

Benefits And Challenges Of Online Education System In Higher Education Institutions During COVID-19 Of Universities & Colleges In Muscat, Oman

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Abstract—The discovery of Covid-19 pandemic in the late 2019 has caused many changes in the world where education systems and other activities have been greatly affected. The need for creating a platform in the online channels to promote remote learning is a mandatory exercise that needs to be promoted and applied within the various sections. In Oman, the higher learning institutions in Muscat resort to online education systems similar to other learning institutions in the world. The system requires a lot of technology implementations and training among teachers and students on how to make use of the systems. The major benefit identified in online education system was the flexibility and choice of the best time for studying as an individual because the materials are stored and can be retrieved any time a student needs to study. However, despite the flexibility, there are ways that must be applied by the teachers and students in obtaining the skill and knowledge of using the systems and programs. Orientation is a major concept that is required for the teachers and students to promote the online education system in Oman where it as to be applied during and after the pandemic. In the future, the consideration of the online education system must be focused from the cost pointy because to every student can afford the required facilities and connections of the internet to help promote online learning system. The government should; consider offering free internet and cheap electricity connections to homes so that everyone can have a similar chance.

Keywords—Higher Education, Online Learning, Information Technology, Pandemic.

I. Introduction

Even before the strike of the COVID-19 pandemic, some educational institutions were offering online education systems in Oman and the rest of the world. However, the pandemic led to a sudden mandatory shift from the classroom setting to online learning processes. Due to the surge in the online demand for the internet and other infrastructure, the online education system's impact has changed during the

COVID-19 period. The research will focus on its benefits and challenges. The use of technology has been in place but not so crowded as the period of the coronavirus pandemic. However, the online education system has brought about benefits and challenges that should be evaluated and a streamlining exercise is done to make it more effective. The data was collected from teachers and students from the colleges and universities in Muscat, Oman. The analysis will examine the demographic of the respondents and the distribution of responses. The issued or shared questionnaire questions have the same questions that either teachers or students can answer. Findings and conclusion, a list of recommendations is issued that can be applied so that the online education system during and after Covid-19 can be undertaken with ease and embrace the use of technology without preventing any party.

II. Background

A. Concept

The utilization of online education systems is a great idea that has been on the rise to ensure that students and teachers who cannot manage to commute and reach to the study places have managed to conduct classes through online platforms. The country of Oman has experienced a huge demand for online education system during the Covid-19 outbreak in the world that led to the dismissal of classroom setting studies and offered suggestions for remote learning so that huge crowds can be eliminated [7]. A majority of the higher learning institutions did not have settings and platforms for offering online education systems but they were forced to implement within the shortest time possible so that the students and teachers can manage to continue with the curriculum as outlined of programmed in the education syllabus.

The need for the online education system has benefits and its challenges. The need for understanding them is important so that it can help to know how it is conducted during the COVID-19 period and afterward. Offering online education systems has been a solution to those students working or engaged

with other crucial matters, which renders them an opportunity to study at their convenience [8].

Online classes were previously offered to individuals working during the day or have businesses that demand much of their time. In helping to cope up, online learning was introduced to help such students further their education and meet their career dreams by attaining the certifications required [3]. Apart from part-time students, other learning institutions had already implemented the online learning system so that even parents and guardians can manage and monitor student progress by using the assigned student account.

The few students and institutions that had already applied the system in their learning processes were working well. However, those who could not afford or had challenges with the system had the option of attending classroom lessons as usual. The idea of making online education optional to students depending on their needs before COVID-19 was better and offering benefits to those who required such services. However, the sudden shift from the classroom to the online education system in Oman and the entire world due to the coronavirus pandemic came with benefits and challenges [9]. The institutions with enough infrastructure would benefit by using them while the less fortunate students and institutions are experiencing challenges. The challenges are the lack of enough resources as there were no prior preparations for the situation.

The study on universities and colleges in Oman will help because most of them do not have enough resources. The students do not have the required infrastructure at home, such as the internet and computers or laptops. The case study on universities and colleges will fit into the study because the students learning through online education system have ways the researcher can reach them via e-mail or any other networking means such as Facebook, WhatsApp, Twitter, Instagram, Skype, and many more [7]. Even after COVID-19, the alternative of learning online will continue as some will have adopted and liked it, or it may be a way of allowing distant learners to engage and receive an education without interruptions.

B. Research Question

The online education system has been made mandatory in Oman and many other places in the world due to COVID-19 restrictions imposed to prevent the spread of the disease. Due to a lack of resources within the universities and colleges, the online education system has benefits and challenges. Since those who were using the online education system before the coronavirus pandemic were prepared and had resources, the forceful; or sudden change by all learners and learning institutions to online education platforms during COVID-19 is what is studied [8]. The research question is about the examination of the benefits derived and challenges faced during the online education system in the

pandemic period among the various higher learning institutions in Oman.

C. Research Objectives

The research is creating an understanding of the benefits and challenges that arise in online education system during the COVID-19 pandemic. While COVID-19 came along and forced education systems to be conducted the online, they brought benefits and challenges that the research in this work will unfold and make it clear. The objectives of the research are:

1. To identify the benefits and opportunities offered by teaching and learning online during COVID-19.
2. To study the challenges faced in teaching and learning online in Oman during the COVID-19 pandemic.
3. Finding remedies to the challenges that can make teaching and learning processes more beneficial in online education systems.
4. To study the role of information technology as an enabler for online education during COVID-19.
5. To highlight the benefits of online education even after COVID-19.

D. Contribution of the Study

The research's main objective is to examine the available benefits and challenges of the online education system in universities and colleges of Muscat. Four higher education institutions form the sources of sample size (Sultan Qaboos University, Muscat University, Middle East College, and Majan University College). A reasonable sample size will be examined to ensure that enough coverage of the Muscat region has been captured to give enough information [1]. The option of undertaking the research on the four selected institutions is to increase reliability and validity of the collected data.

The research study will be significant to understanding the benefits and challenges of the online education system during COVID-19. The understanding will help in streamlining the challenges into benefits and maximizing the benefits by all the stakeholders involved. The research will be important to society as all students are operating from home, where online learning resources may be insufficient [12]. The pointing out of such a challenge will offer a possible remedy that can be applied to help make it easier for students, teachers, and parents/ guardians in handling the online education system.

The coronavirus pandemic is here to stay, and its end cannot be determined. Therefore, establishing a way that online education systems can be applied among the colleges and universities of Oman now and in the future will assure education delivery. Technology is driving the world, and it is getting applied in almost every activity and operation. The research will be significant by emphasizing the use of technology in the education sector.

E. Organization of the Study

The study organization will cover the survey conducted on teachers and students on the various higher learning institutions within Muscat. The institutions of the study include Sultan Qaboos University, Muscat University, Middle East College, and Majan University College. An examination of the institutions will create and offer an examination of the benefits the teachers, students have gained from online education systems, and the challenges faced.

III. Literature Review

A. Theoretical

A theoretical study is not based on experiment nor manipulation of variables. The tests are based on the exploration and development of theories that involve observation and compilation of collected information. Theorists engage in the activities that create an understanding of the collected information from the empirical studies where the data is analyzed and treated using numerical simulations, mathematical models, and some other works related to the analysis of the gathered information [1]. For example, the research about the benefits and changes of online education system will be based on the assumption or opinion obtained from the information applied from the higher learning institutions. There are various theories that have been created to explain and discuss the application of the online education systems among various regions in the world. The study within Oman will help understand how the online education systems is operating by generating benefits and causing challenges to teachers and students. Online education system has the theories of cognitivism, behaviorism, and social construction that are highlighted in the creation of the foundation to help discuss further about the online learning systems.

Behaviorism theory in learning helps in the creation of a way of learning new things that lead to the different ways that people behave. It can be positive or negative depending on the view from which the effect is caused and related to the activities conducted. The manner that students and teachers behave in a classroom setting differs from the way that they can act and conduct themselves online [14]. It is a way that offers and creates a way of understanding the manner that online education systems are conducted and used in offering education. Behavior development is a process that is emulated and formed through the ways of studying and delivering education. Most of the activities are undertaken and offered in ways that cannot be similar to classroom hence behavior of teachers and students has to change causing a need to learn the behavioral changes. The quantification and application of the greatest behavior changes among teachers and students are created by the change of environment and limited interaction that could bring everyone together and attend classes as a family or within a single setting.

Society has a way of conducting things such as education systems where students and teachers have to meet in a setting of premises and converge to exchange and learn about new things. A majority of the activities that need to be offered to students by teachers are structured within the learning institution environment [13]. For example, there are no laboratories within the home settings where students can perform experiments and tests. Therefore, society will require at one point that the settings of online education should include scheduled classes that must be done from school. The classes should be outlined and engaged with the social activities that are not able to be met at the remote learning settings by the students. The cognitive theory is a way that is considered to have a reaction on how to emphasize a predictive learning approach that can restore and issue a promotional conceptual framework that can aid in the creation of a learning setting within the online platform.

B. Empirical

An empirical literature review is carried out by a researcher when a systematic review is done on various studies that aim at answering a specific research questions. An empirical literature review is carried out within the study because it has a role of unveiling applicable theories that can be used in underpinning the set objectives with a lot of support from previous findings. The empirical study uses the available resources of data and other information that have been published or issued by previous research findings from various authors. The findings are used in creating and developing a calibrated and controlled instrument that will focus on a specific area which has an ability to engage and offer a majority of the services. In carrying out of an empirical review, it helps in the authentication of a traditional research that takes place in various experiments and observations that are available within the research area [14]. The experiments carried out from previous studies are reviewed and examined on the applicability within the present study where almost a majority of the activities carried put have to be discussed and performed using the same ways of understanding that any form of research can take. Another benefit of applying an empirical research study is the applied methodology which makes any research to be carried out in an authentic and competent manner where almost all or a majority of the information is not skipped but included within the study program. Because many other studies have been carried out within the same topic by other researchers and authors, the use of an empirical literature review within the study about the benefits and challenges of online education systems during the Covid-19 pandemic is a way that can guarantee the research to be carried out by utilizing existing information in offering solutions. The challenge as have to be identified and explained in ways that can create and offer a great opportunity within the prevailing conditions by creating and developing a

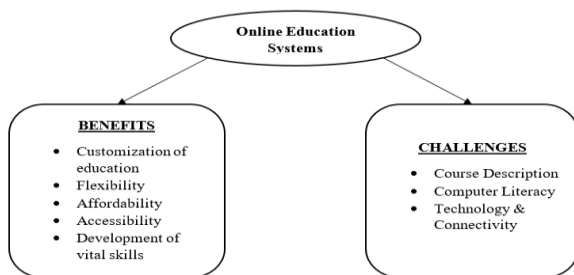
major and common ways of handling the pandemic and learning processes.

C. Research Gap

Covid-19 was discovered in late 2019 where a virus started in China and spread all over the world causing mass deaths and breathing complications to the people. It is a challenge faced by the world in creating and developing the ways of controlling and managing the virus as it is a killer disease in the world. The conduct of the research is a way of ensuring that proper and successful medication alongside the vaccines has been identified. The research gap is created by the negative effects of the disease by killing a majority of the people within the world by the lack of getting proper medication and preventive measures to the virus [2]. Learning systems and other education programs have been greatly affected by Covid-19 where the shift to the online learning systems has caused challenges. However, there are some benefits but the focus will be to create and develop a major concept that will be applied and maintained within the world.

D. Concept Framework

Fig. 1. Online Education System Conceptual Framework [7]



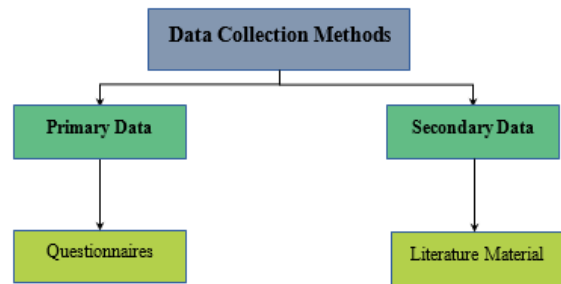
IV. Research Methodology

A. Study Area

The research is about the online education systems during Covid-19 where there are benefits and challenges faced by teachers and students. The lack of familiarity in using technology such as the internet and other programs or devices in connecting to remotely stationed participants is a difficult task. For online scheduled lessons, not all students can make to attend due to various reasons such as power outages or poor internet connections. At the outbreak of the pandemic, learning institutions were forced to engage and operate from the remote places. The area of study is on how online education systems are operated to create benefit to the teachers and learners. Also, the challenge experienced are identified and possible remedies offered at the end of the research findings [4]. The recommendations are made from the analysis findings and interpretation of the available results generated from the tests applied on the data analysis. It is a research based on the identification of benefits and detection of challenges faced by online education system among the higher learning institutions within Muscat, Oman.

B. Data Collection Techniques

Fig. 2. Data Collection Methods



1) Primary Data

The primary data collection will be carried out by making an approach to the various colleges within the region and doing surveys. The teachers and students will be responsible in responding to the raised questions and concerns. They are the most and immediate affected people who need to be asked about their opinions. The primary data can be done using direct & indirect personal interviews with the target population sample, use of questionnaires, and through the local sources.

2) Secondary Data

Secondary data collection is when a researcher uses another author's data as the main source of data. The most used secondary data collection sources include organizational records, collected data for research purposes, censuses information, and collected data by government departments among many others. The use of secondary data can help in reducing the time taken by a researcher because the data will be readily available for extraction and modification to fit into the current research topic.

3) Questionnaires

Questionnaires are research instruments used during studies and research to deliver a list of compiled questions about the research topic. The asked questions are issued with choices of answers that are available to select from so that it can take the shortest time possible to fill. The questionnaires will be created in print and soft copies so that a selection of the format can be issued to the respondents without encountering challenges. The questionnaires are used when collecting primary data from the selected case studies that provides the sample size.

4) Literature Materials

Literature materials are different type of information materials held in reviewed journal articles, research papers, dissertations, and conference papers that carry the information related to the topic under study. The works can be reviewed in the second chapter and be used in the data collection exercise due to containing relevant data that is applicable in research. The literature materials are mostly the applied secondary data sources within a research study.

C. Duration of the Study

The research study takes a period of six months running from March through to August where the final report of the research study has to be submitted for review and grading.

V. Result Discussion

A. Demographic Status

The collected demographic information applied within the research study consists of the gender, age, category, and experience. The age of teachers and students is recorded and applied within the research where the age gap will be used as a measure of the participants that have felt or experienced the impact of online education system. Depending on the area of experience that a participant has had, it is mainly focusing on teachers who take part in the survey. The teachers may have experience in online education system, or not but the response given will determine the exact and appropriate ways of understanding the use of online education systems among students [4].

The categories of participants were separated into two groups that are teachers and students where they are the most affected by the pandemic in terms of service provision or reception. Students get difficult times in collecting the knowledge and skills delivered using online platforms while teachers experience hardships in attending to students using online platforms. The selected population is consisted of only teachers and students even if there are other parties that are involved and affected such as the government, parents, and guardians. Instead, the immediate recipients of the impact of online education system during Covid-19 are teachers and students who need to be given priority in terms of handling the learning experience. A generalization purpose is not given through a sample size but a substantial sample obtained from a majority and great portion of the target population [5]. Since the target is on higher learning institutions in Muscat, it creates and offers ways that can meet and lead towards achieving a better understanding of the available benefits and challenges facing the online education system. The use of a demographic information in the research is an indication on whether the research participants (sample size) forms a representative sample of the entire population of the teachers and students within the higher learning institutions in Muscat.

B. Descriptive Analysis

From the obtained or collected data from the higher learning institutions within Muscat, the descriptive analysis will be applied where summaries of the information will be offered. For example, the demographic analysis will be analyzed and a summary about the number of teachers and students who took part in the survey will be determined. The determined values in terms of frequency will be represented in the form of percentages to indicate the portion of the sample size that each subgroup came across. The patterns can be created in all the questionnaire questions and the sections that

represent the various objectives. The summaries and analyses of the objectives in a separate way can be included and observed using descriptive analyses that requires and maintains the use of collected information [6]. The available descriptive analyses in research is applied to include the quantities that were measured within a given variable or question. A simplified and categorized information from the entire collected information of the research is obtained and applied within the study based on the specific quantities and measures that require to be analyzed. The descriptive statistic or analysis is a reduction of data from the huge collection into a smaller part that requires to be discovered and obtained in the system by offering a creation of meaningful models. The summaries created by the descriptions indicate that most of the results were falling within a given option within the issued options of giving responses. The participants are grouped into sections that are considered to be applicable within the areas of opportunities and systems that can be easy to interpret and understand the issued information.

C. Inferential Analysis

The use of an inferential statistics analysis in research is a way of offering and including the collection of techniques that can aid in estimating a research population features under various parameters. There might be given information or characteristics of the given sample population but the inferential analyses are used for establishing and creating a relationship that can be applied within the associated items. For example, the demographic information has a connection from the identified items to the entire research questionnaire questions based on the various objectives. Inferential analysis in research is a process applicable in the creation or coming up with certainty in the reviewed or tested objectives using the collected data [10]. The made estimates of the results are applicable within a majority of the systems that can be used in understanding the totals, mean, variances, and proportions that need to be engaged and issued within a majority of the information collected from the participants. A certain degree of probability is applied within the use of inferential analysis which uses evidence form collected data. The surveys and other activities that lead to the creation of information within the accurate setting have to be offered and assumed to be part of making the decisions at the end of the research study. They are best applied for the exercise of making conclusions to research.

D. Result of Hypothesis Testing

A hypothesis is an explanation that has a limitation in the collected evidence that can be applied for an investigation. The study is based on the hypotheses;

H1: If universities and colleges have good preparations for online education systems, they will enjoy its benefits for both the institutions and learners.

H2: If the universities and colleges have poor preparation for implementing the online education system, they will encounter challenges.

VI. Conclusion and Recommendation

A. Aim of the Study

The online education system has been made mandatory in Oman and many other places in the world due to COVID-19 restrictions imposed to prevent the spread of the disease. Due to a lack of resources within the universities and colleges, the online education system has benefits and challenges. The research aims to examine the benefits and challenges available in the online education system during COVID-19. Since those who were using the online education system before the coronavirus pandemic were prepared and had resources, the forceful; or sudden change by all learners and learning institutions to online education platforms during COVID-19 is what is studied.

B. Major Findings

It was found out that the online education system is flexible and can fit both teachers and students as they can have access to the system any time when they are set to teach or study. Most of the lessons are recorded and posted by teachers for students to retrieve and listen to or watch. The way online education systems are applied creates much flexibility among the involved parties that require predetermined information in teaching and studying. Despite the pandemic leading to the creation of situations that teachers and students are not ready to use because of lacking the necessary facilities or resources, its flexibility can make it to be promoted and supported by various institutions and the government.

As much as the online education system can be flexible and help teachers and students to get involved when the time is right, a majority do not have the experience of using online platforms in delivering or receiving learning information [11]. The poor or lack of exposure to the technology systems used in the education sector can create a challenge in terms of using the online structures and programs. Some of the able learning institutions and families could manage to provide the necessary requirements but the use of the equipment is a challenge and the required skills and experience is little by both the students and teachers. Training required is a major waste of time as the education program will be at a standstill in the time the training is offered to both students and teachers.

Empowerment was discovered to be a remedy to the experienced challenges where both participants need to be familiar with the devices and technologies used in the online education systems. There are some programs or applications that can be used in learning or teaching that students and teachers need to understand on how they are used before engaging in the online education system [15]. The discovery was suggested after the teachers would not be able to

deliver some of the information that required technical skills in using the platforms to teach. Apart from training and exposure, the availability of the tools such as Wi-Fi connections within the regions of residence can help the students and teachers to connect to the internet and deliver or receive information related to the enrolled courses within the various higher learning institutions.

The entire infrastructure within the areas of residence need to be improved as the research found out that some of the students come from remote areas that do not have electricity and internet connections. The poor connection of electricity and internet causes and lead to lack of taking part in the online classes because without the connection, accessibility to the given information and materials that are supposed to be used need to be made available. The infrastructure must be given a major and serious focus on the majority of the requirements. Information technology is a sector that has to be promoted and empowered towards creating and focusing on the areas that will need to be applied within the major areas of study that online education systems are applicable.

C. Recommendations

A group of those students does not have the morale of studying from a place they are alone without interaction with friends and teachers in physical means. Therefore, the students with such characters need to be motivated and supported to engage and like the environment of studying from home where they can connect with teachers using online platforms. When motivation is offered, such students' morale improves. Furthermore, the need to engage in online classes and retrieve information posted online by teachers can make the system appropriate in understanding and engage in the studies.

When online classes are held, groups can be created and meetings scheduled to start and promote the use of discussion that can be applicable by students. The students can be advised to engage in discussion groups that will help to gain more information that can be gained by students who have less knowledge in certain areas [10]. Instead of studying alone, programmed times can be set among students within assigned groups for making discussions that can guide in the accomplishment on assignments and homework that is assigned by teachers. Instead of struggling, there are areas that student groups can help because some students may understand some of the areas the other students within the groups are weak. Through the exchange of obtained information, more is gained and promoted so that everyone needs to understand the other students' levels.

D. Research Gap and Further Research Avenues

When engaging and applying online education systems, cost is a major factor of consideration that must be put in place because some of the technology items and tools are very expensive and demanding in terms of installation and maintenance. Instead of creating and assuming that the costs is not a factor, the teachers and students must check for cheaper and effective ways of handling online education systems.

Apart from cost, there is an inherent and rapid pace in the development of technologies that keep creating newer versions of the programs. Instead of monitoring and creating focus on the single system, it is advisable to create and modify the systems in ways that can bring and accommodate the entire online education system without the updates and development of newer versions causing a challenge [4].

Acknowledgment

I take the opportunity to thank my supervisor, Dr. Asad Ullah for the unending support and guidance offered throughout the research exercise. In addition, I must express my very profound gratitude to my parents and to my wife, and my fellow students for providing me with unfailing support and continuous encouragement throughout my years of study and through the process of researching and writing this thesis. This accomplishment would not have been possible without them. Thank you.

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