the technology and software you are using for online learning?

Strongly Disagree    Disagree    Neutral    Agree    Strongly Agree

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## Support

17. You get the Necessary Guidelines (ex. how to use online tools) from the university and your lecturer before starting online class?
- Strongly Disagree    Disagree    Neutral    Agree    Strongly Agree
18. The university was helpful in offering the required resources and assistance on virtual teaching and learning process?
- Strongly Disagree    Disagree    Neutral    Agree    Strongly Agree
19. Instructors were helpful enough during virtual class?
- Strongly Disagree    Disagree    Neutral    Agree    Strongly Agree
20. The university ICT support team give all the necessary support for virtual class.
- Strongly Disagree    Disagree    Neutral    Agree    Strongly Agree
21. Your family/colleague/friends/workplace was helpful during virtual class?
- Strongly Disagree    Disagree    Neutral    Agree    Strongly Agree
22. Virtual learning was better for my work and personal situation than conventional learning?
- Strongly Disagree    Disagree    Neutral    Agree    Strongly Agree
23. The sudden move from conventional class to virtual class has affected the quality of education.
- Strongly Disagree    Disagree    Neutral    Agree    Strongly Agree
24. The move from conventional class(face-to-face) to virtual class was a good opportunity for higher learning institutions for the future.
- Strongly Disagree    Disagree    Neutral    Agree    Strongly Agree

25. You have Gained new experience of learning by virtual learning practice?
- Strongly Disagree    Disagree    Neutral    Agree    Strongly Agree
26. How often you join online class during the pandemic.
- Strongly Disagree    Disagree    Neutral    Agree    Strongly Agree

#### Approach

27. You feel more freely to participate during virtual class than the conventional face-to-face class?
- Strongly Disagree    Disagree    Neutral    Agree    Strongly Agree
28. Virtual class create a better discussion environment for students to do group assignment than face-to-face class?
- Strongly Disagree    Disagree    Neutral    Agree    Strongly Agree
29. Virtual learning is more effective in time management than conventional classroom learning?
- Strongly Disagree    Disagree    Neutral    Agree    Strongly Agree
30. Do you agree to have blended learning (mixing virtual with conventional learning) for the future?
- Strongly Disagree    Disagree    Neutral    Agree    Strongly Agree
31. Which case mostly limit you to join virtual class?
- Time limitation    Internet connection    Lack of interest
- Online class schedule.    Other \_\_\_\_\_

#### Opportunity

32. Instructors use different teaching approach for virtual and traditional face to face class?



Strongly Disagree    Disagree    Neutral    Agree    Strongly Agree

33. Instructors make enough preparation and readiness before virtual class?

Strongly Disagree    Disagree    Neutral    Agree    Strongly Agree

34. Instructors have the necessary teaching skill to give virtual Class.

Strongly Disagree    Disagree    Neutral    Agree    Strongly Agree

35. Instructors give you the proper support and response for your question during virtual class?

Strongly Disagree    Disagree    Neutral    Agree    Strongly Agree

36. Instructors present on time for virtual class.

Strongly Disagree    Disagree    Neutral    Agree    Strongly Agree

37. The university use proper assessment and evaluation method for the virtual learning?

Strongly Disagree    Disagree    Neutral    Agree    Strongly Agree

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### Open End

38. What do you find most useful as a student about virtual learning?
39. In your opinion, what were the strengths of virtual learning during the pandemic?
40. In your opinion, what were the weakness of virtual learning during the pandemic?
41. In your opinion, what were the challenges of virtual learning during the pandemic?
42. In your opinion, what opportunities can you see in virtual learning?
43. Please give your opinion about virtual learning practice in general

### Instructor's Questionnaire

#### Demographic Data

44. Gender  
 Male    Female
45. Age  
 30-40    40-50    50-60    Above 60
46. Teaching experience  
 Less than 5 years    5 to 10 years    10 to 15 years    More than 15 years

#### Experience

47. Do you have virtual Teaching experience before?  
 Yes    No
48. You have the necessary computer knowledge and IT skills to give virtual lectures?  
 Strongly Disagree    Disagree    Neutral    Agree    Strongly Agree
49. Where do you give your virtual Lecture mostly?  
 Home    Office    School    A place with internet
50. Which Internet Technology you use for Virtual class  
 3G    4G    Broadband(1-2mbps)    Wi-fi
51. Which software tools you used mostly for Virtual Class?  
 Zoom    Google Meet    SMU School LMS  
 Other \_\_\_\_\_

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### Access

52. How stable is your electric power supply during virtual class?  
 Yes  No
53. You have suitable teaching environment for virtual class?  
 Strongly Disagree  Disagree  Neutral  Agree  Strongly Agree
54. Your place has the required internet speed to give virtual lectures?  
 Strongly Disagree  Disagree  Neutral  Agree  Strongly Agree
55. Are you familiar with the technology and software you are using for online learning?  
 Strongly Disagree  Disagree  Neutral  Agree  Strongly Agree

### Support

56. The University previously provided you any training (through a seminar, guide, etc.) about how to give virtual lecture?  
 Yes  No
57. The University was helpful in offering the resources and the required assistance on virtual teaching and learning process?  
 Strongly Disagree  Disagree  Neutral  Agree  Strongly Agree
58. The University ICT support team was helpful in assisting virtual class.  
 Strongly Disagree  Disagree  Neutral  Agree  Strongly Agree
59. Your family/colleague/friends were helpful during virtual lectures in the time of pandemic?  
 Strongly Disagree  Disagree  Neutral  Agree  Strongly Agree
60. The sudden move from conventional class to virtual class has affected the quality of education.  
 Strongly Disagree  Disagree  Neutral  Agree  Strongly Agree
61. The move from conventional class(face-to-face) to virtual class was a good opportunity for higher learning institutions for the future.  
 Strongly Disagree  Disagree  Neutral  Agree  Strongly Agree

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### Approach

62. How satisfied are you with your preparation and readiness for virtual class?  
 Strongly Disagree    Disagree    Neutral    Agree    Strongly Agree
63. How satisfied are you on your teaching skill for virtual class?  
 Strongly Disagree    Disagree    Neutral    Agree    Strongly Agree
64. How satisfied are you with your punctuality for virtual class?  
 Strongly Disagree    Disagree    Neutral    Agree    Strongly Agree
65. How satisfied are you with the assessment and evaluation method of virtual learning?  
 Strongly Disagree    Disagree    Neutral    Agree    Strongly Agree

### Opportunity

66. How satisfied are you as a teacher with the effect of virtual learning on student's performance?  
 Strongly Disagree    Disagree    Neutral    Agree    Strongly Agree
67. Students have more motivation for learning in virtual class than in conventional class  
 Strongly Disagree    Disagree    Neutral    Agree    Strongly Agree
68. Student-teacher communication was better during virtual class than the conventional face to face class?  
 Strongly Disagree    Disagree    Neutral    Agree    Strongly Agree
69. Students have better participation in virtual class than in the conventional face to face class.  
 Strongly Disagree    Disagree    Neutral    Agree    Strongly Agree
70. You use a different teaching approach for virtual class and for conventional face-to-face class?  
 Strongly Disagree    Disagree    Neutral    Agree    Strongly Agree
71. You have Gained a good experience of giving Virtual lectures?  
 Strongly Disagree    Disagree    Neutral    Agree    Strongly Agree
72. Do you prefer to have a blended class (mixing virtual and face-to-face class) for the future after COVID-19 pandemic?  
 Strongly Disagree    Disagree    Neutral    Agree    Strongly Agree

### Open End

73. What do you find most useful as a teacher about virtual learning?
74. What were the strengths of virtual learning during the pandemic?
75. What were the Weakness of virtual learning during the pandemic?
76. What were the challenges of virtual learning during the pandemic?
77. What opportunities can you see in virtual learning for higher learning institutions in the future?
78. Please give your opinion about virtual learning practice in general