Czech University of Life Sciences Prague

Faculty of Economics and Management

Department of Languages

Master's Thesis

Experience, challenges, and acceptance of e-learning as a tool for teaching during the covid-19 pandemic among university medical staff

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Faculty of Economics and Management

DIPLOMA THESIS ASSIGNMENT

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Economics and Management

Thesis title

Experience, challenges, and acceptance of e-learning as a tool for teaching during the COVID-19 pandemic among university medical staff

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Objectives of thesis

The objective is to identify the benefits, barriers and challenges of e-learning during the COVID-19 pandemic, and factors influencing the acceptance and use of e-learning as a tool for teaching within higher education.

Methodology

The work will consist of two parts – a theoretical part and a practical part.

The theoretical part will be based on the analysis of secondary sources.

The practical part will be based on both quantitative research and qualitative research. Quantitative research will be used to collect data using an electronic questionnaire with a validated Technology Acceptance Model (TAM) and qualitative research will be used to collect data arranging the interviews with the predefined questionnaire. Both the methods will be used for exploring factors that affect the acceptance and use of e-learning as a teaching tool among medical staff members of one of the GMERS Medical College and Civil Hospital. After collecting the data, quantitative analysis will be performed using SPSS – Statistical data analysis software. Some of the analysis like descriptive statistics, tests of statistical significance and factor analysis will be performed.

The proposed extent of the thesis

60-80 pages

Keywords

COVID-19, WHO, e-learning, technology, education, medical staff, Internet, statistical data analysis, SPSS, TAM, ease of use, user acceptance.

Recommended information sources

BELL, Judith. Doing Your Research Project: a guide for first-time researchers in education, health and social science., Open University Press, 2010. 293 p. ISBN: 978-0335-23582-7

COHEN, Jacob. Statistical Power Analysis for the Behavioral Sciences. Lawrence Erlbaum Associates, Publishers, 1988. 579 p. ISBN 0-8058-0283-5.

COUSIN, Glynis. Researching Learning in Higher Education. An Introduction to Contemporary Methods and Approaches. Routledge: Taylor & Francis Group, 2009. 272 p. ISBN: 9780415991650

DENSCOMBE, Martyn. The Good Research Guide: for small-scale social research projects. Open University Press, 2010. 389 p. ISBN: 978-0-335-24139-2.

MISHRA, Dr. Shanti, ALOK, Dr. Shashi. Handbook of research methodology. Educreation Publishing, August, 2017. 137 p. ISBN: 978-1-5457-0340-3.

NAPITUPULU, Darmawan, et al. Proceedings of the 2017 International Conference on Education and Technology (2017 ICEduTech). Atlantis Press, 2017. 247-251 p. ISBN: 978-94-6252-572-6.

NICOLE, Buzzetto-Hollywood. Advanced Principles of Effective e-Learning. Informing Science Press, 2017. 310 p. ISBN: 978-1932886023.

RAPANTA, C., BOTTURI, L., GOODYEAR, P. et al. Online University Teaching During and After the Covid-19 Crisis: Refocusing Teacher Presence and Learning Activity. Postdigital Science and Education. [cit. 2020/07/07]. Available at: https://doi.org/10.1007/s42438-020-00155-y.

SINGH, Vandana, THURMAN, Alexander. How Many Ways Can We Define Online Learning? A Systematic Literature Review of Definitions of Online Learning (1988-2018). Routledge, 2019. Available at: https://doi.org/10.1080/08923647.2019.1663082.

WHO: Coronavirus disease (COVID-2019) situation report. [cit. 2020/03/28]. Available at: https://www.who.int/emergencies/diseases/novel-coronavirus-2019/situation-reports.

Expected date of thesis defence

2022/23 SS – FEM

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Electronic approval: 6. 6. 2022

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Electronic approval: 27. 10. 2022

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Prague on 24. 03. 2023

Declaration

I declare that I have worked on my master's thesis titled "EXPERIENCE, CHALLENGES, AND ACCEPTANCE OF E-LEARNING AS A TOOL FOR TEACHING DURING THE COVID-19 PANDEMIC AMONG UNIVERSITY MEDICAL STAFF" by myself and I have used only the sources mentioned at the end of the thesis. As the author of the master's thesis, I declare that the thesis does not break any copyrights.

In Prague on 31st March 2023

Acknowledgement

I would like to thank my supervisor PhDr. Mgr. Lenka Kučírková, Ph.D. for her excellent advice. I also would like to thank Dr. Nitin Vora (Dean, GMERS Medical College), Dr. Harshil Patel (Senior Professor, GMERS Medical College) for their extra ordinary support to get the data for my thesis research. Lastly, I would like to thank my family members without whom, I could not have completed my thesis.

Experience, challenges, and acceptance of e-learning as a tool for teaching during the covid-19 pandemic among university medical staff

Abstract

This thesis aims at clarifing the perspectives of the medical staff regarding e-learning during the COVID-19 pandemic. The study employed a qualitative research design, utilizing semi-structured interviews with medical staff from various specialties and roles. The study aimed at exploring the medical staff's perception of e-learning, including its effectiveness and challenges faced in adapting to this model of learning during the pandemic, as well as potential long-term implications for medical education. The findings of this study provide valuable insights into the effectiveness and feasibility of e-learning in medical education during a crisis, as well as justify future efforts to enhance the quality of medical education, especially in times of crisis. It is hoped that the results of this study will inform policymakers, medical educators, and other stakeholders in healthcare to develop strategies to effectively implement e-learning while addressing the challenges faced by medical professionals in adapting to new modes of learning. This study can serve as a foundation for future research in exploring the potential of e-learning, and other innovative technological solutions, as part of medical education. Given the continued prevalence of healthcare crises, research on e-learning in medical education can help to identify effective educational interventions that address healthcare professional needs and support high-quality medical education, even in times of crisis. In conclusion, this thesis highlights the significance of e-learning in medical education during a healthcare crisis such as the COVID-19 pandemic and the importance of understanding medical staff perspectives to ensure that educational interventions are designed and implemented in a way that effectively addresses their needs.

Keywords: COVID-19, WHO, E-learning, technology, education, medical staff, Internet, statistical data analysis, ease of use, user acceptance

Zkušenosti, výzvy a přijetí e-learningu jako nástroje pro výuku během pandemie covid-19 mezi univerzitními zdravotnickými pracovníky

Abstraktní

Tato práce si klade za cíl objasnit perspektivy zdravotnického personálu ohledně e-learningu během pandemie COVID-19. Studie použila design kvalitativního výzkumu s využitím polostrukturovaných rozhovorů se zdravotnickým personálem z různých specializací a rolí. Studie se zaměřila na zkoumání vnímání e-learningu zdravotnickým personálem, včetně jeho účinnosti a výzev, kterým čelí při přizpůsobování se tomuto modelu učení během pandemie, jakož i potenciálních dlouhodobých důsledků pro lékařské vzdělávání. Zjištění této studie poskytují cenné poznatky o účinnosti a proveditelnosti e-learningu v lékařském vzdělávání během krize a také ospravedlňují budoucí úsilí o zvýšení kvality lékařského vzdělávání, zejména v době krize. Doufáme, že výsledky této studie budou informovat tvůrce politik, lékařské pedagogy a další zúčastněné strany ve zdravotnictví, aby vyvinuli strategie pro efektivní implementaci e-learningu při řešení problémů, kterým čelí zdravotníci při přizpůsobování se novým způsobům učení. Tato studie může sloužit jako základ pro budoucí výzkum při zkoumání potenciálu e-learningu a dalších inovativních technologických řešení v rámci lékařského vzdělávání. Vzhledem k pokračující prevalenci zdravotních krizí může výzkum e-learningu v lékařském vzdělávání pomoci identifikovat účinné vzdělávací intervence, které řeší potřeby zdravotnických pracovníků a podporují vysoce kvalitní lékařské vzdělávání, a to i v době krize. Na závěr tato práce zdůrazňuje význam e-learningu ve vzdělávání lékařů během krize ve zdravotnictví, jako je pandemie COVID-19, a význam porozumění perspektivám zdravotnického personálu, aby bylo zajištěno, že vzdělávací intervence jsou navrženy a implementovány způsobem, který účinně řeší jejich potřeby.

Klíčová slova: COVID-19, WHO, E-learning, technologie, vzdělávání, zdravotnický personál, Internet, statistická analýza dat, snadné použití, přijetí uživatele

Table of content

1 Introduction

COVID-19 has brought differentiation in the world in the context of crisis and health. The outbreak of this has disturbed several industries and has taken away lives. Context of rigid regulations and numerous death cases have been found all over the world. There are reports that this crisis has given rise to a downward graph of not just the economic scale but also the contemporary societal conditions. The social life of people is disrupted and the government can do nothing about it. However, in the general context of this pandemic and the challenges that it has brought, the most important criterion for this disease outbreak and a result factor is technological innovations. Technological innovations, especially in education and healthcare, are implemented after the outbreak of the pandemic to a greater extent. This means, starting from the new technology personal and professional lives are getting affected by the pandemic and its outbreaks. Necessary components that elaborate on the use of technology present how it has affected lives. Students have been affected because they cannot go to school or universities and when it comes to higher studies it even becomes a more valid point. However, even then some branches of education require people to be offline when studying it. Virtualized version of studying those objects is of no use, as per the stereotypes. One of these subjects includes medical education. This is the education given to doctors, nurses, and other hospitals' medical and technician staff. This education is even more necessary because several alternatives come along with the educational agency which has not just stimulated educational growth but has led to the interruption of various contexts (Sathishkumar, et al., 2020, p. 8).

Traditionally, education was based on the teacher-centric mode. However, education should be majorly based on the student-centric mode because it becomes important to show how flexible and creative they are even though virtualized methods of studying persist (Aini, et al., 2020, p. 5). Starting from the aspect of flexibility to the educational needs, majorly in developing nations, all of these are addressed. E-learning becomes a crucial factor with several platforms like Microsoft teams Google classroom and zoom. This is also implemented throughout the creative studies and has synchronized the environmental conditions. This has brought the concept of flexible learning. Social distancing is an important criterion when talking about the pandemic. This means, with social distancing the general ways in which alternatives can be managed are through the circumstances. Social distancing is maintained for taking online classes or when emerging with E-learning

platforms. With E-learning platforms, it is all about the curriculum of the students. It is about the crisis and its comeback helps in finding alternatives for studies and simultaneously improves growth. This is necessary for the internet available because it is about the learning experience that identifies the environmental conditions. It is also about the creative strategies whose implementation becomes necessary. These are important to be noted because with educational activities comes positive impacts on the individuals and indirect positive impacts on society (Maatuk, et al., 2022, p. 3). With online E-learning, the first concern that the guardians had was that it was a mood where they could not see the teachers or connect with them. With daily classes of E-learning, this problem is also a point of availability but still, children cannot be betrayed through online mode of education. However, there are certain ranges of experience and evaluations made through staff perceptions which also brings together the students-centric model here. There are greater criteria for identifying performances, and experience as it initiates confidence and certainty. These elaborations of staff perceptions and bringing together the concept of E-learning have helped in many ways. It is also going to help students to note their experiences and the values or morals that they are commonly facing during the covid pandemic. Some of the necessary components that arise with the factors of the developing countries are the aspects that in the current crisis and the pandemic, it is necessary to get validated.

The variety of components present here includes the aspect of progressive learning through innovation and the use of recent technologies. This is not just about the advantages of self-directed learning, it is also about the updating of the curriculum. However, with the general context of student responsibilities and E-learning components, it becomes easier to identify the responsibility and the benefits that are demonstrated. However, this does not mean that E-learning is without challenges. E-learning causes a huge variety of challenges. This is when it comes to the advanced technology used during the pending for sustaining the productivity of the world. The basic context of recent technology here deals with the nomination of the educational culture and E-learning concepts. There are necessary components even for medical schools because in technical settings it becomes extremely difficult to continue in E-learning mode. The simulators for virtual reality and the concept of overcoming it are also necessary. It is all about the brainstorming of ideas and dealing with certain important classifications of E-learning that define the concept of acceptance of the E-learning criteria. Concerning E-learning, becoming a part of medical student study can create a lot of psychological stress and anxiety. This is a fact as per the educational and

professional scenarios. Moreover, this deals with the investigation of depression as well as anxiety. Virtual learning and all the delivery methods of learning can make the students define their educational behaviors. This is not just about the educational experience or over the mindset but relates to the concept of grasping anything that is taught online. Using all this can help in investigating the educational mode of distance learning because of its psychological stress and depression. According to research on organizational learning, some types of knowledge may be better acquired through e-learning than others. (e.g., procedural vs. declarative, or hard-skills vs. soft-skills) (Napitupulu, 2017, p. 249). It is not just about the financial constituents but it is also equally about the assessment methods that are transformed.

The pandemic has forced the world to do many things which the world has never done before. This is not just about how the world comes about in the context of E-learning as a tool but it is always about identifying the major objectives for its evaluation. There are medical staff members and different other perceptions that brought together the recognition of barriers and challenges. These are not just necessary but capable of exploring different factors. This is because they affect the basic context of E-learning and its necessity as a tool (Sathishkumar, et al., 2020, p. 11). This is equally all about various technical problems and the learning experience. The identification of E-learning, especially for the medical staff is that it is perceived to be flexible. It is also about the practical courses and the difficult constructs of the online course maintained by the medical staff members. This not just depends on the classroom environment but also retains the online setting of the classroom, which brings in theoretical courses. At times, when it comes to the medical staff of the university due to lack of physical contact with the other students their concept of learning new things and learning from experience is minimized. It is not always about how a student to student contact is maintained. This is because when it comes to the online mode of learning by the University medical staff it is all about how they have zero experience in relating to one another especially physically. Eventually, with the improvement of educational efficiency, the discipline of the students is much more conventional throughout the courses. It does not just relate to the predictive of the perceived usefulness or ease of use by the E-learning methods but also relates to acceptance. Hence, the most important concept here to be identified by the University medical staff through E-learning would be the aspect of performance improvement and increased productivity (Pustika, 2020, p. 3). There are some of the basic concepts that come along with the technical problems and sometimes with

the shortage of e-materials or technical staff. This means, it is all over the dispersed concept of online learning and dealing with the online environment brings in the new concept of being away from traditional learning settings.

There are also maximum and minimum dependencies that form some significant challenges in E-learning. This is necessary for the pandemic results and the basic concepts of higher education which are defined by the E-learning mode due to the pandemic situation. Hence, for the university medical staff, it becomes quite impactful because there are different impacts on different educational systems. The place of research is GMERS Medical College, Ahmedabad, India.

2 Objectives & Methodology

2.1 Objectives

The main objective is to gain insights into the use of E-learning as a tool for teaching in the context of the COVID-19 pandemic among university medical staff, with a focus on their experiences, challenges, and acceptance of this method.

- To explore the benefits and experiences of university medical staff in using E-learning as a tool for teaching during the COVID-19 pandemic.
- To identify the barriers and challenges encountered by university medical staff in using E-learning for teaching during the COVID-19 pandemic.
- To investigate the acceptance level of university medical staff towards E-learning as a tool for teaching during the COVID-19 pandemic.
- To provide recommendations for improving the use of E-learning as a tool for teaching among university medical staff during the COVID-19 pandemic.

The findings of the study could be useful in enhancing the effectiveness of E-learning as a tool for teaching in the future, particularly during similar crises.

2.2 Research Methodology

2.2.1 Method Outline

This study emphasizes several aspects of E-learning during the period between March 2020 to March 2022 as an important teaching tool and provides aid in recognizing different barriers to an E-learning system and the possible way to get rid of these barriers. This research was conducted using a mixed methodology as this study was completed by collecting qualitative data. Thus, it covered a wide range of data collection which further helped in analysing various aspects of E-learning. For instance, it analyses the interests of staff in the medical field to accept the evolved E-learning as primary teaching as well as a learning tool.

2.2.2 Research Philosophies

The research philosophy itself is a large topic that consists of factors affecting the researcher's thought process which drives the way of acquiring knowledge regarding their

studies. The research philosophy correspondingly benefits in exploring the nature of the research (Poucher et al., 2019, p. 12) The philosophy involves the origin along with the development of new acquaintances of a researcher about a particular field. It generally panels the thought process of the researcher to develop various ideas about the ongoing study, and it provides different choices for selecting the strategy of the research. The researcher performs every process related to their studies based on these strategies. As these strategies have a significant impression on the development of the project, the optimum philosophy is desired to be selected. Philosophy also has great significance in the processing of the raised problems, collecting the relevant data along with analyzing the data to obtain an optimum result that satisfies the research findings.

The function of the research philosophy: The philosophy behind the research manages information and the choice of the correct assumption of the researcher to develop the outline of a research. Besides, that added several significant utilities are also taken into consideration.

Elucidation: It refers to the idea of revealing, and assessing the assumptions of the researcher that are unsanctionable along with it elaborates the discrepancies and apparent confusions faced during the development of the research structure.

Providing knowledge: Research philosophy benefits in developing a broader view of the researcher's presumptions and beliefs concerning the vast field of information. Moreover this research philosophy benefits in developing awareness about the achievable potentialities among the researcher.

Facilitates in-process activities: Research philosophy plays an essential role in the disintegration of the activities involved in the development of the research for a broader view of each activity. Thus it potentiates the ability to better select the most preferable and feasible methods (Poucher et al., 2019, p. 19). This benefits the researcher to cultivate the available methods and their usability. Thus, the basic function of research physiology is to cultivate the optimum beliefs to aid the development of research methodology.

Types of research philosophies: (Poucher et al., 2019, p. 23)

Positivism: This research philosophy follows the idea that emphasizes learning truthful facts through the application of science. Regarding philosophy, positivism ensures that knowledge is obtained through the sensory observation of the researcher. Positivism emphasizes the objective aspect of data collection irrespective of the researcher's personal views regarding the data collection and also aids the neutral interpretation of the collected data based on the

interpretation. Positivism as a research philosophy is often based on quantitative opinion and data collection, further focusing on the interpretation of the data through statistical analysis. Positivism also aids in the development of the positive temperament of the researcher to obtain essential and pertinent information out of a huge reservoir of irrelevant information.

Realism: This research philosophy follows the idea that emphasizes the liberation of reality concerning human thoughts. Realism is often related to the presumption of the research approach to obtain optimized knowledge. Based on the perspective view realism is often categorized into two classes, which are "naive realism" and "critical realism". Naïve realism generally follows the idea of the development of knowledge with the help of observational findings (through human senses). This philosophy limits the truthful interpretation of the observable findings, for instance, illusion in optical observation misleads the researcher to collect true observational data. However critical realism follows the idea of the idea that data collected through observation using human sense can be misleading followed by deep investigation to obtain a truthful observation.

Interpretivism: This research philosophy follows the idea of interpreting the different elements of the research. It helps to concentrate human focus on a study. It is a natural approach to data collection, it often involves the collection of data through observation and interviews. Interpretivism often leads to secondary data collection (Alharahsheh et al., 2021, p. 44). This philosophy involves obtaining a sense of the research at the end of the process. This philosophy limits the research with biased data collection, though the adoption of interpretivism as a research philosophy helps in understanding the ethics of the research to a great extent.

Justification for choosing positivism as research philosophy

The significance of the research philosophy in the development of research cannot be left without it, as it helps in several aspects of the development of research. The research philosophy significantly helps the researcher to follow the appropriate beliefs to obtain the optimum structured research philosophy. The well-organized methodology for the research is obtained through the selection of the optimum research physiology. The selection of optimum research methodology not only benefits in the selection of a proper assumption but also benefits in providing the ability to collect and analyze significantly relevant information out of the vast source of information.

This study involves the adoption of positivism as a research philosophy, which is based on the idea of obtaining the interpreted meaning through observational data. By selecting

positivism as the research philosophy the research will be focused on collecting the relevant data and analyzing these collected data to get the appropriate result, which leads to the successful completion of the research. Positivism as the research philosophy in this study benefited in maintaining motivation to continue the research, through amplifying the concentration on positive aspects of the research that lead to increment in motivation throughout the data collection and analysis process.

This study has the vision to influence the education and training structure of several students as well as the staff, particularly in the medical field. This research is aimed at modifying the educational tools by emphasizing the importance of E-learning which has great potential to be accepted as the primary mode of education and training in the university of medical staff. Furthermore, positivism was used as philosophy in this research which lead to maintaining the motivation for data collection specifically related to the medical staff. Moreover, the data collected are both qualitative and quantitative which lead to the interpretation of result through the analysis of statistical data which is again aided by the positivist research methodology. The result achieved through adopting positivism as a research philosophy is the finest, which would not possibly be attained through other research philosophies. In addition, this philosophy also helped to select the proper assumptions before data collection which had a significant benefit in relevant and essential data collection out of a gigantic pool of information.

2.2.3 Research Approach

The research approach is generally referred to as the methods and planned procedures involved in the endured research which shifts the focus from wide assumptions and concentrate on the narrower and more detailed method of gathering data and analyzing this gathered information to generate some results and later followed by the interpretation of these results to obtain meaningful theory. This approach encompasses several imperative decisions that ensure the selection of the appropriate method of data collection as well as the procedure and selection of data analysis techniques. The research approach lies within the center of the research philosophy and the research design. The research philosophy additionally helps to choose the appropriate research approach or the procedure through which data collection and analysis is performed for specific research. This approach further aid in the selection of the proper research design to generate a successful research theory.

The research approach holds a significant value in research as it helps to develop the information which further potentiates the development of knowledge to solve the research problem and during this process evolution and emergence of new theories and information occurs.

The research approach includes several procedures for data collection as well as data analysis. The procedures for data collection are qualitative, quantitative, and mixed methodology (Maarouf, 2019, p. 22). Although the overall procedure includes deductive and inductive approaches. The research approaches have significance in research methodology. It is considered the heart of the research without the collection and analysis of relevant data (relevancy is determined by the proper research philosophy). Moreover, an approach provides a direction to initiate a positive motion to legitimate research, and the planning and procedures involved in the specific research have the potential to be followed by other researchers to obtain their research findings. There is a set of approaches you can employ to find common themes, patterns, and linkages among replies from sample group members in respect to the codes that have been specified in the earlier stage (Cousin, 2009, p. 145).

Types of research approach

There are several types of research approaches available to collect the data along with approaches to analyze these gathered sets of information and interpret the result of performed analysis.

Deductive approach: It is a type of logical reasoning-based approach, which is commonly termed a "top-down" type of approach. This type of approach initiates with previous research findings by defining pre-stated and well-defined theories. Further, these theories are refined and sorted to reach the actual hypotheses. Hypotheses are collected and tested for proving the truthfulness of the gathered hypothesis (Azungah, and Kasmad, 2020, p. 17). After testing the hypothesis various data get generated in form of observations, which are very essential for the confirmation of the hypothesis, and whether the hypothesis obtained from the theory contains the true statements. It generally acts as an aid in gathering secondary data.

Inductive approach: It is also a type of logical reasoning-based approach, commonly termed a "bottom-up" type of approach. This type of approach acts oppositely concerning the deductive approach. This type of approach moves from specific aspects to generalized aspects. In this type of approach new hypothesis is obtained which are further nurtured to obtain a new theory, which in the future acts as a guide for other researchers to obtain

additional data and information regarding their studies in their respective fields (Azungah, and Kasmad, 2020, p. 56). The inductive approach begins with the observation of a certain process, through which certain observational data gets generated which are further studied to observe several patterns. These patterns lead to the generation of tentative hypotheses which get nurtured to obtain a new theory. The inductive approach generally acts as an aid to gather the primary and experimental data.

Justification of approach used in this study

Research article generally is the method or a planned way out for the collection of relevant and significant data. Moreover, it also provides a way to analyze the collected data and interpret the result obtained through the analysis of the obtained statistical and qualitative data.

According to the previously stated fact research approach also includes several important decisions to choose the appropriate techniques of the collection as well as analysis of the set of information. There are two well-known approaches namely, the deductive approach and the inductive approach. The inductive approach is compatible with quantitative data collection and the deductive approach is compatible with qualitative data collection.

This research focused on data collection by adopting a mixed methodology. The research adopted the collection of primary quantitative data along with both secondary qualitative and quantitative data. It involves the data collection from previous findings as a secondary source of data collection and the primary data was collected through observation of survey reports submitted by several medical staff.

According to the fact of implementation of a mixed methodology for data collection, both the deductive and inductive approaches were used to drive the collection and analysis of several sets of data. The deductive approach assisted in the collection and analysis of the secondary qualitative data and secondary quantitative data as well, from several previous research findings. Though, the inductive approach is also implemented during the collection of primary data collection from several survey reports. Thus, the usage of both deductive and inductive methods was an appropriate selection as a research approach for this study, and the selection of either of the approaches would not have provided the optimum result.

2.2.4 Research Design

Research design is also a significant aspect of the research methodology after the research philosophy and research approach. From the basic point of view, the research design

is the framework of the methods implemented by the researcher in their specific research (Dannels, 2018, p. 405). It prevents the problems raised by unorganized design by systematizing various aspects of techniques and methods involved in research. The research design assists the researcher to attain systematic and well-structured techniques to conduct the research. And this systematic approach also helps to ensure the continuous flow of motivation among the researchers.

The successful conduct of research is obtained through an appropriate research design. Moreover, an appropriate research design aids in achieving unbiased statistics related to the research. Research often applies data collection through surveys and research design has the potential to create a survey suitable for unbiased data collection (Jilcha, 2019, p. 27). It is generally achieved by implementing four different types of characteristics. Systematic sampling method followed for this study. (Mishra, et al., 2017, p. 35)

Neutrality: During the initial phase of development of the research there are several assumptions related to data collection. Though the personal thought needed to be kept aside and the unbiased collection of the data is only considered. Maintaining the neutrality of research is very much essential, otherwise, the result obtained will mislead the researcher to obtain inference.

Reliability: For research consisting of data collection multiple times the researcher tends to compare the obtained result with the standard one. Further, the researcher also expects to obtain similar results every time they conduct the study. Thus, reliability is an essential aspect of obtaining a neutral and accurate research report.

Validity: Every aspect used in measurement and other significant aspects related to the development of research, research method, and different research technologies needed to be validated. Every measuring tool is ensured to be validated before implementing for the research purpose.

Generalization: The objective and the result of the design is ensured to apply to a wide range of population rather than a restricted group. This benefits an increment of reach towards a large population which will provide the opportunity to influence other researchers in the related field.

Types of research design

Out of several classifications three useful and, well-popular research designs are enlisted in this research design.

Exploratory research design: With relevance to the name of this research design it is acquired that this type of research design is oriented toward experimental research. This research design correlates the cause of a situation with its effects. This design generally focuses on topics that have not been discovered well (Thomas, and Lawal, 2020, p. 16). The exploratory design helps to understand the problems that had not been well-defined to a better extent and to perform deep research in the particular field, though the application of this design is unable to provide a strong convincing outcome (Thomas, and Lawal, 2020, p. 25). Generally in this type of design, the researcher begins with solving the issues-oriented with the research itself and generates observational data which is further analyzed to generate a conclusion. The inductive research approach often leads to the selection of this research design.

Explanatory research design: This type of research design leads to the investigation of several aspects to provide the reason behind an effect in a particular situation. This design also focuses on the topics that have been discovered but no recent well-established studies have been done. The explanatory design helps to understand the problems by linking several ideas, which leads to the establishment of a cause and an effective relationship in a particular situation. Generally, this type of research design is followed after the application of exploratory and descriptive research design. The outcome obtained through the application of this research design consists of the deepest level of knowledge, which contain the researcher's finding about the cause and effect of a particular situation. The application of the deductive approach in the research methodology leads to the selection of an explanatory research design.

Descriptive research design: This design lead to the generation of interest of the researcher primarily in describing any case or situation involved in their specific research. Descriptive design is often considered to base on theoretical aspects of the research which includes the collection of the data followed by the analysis of the data and finally the presentation of the gathered data. It is often required in situations where the requirement of magnification on certain topics is identified. Furthermore, this design does not get affected by the perspective of the researcher, which provides significant assistance in understanding the need and purpose of the research.

Justification of the research design used in this research

Research design is the basic framework of the general techniques used in the research process. A proper research design leads to the successful completion of the research. It

provides a well-organized and structured procedure to follow during the conduction of the research to avoid misleading and haphazard operations during the conduction of the research. Moreover, according to the pre-discussion on the picture of characteristics of research design, it was found that for successful research the neutrality, reliability, validity, and generalization of the research design is very much essential. Moreover, there are several types of research designs among which a few essential and commonly used designs are enlisted in this study, according to the need of research the researcher chooses the research design.

In this study, both descriptive and explanatory research designs were adopted. Since the research contains both novels set data on the interest percentage of medical staff in accepting E-learning also termed the online mode of learning, as an essential tool required for both teaching and education experience in medical universities. This research also gathered information along with data from several predefined research findings for developing the knowledge about the status of the acceptance criteria of online learning as an educational tool and developed knowledge about the impact of the COVID-19 pandemic on E-learning. The descriptive design benefited in developing the need of conducting this research and described the data collected from previous pieces of literature while the explanatory design aided in finding the reason behind the wide acceptance of E-learning in some medical universities and the lack of interest to accept online learning as a primary tool for education and training. Implementation of both descriptive research design as well as explanatory research design led to the meaningful completion of the study on experience, challenges, and acceptance of E-learning as a tool for teaching during the covid-19 pandemic among university medical staff which would not be possibly attained through implementation of other research designs.

3 Theoretical Part

3.1 Covid 19 & Modes of Education

The pandemic has brought in some serious issues with education. Several traditional modes are used for teaching students. However, as the pandemic has brought, about 1.2 billion children are affected in the overall world of 186 countries. Hence, the schools are closed and the universities are bringing the use of E-learning models and technologies. Even though these technologies are present, they were of no use when it came to education because the traditional mode of education was only preferred. The adaptation of this kind of electronic learning mode, therefore, held persisting with the educational condition during and after the COVID-19 scenario. Different components come along with the impacts that are made by these modes of education on the educational world and marketing. This is also about online learning and the persistence of the postpaid name that is capable of creating wonders in the educational world. It was not just about this topic of the business but also about relating to the educational constructs and the editing investments. This is about how the education sector is growing and with the pandemic, even University medical exams and studies have become online (Sathishkumar, et al., 2020, p. 8). This online mode of education is not doing well for the subjects that require a lot of practical experience. This is so about the educational technology and the online tutorial which are all related to the editor industry under highly valued. This means the necessary components of the announcement for students to come back to the traditional modes of assignments, it is not always easy to do so. This is not just about the auto-translation of the exponential growth of education through the online mode but is also about the real-time constructs.

However, during the pandemic, since the world was incapable of meeting in person or offline mode, it became easier to make reliable connectivity. Different components come along with the new records. available connectivity and global infrastructure of servers are necessary and are contributing a lot when it comes to online modes of education. Even though there are a lot of challenges, the ultimate result is good and so, the impact of online education on the global platform becomes necessary. There are online platforms created by several educational institutions in respective medical or engineering fields. Just like institutions like Byju's or several other regular institutions have brought in this educational technology for tutoring students. There is an online movement or so it may be called to

define the capabilities of the E-learning platforms. The internal tools used for E-learning include connecting with the students through chat applications. It is also about maintaining video conferencing. With the global infrastructure changed and with various capabilities like auto-translation or real-time editing it becomes essential to utilize online education tools. These tools are not only going to help during the panda make but even after the pandemic is over other remote works would be held by these platforms.

There has been a noteworthy alter within the worldwide, multi-disciplinary acknowledgment of story request as a thorough technique centered on creating an understanding of individual and proficient encounter (Bell, 2010, p. 78). The truth of improvement of exceptionally changes within the subordinate variable is unsurprising. Typically basically simply another way of expressing the self-evident: that the sociology is not as distant progressed (Cohen, 1988, p. 145).

This means it is very crucial to maintain social distancing and to compulsorily ensure infection control in different public spaces including schools. These public spaces do not just result in nationwide people coming together for studies or business or treatments. Moreover, they also relate to contaminating other healthy people with the disease that they have inside themselves. There are several other necessary components when identifying E-learning. With various technology resources of information and communication technology, it becomes essential to make effective learning systems in a distanced manner. The performance of the students and the knowledge gained are some of the important parameters. At the same time, facilitating independence and collaborative methods of learning is also about how the courses are to be designed. This collaborative learning also brings effective and interactive learning sessions among students to enhance the concept of distance learning (Turnbull, et a., 2021, p. 16). Even though physical touch or physical classroom is absent, student engagement needs to be maintained even through online modes of teaching. It is equally about gaining student satisfaction because other than that student engagement would never be created and learning will never be blended into the system. The promotion of online education is possible for different schools in colleges. But, for practical subjects like medicine, it becomes difficult because educators face a lot of challenges and there is a requirement for physical presence. It is necessary important to underline the facts about various learning skills starting from group discussions to bringing out problem-based learning. The necessary components here are additional learning and the availability of the self-directed curriculum (Kaur, et al., 2020, p. 5).

During the pandemic season, it becomes important to come up with student-centric methods for learning and making interactive lectures. This is so as even outside the college campus the E-learning platform gets equally enjoyable and interesting. The online modes of learning are somewhat different from the concept of distance learning and evaluation of the blended learning methods. For distance learning as well, there is positive feedback given by students. The university students and the elementary school students are at times happy with the way of learning. However, in certain cases, the perspective of the students is not correct as well.

Instructing with innovation isn't a one estimate because it depends on the sorts of technology in utilize at the time additionally the educational programs substance being instructed. This implies that the joining of innovation gives extra variables for thought in terms of educating instructional method and development of learning encounters (Gillett-Swan, 2017, p. 26). The e-learnings has focal points and drawbacks. Picks up in one heading will bring with them misfortunes in another, and the social analyst must live with this (Denscombe, 2003, p. 309).

The thought is that assets ought to adjust to person profiles, coordinate students requirements and interface, back individual learning forms, and cultivate the amalgamation of unique items by students. Learners ought to be able to require activity with respect to (a few of) the methods, time, put, substance, and grouping of studying (Buzzetto-Hollywood, 2007, p. 131). Online instructing and studying suggest a certain academic substance information (PCK), basically related to planning and organizing for superior learning encounters and making unmistakable learning situations, with the assistance of computerized innovations (Rapanta, et al., 2020, p. 933).

3.1.1 E-learning as a tool

E-learning is defined as the development and training of students as well as employees concerning electronic media or through electronic media. This is a form of web-based learning where people from where you said yes come together and join through video conferencing through other tools to exchange knowledge or to teach. This is also about how the world is slowly adopting all these technological aspects concerning their constraints. It is not just about E-learning all about education but it is about dealing with something

important. E-learning produces interactive classes and completes courses very smoothly because everything remains regulated and disciplined through E-learning. As a tool of the academic world, E-learning has flourished to a greater extent during the pandemic. This is because students are not capable of stepping outside or going to designated educational institutions for continuing their studies. When going on discussing certain subjects video conferencing becomes an integral tool of E-learning. With video conferencing and several other tools as such, the lecture sessions become more interactive. It is also easy to find great possibilities for group projects in group discussions. This is not just to add the element of interactive but it is to make learning easier and fun. For tutors in schools and colleges, E-learning is a great source of saving time, teaching and guiding students overall. It is not just about schooling but it helps students to grasp the lessons at a faster pace. There are some of the necessary components that are easily attributed to the psychological constructs of E-learning. It now just helps in making the lectures much more interactive but helps students to remember things for a longer period. Content analysis of the collected definitions led to an understanding of the core elements for defining online learning, the confusion surrounding the terms and the synonyms used for online learning. (Singh, 2019, p. 302).

As explained by science, audio and visual media at the same time help discipline learning and create a better learning environment. This is not just about student engagement being about effective tutoring but is related to the enhancement of skills and empowerment of learners. There are a variety of other criteria which are also related to student engagement, especially with the aspect of underlining the learning skills and developing the advanced nature. A general criterion of bringing and learners are not just about elaborating a good practice of knowledge but it is also about sharing the online platforms and identifying their differences. E-learning as a learning tool is not something that was appreciated before the lockdown to an extent of this. However, it becomes more important to know that learners are quite the entire concept of sitting back at home and studying. This is also about maintaining a good practice of disciplined learning and self-study which is necessary in today's world. Being technologically updated is what every person demands. So, E-learning provides a greater scope of being efficient in the technology and being adequate in identifying the education methods. There are some of the major components that are detailed with the self-initiated and digital points of learning. It is not just always about E-learning education but is related to the versatile development of one's psyche especially when it comes to students (Mardiah, 2020, p. 33). There are other points to employ with the concept

of E-learning because eventually with many practices and methodologies the blend of E-learning education becomes versatile. Some of the necessary components deal with mixed learning and blend direct communication with online modes of learning. This always remains synchronous with the provider, especially when talking about audio and video conferencing. Other impacts help the receiver to get into the topic. The basic understanding of establishments of communication through E-learning modes relates to the following methodologies and practicing the usage of the E-learning tools (Jacques, et al., 2021, p. 17). This is equally based on the promotion of self-study practices because with web-based learning, the practice sessions become much more interactive.

There are supplementary audiovisuals and the methods are extremely communicative which makes and promotes student engagement to a higher level. The general context of learning here is all the way based on the fulfillment of student requirements. Student requirements mean student satisfaction and comfort in learning and studying with a particular mode of education. This is not just important for the institute to follow but is also for the students and their accessible contents to prove the same. The relative benefits of E-learning are that online learning is also based on the relevant content and the mode of portraying the lecture. The advantages that come along with E-learning are the accommodation of everyone's requirements and needs. This is also about taking out a class from a place where the tutor finds it easy and it is also equally beneficial for the students for the same reason. This is not just about how the tutors prefer to take the classes but is how the students find it engaging and interactive to attend them. There are other necessary concepts like being prolific and the accessibility towards the web-based services to be celebrated to the maximum. The school and college tutors bring updated content and create an uninterrupted learning mode enjoyed both by the students and by the teachers. E-learning as a mode of the study itself synchronizes every aspect of modern learners and makes them much more technologically built and technology dependent. With the COVID pandemic, the manifestation of this online mode of education is done even more because it is not just about the possibility but also scalability and duration. The content of the study along with the reasonable measures of mixing current trends with modern learners. This is equally about the scaleability of learning and consistency. This is because E-learning methods are highly ranked. Even though a teacher is in the class delivering his lectures it becomes important to match the high coverage and degree of consistency when E-learning is identified. E-learning as a tool has reduced the cost of learning. It is determined that knowledge is made more

powerful and has imparted high benefits among students. Through the audio-visual classrooms and lectures grasping knowledge and concepts has become easier (Zalat, et al., 2021, p. 4).

Extremely complex ideologies are easily remembered by the students. Mobility is promised by E-learning. E-learning is not just about sitting back at home and studying but with the context outside the covid pandemic, E-learning provides mobility and is better than taking classes in a traditionally based method. Several necessary components come along with the right information and places to learn over the top shelf. However, the general points of understanding the online sessions and the development of the training schedule, make it accessible for students to learn anytime and anywhere. This is the most important point of the E-learning concept because there are more possibilities for changing the learning modes and it is also about comfort and a student-centric mode of learning.

3.2 Online Teaching of University Medical Staff

Medical education especially, when it comes to the pedagogical approaches is easier to deal with when the classes go on face to face. The university medical staff and various experiences gathered by the concept of E-learning have brought challenges and barriers. At the same time, it has taught me how to be effective and how to enhance on soon learning skills through better communication and by utilizing the content that is available online (Ionescu, et al., 2020, p. 11). This is not just about the varied information quality but it is also about the effective way to get wide knowledge about the concepts and demand a better-personalized experience for learning. For medical students and graduates, it becomes essential to hit the ground with a proper clinical education that is not just traditional but is also up to date with the latest technology and flexible workplace dimensions. These are all related to the continuous updates of skills and a better environment for providing healthcare. Digital literacy is necessary as with digital technology and better communication tools only in today's world the clinical staff can advocate and evaluate their diagnosis and medical procedures (Hermawan, 2021, p. 12). It also becomes important to get the ability for identifying different formats through which digital concepts and ranges of various knowledge manipulation can be done.

There are major factors that are based on student engagement and education based on technology. Staying focused on where faculty and dealing with extra pressure are also recognized throughout the development of medical education and when strengthening the

position of the faculty. It is necessary because when addressing the underlying concerns the medical faculty is the one who should integrate with E-learning methods. There are better formats that come along with the robust evidence of medical education done on an E-learning platform. These perceptions are necessary because barriers and evidence all form challenges for the medical educator. A variety of perspectives appears when online learning modes are involved. The necessary components for engagement improvement with students and the Teachers relatively help the implementation of E-learning. This is equally from the educator's perspective but at the same time talking about the medical education implementation also becomes necessary. This is also about the medical educator's perspective to identify the barriers that come when aiding E-learning. The existence of digital literacy helps in improving a person's concerns about the E-learning tools and the technology and prospects. Different components help in the evaluation of integrated E-learning termed online learning and distance learning for medical education (Gohiya, 2020, p. 14).

However, it is also true that coming out of the results from the traditional aspects of learning the medical world might find it a bit difficult to arrange proper intervention with the trainers and the trainees. This is not just elaborative in its induced by higher levels of institutions and proper online learning. The designed impact of the engagement for online learning is developed through the content and the implementation of qualitative studies. At some point E-learning by the University medical staff becomes a criterion for not just moving on and engaging with development but also for implementing technical skills. Certain important components help with engaging in the online education mode because it is not just always the medical educators or the life commitments but it is about significant barriers within the detrimental pedagogical system.

3.2.1 Challenges faced in E-learning

There are a variety of challenges faced when continuing with E-learning. These include skill deficit, lack of engagement, time constants, infrastructure constraints, lack of proper communication which means a lack of technical aspects, problems related to attitude, and many more.

These challenges create difficulties both for the learners and the educators. Firstly, with the lack of skills or skill deficit there come issues relating to the technical constraints. The technological constraints stop allowing any kind of implementation or development of

the E-learning platform to make progress. It is not just about the educated who need to be capable and able to engage with these technical concepts but it is also the students or the learners who need to learn developments and engage in necessary skill building (Favale, et al., 2020, p. 10).

The next is the time barrier. Medical educators or sometimes even the learners reside under great pressure and the amount of study that they have to put up with is also voluminous. The time barrier is extremely significant here and is also considered to be a major challenge because when it comes to the medical student's E-learning highlights engaging with the electronic tool of e-portfolio. Teaching time has to be compensated because the administrative time of the programs is too justified. This is equally about how spending time can become a formal mechanism and there have to be proper acknowledgements made for the efforts rewarding the faculty for giving the time.

In the university medical scenario, it is not just about the medical education but it is also above the technological basics which create intermittent problems with internet access. This is equally about the lack of any kind of technology with poor quality services and elaborative technical issues. There can be poor internet connectivity and other technical issues forming major challenges in the process of E-learning. The economic factors also come in adjacent to this point because in a country that has low income it's very difficult to form proper physical infrastructures for E-learning. This is a major challenge because when talking about the health profession and its educators implementing proper learning methods is necessary to create solutions for the challenges (Mseleku, 2020, p 13). The barriers that come about when implementing E-learning are based on limited access to poor infrastructures and computers. This challenge can be solved by developing correct infrastructures and by creating a web-based education system where the traditional aspect of face-to-face education won't be an issue.

Then comes another problem of poor communication which is also linked with the technical aspects. It is because with limited direction and limited institutional support proper adaptation of E-learning communication is not possible. Hence there is always a necessity for the polarization of E-learning tools to adopt the concept.

A negative attitude is not always appreciated and hence it becomes necessary to underline processes for engaging new tools and navigating certain issues that might be technically minor but are not. Adequacy and other elements for committing to the implementation of online practices cannot be fulfilled through limited knowledge. Limited

knowledge is very harmful even for the entire engagement process navigation. This means it is always necessary to stop believing in any kind of preconceived notions and also to get out of stereotypes. A student or a child cannot just learn with educators facing them physically (Khan, et al., 2021, p. 14). A student can also learn in the online mode where learning becomes much more interactive and fun even though they come with a wide range of challenges.

3.3 Economic impact of E-learning

E-learning allows anybody with access to a computer and the internet to take part in the educational process from anywhere in the globe. This simplifies the procedure overall and helps in preventing issues at the location where the training will be held.
Cost savings might be realised while taking classes online.

By not having to physically go to a classroom, students may save a significant amount of money by taking advantage of E-learning. There is no longer a need to spend a fortune on textbooks, gas, child care, and other expenditures associated with attending a regular classroom.

While it's certain that students benefit from online courses, it's unclear if the growing popularity of E-learning is good for the economy. It goes without saying that the creation of online courses changes the way education is often delivered and creates a whole new industry, leading to an increase in demand for online educators, web developers, and administrators.

More and more students are getting their educations online, which might boost the economy. It is easy to see how online courses might revolutionise the way we teach and learn, as well as boost our economy. Because of its lower cost and more adaptability, online learning is gaining popularity among students.

Finding and preparing teachers willing to adopt this new pedagogical approach is crucial to the success of E-learning. Fortunately, today's technology makes it possible for teachers to create online instructional methods that much beyond the effectiveness of traditional classroom methods. Although the effects of E-learning are likely to be modest at first, they might eventually boost the economy if current trends continue.

3.4 E-learning as a tool for teaching university medical staff

According to a group of researchers several pharmaceutical and medical institutions all over the globe already had the facility of learning through online electronic portals and platforms several years back before the rise of COVID-19. Before the period of the pandemic, the electronic medium of learning was used as a supportive tool rather than a primary tool. The medium was used as a platform for the submission of assignments, and projects and it allowed the students to review and multiply access to the study materials, lectures, notes, and different types of descriptive and stimulating videos (Shawaqfeh, at al., 2020, p. 32). E-learning was for the betterment of the students. The researchers also suggested that the massive spread of the novel coronavirus caused a lot of closures in the sector of traditional education. But during the period of COVID-19, the online medium experienced a rapid shift from a supportive tool to a primary tool of learning (Shawaqfeh, et al., 2020, p. 29).

During the coronavirus pandemic, every field of learning including medicine, pharmaceutical, business, computer science, and many more experienced this shift and used online portals as a primary source. Though the medical and pharmaceutical fields find it somewhat difficult as these fields included mostly practical lab and in-field knowledge, electronic medium failed to provide the in-hand experience of these practical works and thus knowledge gained to the students and the staff in a theoretical way. The same research findings also suggested that during the rapid shift the teachers and the instructors had great responsibilities, as they had to adapt to the situation very swiftly. It was for the first time that the instructors had to rely on online portals and platforms to show different activities and explain different in-hand procedures also through this electronic system, which was very difficult (Shawaqfeh, et al., 2020, p. 41). Regardless of the problems the instructors and trainers provided the training and instruction through this online method, and the whole process of this learning method was not easy and smooth for the trainees, staff, and the student from the medical and related fields, they also faced several health issues due to long exposure to the digital screens. Some technical issues were also faced during the online training sessions due to the internet signalling problems accompanied by the problem in the operator bandwidth. According to this study, the researcher found that during the period of the global pandemic the students faced several issues despite these issues the students and trainees had a positive attitude toward learning, and the majority of the students were

reported as satisfied with the electronic and online learning phase. Student satisfaction and motivation was a difficult goal of online learning, which was successfully achieved by the continuous efforts of the instructors in converting the monotonous method to an innovative way of learning.

A scholarly article has identified the global emergency actions as a result of the global pandemic 2019 also known as the COVID-19 pandemic. For preventive measures, global exposure to human-human interactions was reduced in different sectors (Maatuk, et al., 2022, p. 23). Majorly emergency sectors like healthcare sectors, pharmacy sectors, telecom sectors, and the law-and-order sectors were active during the pandemic stage. Preventive measures for reducing the spread of the virus caused the closure of many sectors including the educational sector, institutions experienced lockdown on a global scale. As a consequence of this emergency lockdown, the authorities took a bold step to alter the way of learning, which included an online mode of learning through an electronic medium, it was a modified and developed method for learning, which ensured the students do not lag in the studies and courses, along with that it provided them prevention from the spread of coronavirus 2019 variant (Maatuk, et al., 2022, p. 25). This article also recognized that E-learning is a basic formal way of learning aided by electronic devices and operated on online platforms. This mode of teaching and learning can be operated irrespective of the position of the classroom, which indicates that a student can learn at home and also inside the institutional classroom. Other than the prevention of COVID-19 among medical students, there are other benefits of E-learning as it helped the medical students and staff to save travel expenses, and attend lectures and sessions with flexible timing, moreover, it also reduced the burden of a lecturer to give time-consuming lectures along with efficient attendance recording. This article also suggested the major drawback of this online learning as the inconvenience in demonstration and understating the in-hand practical based activities, which medical staffs and students learn through physical experience in performing the activity, virtual based activity was not sufficient to provide the practical knowledge, especially in the field of medical science.

This E-learning used various demonstrative tools such as standard web videos, and standard software for knowing the basic handling of the equipment and the operative measures of a procedure, along with these various other online platforms were used to conduct the sessions. Some of the useful platforms which aided the online sessions are “Microsoft Teams”, “Google meet”, “Zoom meeting”, and “Webex meetings” (Maatuk,et

al., 2022, p. 26). The scholarly article also suggested the use of tutorials adapted from various sources, virtual models used to describe the anatomical features, and different online libraries were also used for convenient learning of the trainees and students. The author emphasized the fact that E-learning was oriented with various health and technical issues, though the system managed to evolve with innovation. Moreover, provided the educational information guided by the instructor to the learners safely and efficiently during the period of the COVID-19 pandemic.

Well-known research finding ensured that constant advancement in traditional learning resulted in E-learning or commonly termed an online mode of learning. E-learning is considered a key aspect of better learning in every stream of education. Medical education of students and the medical staff also require this mode of learning as it encompasses different applications of technologies. E-learning in medical universities helps to visualize, transcribe, understand, and gain better knowledge about different clinical topics. This article has also identified various barriers which restrict the application and adoption of online learning in medical universities. The barriers include the restriction in interaction with other medical staff and patients, E-learning has restricted infrastructure, solidarity, and empathy for the medical team. Online learning is widely accepted since late 2006. The different organizations came up with different online platforms for medical studies, one of which is e-MedEdu a well-known online portal in South Korean universities. On this platform material and resources for the medical courses and other relevant information are available free of cost and are specifically for the medical student. These online portals are controlled and maintained by combined agencies that include committees consisting of the medical members from different universities. The article also ensures that the resources available at this portal are envisioned for various learning concepts as well as teaching outcome concepts. Several online portals like e-MedEdu can be used for gathering knowledge from the resources that can be searched individually through a search engine or category-based browsing available as a default in the websites. Besides that, various application was launched in late 2012 because of the high demand for mobile technology used for the development of medical learning. Several contents are available in these online portals that include different clinical cases, procedure parameters, video clips, audio clips, and pictures of different medical issues, in addition, they also consist of different quizzes and questionnaires for better learning opportunity. All this information involves both the medical student and the medical practitioner along with other staff. According to the author, these

online tools are a well-established platform for the medical student to retrieve various relevant and authentic information, which undergoes constant updates to maintain the resources of the latest cases. The author also finds that it becomes challenging for medical educators as medical education involves a broad range of topics and the resource on each topic undergoes various modification over time thus tracking all the records is difficult, Though for the betterment of medical student and medical staff joint approaches from authorities of different universities leads to the advancement of online learning for the medical staffs.

According to a group of researchers, information technologies have aided every aspect of human life which cannot be denied. A major part of these technologies has aided the educational system worldwide, in the previous traditional learning methods learners had limited resources and various other limitations to access information, compared to this system of teaching and learning modern development through information technologies has enabled unbounded access to knowledge (Abbasi, et al., 2020, p. 59). Most of the teaching-learning methods have transformed into an online mode of learning also termed E-learning or the learning attained through online mediums. Online media is appreciated and adopted by various medical and other universities across the globe. Several significant features of E-learning motivate the learners to experience the online teaching-learning experience, which includes learning in a flexible schedule, easy learning through innovative modelling, and a large number of learners can access to well-established online resources to gather knowledge (Abbasi, et al., 2020, p. 59).

E-learning has several limitations also and one of the major limitations is the social isolation of the learners, the learner will only use electronic devices to gather information and will not evolve in practical knowledge and practical communication. This study suggested that the combination of E-learning with offline learning gives the optimum earning experiences as the education obtained in the offline mode is very interactive and the learners gain practical knowledge about several procedures and risk management in the medical field, offline learning helps the medical staffs to interact with patients better and study about the patient cases with ease (Abbasi, et al., 2020). The online mode of learning includes several other benefits as it provides aid to the medical student and the staff to research the ailments and the medications available to cure them, and will provide theoretical knowledge through innovative learning using video clips, pictures, and other application-based information. E-learning benefits the medication practitioner and other staff to get the

latest updates about medical technology, new inventions of operation procedures along with new inventions of medications.

The article also recognizes that E-learning was available to various medical universities, though was not a primary method of learning. During the widespread of COVID-19 from the start of the year 2020, there was a rapid lockdown of the universities on a global scale, it occurred to prevent the further spread of the virus among the student and the medical staff (Abbasi, et al. 2020, p. 60). This lockdown forced the universities to switch to the online mode of learning to continue the flow of information about the pursued courses among the students. Though some of the frontline staff on the other side had to face offline on-field interaction with patients. During the massive crisis, E-learning aided medical researchers with information about the novel coronavirus, and this helped the researchers to identify the backbone of the virus and also benefited to develop the vaccine. E-learning aided in educating the common population about different safety measures and creating a wide view of the global statistics of the COVID-19 infection and death rates.

According to medical research, the scenario of education in the medical field has changed over twenty years. Modernized technology along with the internet has created dominance in the medical field. E-learning is commonly used in medical institutions across the world (Huynh 2017, p. 430). According to the author E-learning in medical relevance includes several tutorials, visual clips with adaptive audio embedded, and several other innovative models to increase motivation among the students. E-learning has the potential to amplify students' isolated and self-motivated learning. It also motivates the students and aids them to achieve controlled learning (Huynh 2017, p. 430). The author also suggested that online learning undoubtedly has an essential role in achieving controlled and innovative learning in relevance to medical background. Though this importance is limited to theoretical knowledge only, in the case of practical knowledge E-learning has a barrier of lacking in hand and situation-based experience (Huynh 2017, p. 430). Thus, the future scope of E-learning is to be used as a blended mode of online as well as the offline method of learning and education.

3.5 Acceptance of E-learning as a teaching tool among university medical staff

Agreeing to a bunch of analysts, a few advantageous changes happened over a few periods as the major move is the consideration of the web within the learning process. Online studying is additionally named studying online and e-commerce that employments the

innovation and web to supply educating to understudies and help in studying from the instructors. Online studying has been presented to therapeutic and medical areas a long time prior. A few of the educate taken after the right utilize of this innovation and made the studying prepare less demanding for therapeutic understudies. The online entrances were utilized optionally for the accommodation of assignments and ventures until 2020 (Ibrahim, et al., 2021, p. 19).

As amid 2020 coronavirus cause a gigantic emergency within the healthcare administration framework at a worldwide scale and there was a shutdown in different segments other than crisis administrations. In this way, the around the world shutdown of colleges and teach constrained this move of digital studying from a moment variable to a essential angle of studying. As the move happened over a brief period it brought about in acknowledgment concerns for both teaches and understudies (Ibrahim, et al., 2021, p. 20).

This paper acknowledges the discernment of acceptance of online studying within the therapeutic field. It comprises a web-dependent think about among the restorative staff of a therapeutic college. This inquire about was done by gather the information through a standard online frame which was shared among the restorative staff and understudies. The frame collected different data almost the utility, quality, focal points, obstructions, and the staff and students' compliance with e-learning. The article moreover recommended that at the beginning stage of the widespread most of the colleges had experienced shutdown and this influenced numerous therapeutic understudies concurring to the information given by UNESCO it was found that 99.9 percent of the worldwide understudy got influenced due to this shutdown. (Ibrahim, et al., 2021, p. 20).

Thus, to secure the therapeutic students and staff's information in their field a fast move was watched from conventional strategies to online studies. This paper recognizes different restrictions and focal points of the boundaries confronted by the restorative staff and understudies. The employees and the understudies were enjoyable within the chalkboard educating framework but when the move took put larger part of them favoured the online stage that gives simply get to go to the sessions, in this way zoom assembly stage was broadly utilized. Most of the populace chose online learning as more helpful, although as it were 28% of the populace of therapeutic staff and understudies accept online studies as palatable and the larger part of the understudies were unsatisfied with the online mode of learning. Less fulfilment can be legitimized as in restorative areas the common-sense information

covers the major parcel and through online mode, it was not simple to urge a palatable encounter.

An academic paper accept that online studying was undervalued and not widely known as a device of productive studying till the time COVID-19. This paper allows online student as a learning tool by means of the e-gadget and utilized by the application of the web. The analyst admits a few variables that impact the acknowledgment basis of e-studying among restorative staff. The information collection was done by utilizing the surveys created and confirm online and approved to discover out the components affecting the acknowledgment of learning in online mode among the medical staff. A huge populace of therapeutic staff taken an interest within the accommodation of this survey. Among the huge populace proportion of females were more when compared to male. This article too proposed that a few boundaries were uncovered by doing this ponder which included the unsteady web quality, specialized issues, and need of electronic gadgets, and the recurrence of the said reports was most elevated. In addition, areas of concerns to studying were illustrated by a few analysts. The Other concerns incorporate foundation issues in innovation and effecting issues and other strong and administration issues. The paper too outlined online mode of learning ought to be trusted and must meet the fool-proof basis for the web entrances and stages. At the side that different other obstructions were moreover accept which incorporate the issues among the students, teaches, and various other corporate issues.

Half of the populace was restorative educating staff and half of the populace was the clinical staff. This article recommended that 77% reacted through online handle as a valuable prepare and online studies as advantageous within the advancement of the learning handle. 76% of staff reacted that e-studies was a user-friendly handle and found it simple in working the online entries and stages. Nearly 80% of staff acknowledged e-studies as a palatable way of studying and keeping up social separate (Zalat, et al., 2021, p. 32). The majority of the responding medicinal staff thus stated that there is a high degree of Web-based approval among the healthcare personnel. Although some employees mentioned that there are some difficulties with online study. The issue of erratic online access was mentioned by nearly 40% of the staff, while only 32% mentioned a dearth of technological gadgets like notebooks or processors. Because of the institutional lockdown, e-learning has been broadly and universally embraced despite its many benefits and drawbacks. The move was very abrupt and inadvertent, and it also offers the chance for worldwide online learning expansion.

According to a scholastic piece, organizations and institutes had a goal of utilizing clever and succinct understanding more widely. (Mahmodi, 2017, p. 12). The colleges were interested in a variety of smart technologies, including smart boards, internet archives, digital books, etc. Internet learning, also known as online education, is a useful way to advance the teaching and learning process. In the healthcare field, where hospital staff members and students are interested in using and engaging in online learning, the implementation of education through online mode has also received widespread exposure. There are several different E-learning acceptance models, some of which include external variables that are split into utility and gadgets ease. (Mahmodi, 2017, p. 22).

If the gadgets or acquiring technique is simple to use, the staff will first believe its utility. Next, they will notice how the user uses it, and if their attitude is positive, they will determine whether they intend to use it. Only then will they consider how the Online education is actually used. The employees and children' reception of online education also depends on the societal consequences that might influence their attitudes toward tech use. The recognition standards for web teaching are also driven by numerous qualitative characteristics. According to this article, most employees of some companies were engaged in online instruction, but due to various factors, including the influence of staff behaviour, societal.

According to a renowned study paper, the COVID-19 epidemic was experienced with a Rapid instruction structure and acquiring process. Thanks to the closure of numerous colleges around the globe, this outcome offers an option to the study process. Even with the typical process accessible for oversight, conducting private courses at the institution level was challenging. (Ambrose, 2022, p. 29). The administrators of the various universities changed the instruction procedure to an online method of instruction as a choice to offline classes. To improve communication between the student and the instructor, many colleges adopted online platforms as an alternative to traditional classroom settings, including Google Meet and the sum of universities, which adopted Zoom Meeting. With tutorials, debates, online demonstrations, and other evaluation techniques like quizzes and report writing adopted for evaluating the student's abilities, the majority of learning activities were conducted using instructional videos and materials. Using the internet, teachers, teachers, and scholars are now connected thanks to the adoption of E-learning in colleges. For performing acquiring and instructing programs, several colleges had embraced their portals. (Ambrose, 2022, p. 32). The approval of web studying among students is influenced by

several variables, ranging from the instructing and leading attitudes to the accessibility of course resources. Many institutions found a means to advance their electronic instruction and online assessments systems, which had a significant impact on the learners' acceptance of the tech. Some of the strategies included giving the teachers better training. The platform where the training contents were posted was used by the pupils. The trainees also received training on how to use internet resources.

Along with this, the study's conclusions indicate that the majority of pupils and other faculty members were happy with the use of online learning, and it was generally regarded as a different method of instruction. It can be challenging to satisfy some students and workers digitally. (Ambrose, 2022, p. 30). The approval of web studying among students is influenced by a number of variables, ranging from the instructing and leading attitudes to the accessibility of course resources. Many institutions found a means to advance their electronic instruction and online assessments systems, which had a significant impact on the learners' acceptance of the tech. Some of the strategies included giving the teachers better training. The platform where the training contents were posted was used by the pupils. The trainees also received training on how to use internet resources.

In overall, the obstacles involve the accessibility of technological gadgets to access this online education. An unsteady system conjunction was another reason for the rejection of e-learning, in addition to the fact that students who are not familiar with technology find it challenging to use the via the internet mode of instruction. In addition to this hurdle, some reports suggest that prolonged screen time strains the eye and back skeletal muscles. This paper offered a comprehensive analysis of the global recognition of online education, concluding that while it is widely used, it also has some drawbacks that can only be overcome by a blending mode of learning, which combines an online learning environment with an offline learning process.

The variables influencing the acceptance of online learning as a teaching tool have been confirmed by a new recharge finding. (Salloum, et al., 2019, p. 28). The student's inspiration, the individual's creativity, the quality of the content, the learner's degree of stress due to prolonged exposure to the computer, and the method's quality, effectiveness, and computer-related factors were among the many other factors. Improved content quality and system quality have a positive impact on learners' willingness to embrace and use the online instruction process as a tool for instruction. This is due to educators' positive attitudes. (Salloum, et al., 2019, p. 15). And I have the tech that the gadgets manager requires to raise

the standard of the online developing system. According to the article, students who are proficient computer users and those who must improve their interpersonal skills through online interactions have a positive outlook on using learning as a teaching instrument. As a result, the adoption rate of e-learning as a tool for education is comparatively low and could increase positively if the component under study is improved.

3.6 Advantages of E-learning as a teaching tool in the COVID period

According to the author of a scholarly article E-learning itself has several benefits for well-established educational institutions and medical institutions. Because of these benefits is often referred to as a standardized way of education. General studies about E-learning procedures also confirm the benefits experienced by the implementation of E-learning in the medical field. E-learning has a potential benefit in fulfilling the need of the medical student and staff in the process of learning (Arkorful, and Abaidoo, 2014, p. 17). E-learning provides knowledge in a digital note which can be modified by the instructor as per the learner's requirement. Some of the advantages of the implementation of E-learning in medical fields are that the online mode of learning is very much flexible when other issues like time and place are considered. In this mood of learning the student Have the opportunity to choose the time of learning as per their preference. During the period of a pandemic caused by Coronavirus, all the institutions and universities faced lockdowns therefore virtual learning period of Institutions and universities was modified flexibly which proved to be advantageous for the medical staff and students (Arkorful, and Abaidoo, 2014, p. 18). The author also stated that E-learning had a modified method of learning which proved to be efficient and increased the quality of knowledge and qualifications. During the Global pandemic libraries and other physical resources for medical use was unavailable during this phase online libraries and other online resources opened access to vast information, which was difficult to achieve through physical sources of information. E-learning also enables the opportunity for introductions between learners and staff from organizations and different hierarchy levels (Arkorful, and Abaidoo, 2014, p. 13).

This characteristic of E-learning benefited various patients and other staff to interact with doctors from different organizations and share knowledge about medical issues. This advantage help lowering the barriers which have a potential restriction for the learners having communication problem thus E-learning help in the motivation of learners to interact and enhance their communication skill. Another benefit of E-learning can be considered it

helps the learners to save transportation costs and help them to save the energy required for transportation in this way the learner can invest the saved time in learning new skills which will motivate them to undergo the constant process.

A well-established article ensures that online learning was established as an educational tool a long time ago but due to fewer requirements of online learning it was not commonly used by the universities. Online learning grew rapidly from the time of the COVID-19 outbreak, various global actions were taken which included the closure of business organizations, educational organizations, and medical universities. Only a few emergency services were active to help mitigate the social problems and provide the basic services required for fulfilling the basic needs at a social scale (Mahyoob, 2020, p. 26). This sudden closure of universities for a long period resulted in the rapid shift of the traditional method of learning to a widely accepted E-learning or online mode of learning which uses different online platforms and portals to Provide information about the procedures, operations, handling of resources and theoretical knowledge about the course through audio-visual clips, standard online graphics, pictures and through accessing a huge e-Library. The author also suggested that E-learning has a well-established range of advantages that properly benefits the learner to achieve specific knowledge (Mahyoob, 2020, p. 32). The enlisted advantages of online learning include that E-learning considers the preference of the medical staff as a learner and helps the learner to concentrate on the related topic according to their preference. E-learning also helps to differentiate between every learner's preference and sets specific content for different learners based on their preferences and emphasizes the information about that related topic. During the time of the coronavirus pandemic, the E-learning method focused on various information about the novel coronavirus outbreak and relevant information about preventive measures. Along with that, it aided the interaction between medical staff and the medical practitioner. Information related to the handling of COVID patients and other safety precautions-related information were given by the online mode of learning or E-learning.

The Other advantages of E-learning include that the number of administration staff required to provide guidance training demonstration are lace compared to the offline mode of learning as in the case of online mode a single staff can concentrate on many learners and also no limitations of room space is involved in E-learning (Mahyoob, 2020, p. 21). During the pandemic situation, there was a scarcity of instructors and other medical practitioners a single practitioner or instructor could give instructions to many learners. It also prevented

the congestion of learners in a particular room otherwise which would infection rates. Implementation of E-learning benefits in self-boost of confidence and speed up the learning process of the individual learner, and this leads to self-satisfaction and reduced extent of stress.

A group of researchers recognized the role of effective online learning also known as E-learning in medical education. According to the author online learning are the improvement of the performance and awareness of individual using online information technologies. The article also states that E-learning is a substitute for traditional learning, rather E-learning is a complement to traditional learning, this refers to the fact that online learning can attain great height and acceptance when combined with offline or traditional learning. In relevance, to medical education, a strong infrastructure is a primary requirement, and this strong infrastructure will incorporate the storehouses and e-libraries needed to manage for easy access to information at the time of need. E-learning has a significant role in various sectors, and it benefits self-learning, and collaborative learning in which the learner interacts with several other learners and instructors from the same or different levels of organization helps the learner to overcome the fear of communication (Maatuk,et al., 2022, p. 11). E-learning also transforms the role of the instructor or the professor as the instructors can attend to many learners virtually, unlike the physical mode of learning which has a restriction on the number of attendees.

This article also suggested that E-learning supports personal learning purposes as it enables the control for time management and sequential learning of preferred content. Moreover, the medical staffs have more improved accessibility to information, and stress-free content modification (Maatuk, et al., 2022, p. 17). Medical learners get personalized instructions based on the preferred content of the learner. Among all the benefits improvement in accessibility is very much essential in the learning process as learning does not always occur through preplanning, during the sudden need for information these improved resources benefit the learner.

The same article stated that several additional benefits of E-learning include the uniform and equal knowledge distribution of the content of a specific course among the learners, which is more beneficial compared to traditional classroom learning where the instructors give different levels of lecture to different groups to learners as a consequence some group may not have the same information (Maatuk, et al., 2022, p. 14). In addition to that E-learning analysis facility through which whether the learner had learned can be found, which

is done through several types of assessment. Among all of these benefits, every benefit is useful in the COVID-19 pandemic period. Especially learning enhancement, enhancement of access to various resources and a large number of resources results in greater acceptance of learning among the medical due to the vast range of information which helps the medical staff to gather information about the preventive measures of novel coronavirus infection along with the measures of social distancing that added in reduction of the spread of coronavirus. That enhancement in introduction helps the learner's efficiency to get enhanced this way motivation to get enhanced with flexible learning skills. This article shared an overall view of several advantages of E-learning that included better flexibility, better Resource Management, better time management, self-motivation, and interaction skill improvement. Scholarly articles identify the cause of the shift towards E-learning from the traditional methods of learning. The majority of universities that deal with medical information had predefined E-learning facilities and were not acting as the main feature of the learning process (Mukhtar, et al., 2020, p. 22).

The Rapid shift initiated by the rise in the Global pandemic caused by the coronavirus which late to the massive spread of this disease among various other human beings this situation led to the closure of many administrative blocks including educational institutions. For the social well-being of students and the medical staff, to maintain the flow of Information and knowledge related to the course, and to prevent the widespread Coronavirus among the student and staff this rapid shift toward the online mode occurred (Mukhtar, et al., 2020). Of the Rapid shift, several universities provided innovative ideas to deliver the best content and to maintain the enthusiasm for learning among the learners. The lecture of courses for several hours is monotonous. Thus, to make the lectures more innovative online platforms are used. Online mode of learning has features of a whiteboard, smart quizzes surveys, and discussions which enables both-way communication between the learner and the instructor to share various ideas during the lectures. Several online platforms are used for the conduction of sessions among which Microsoft teams Google meet zoom meet and WebEx meetings are commonly used. Advantages include two categories flexibility and student Centre learning (Mukhtar, et al., 2020, p. 35). Flexibility includes remote learning also known as distant learning during the recent global pandemic online mode was the only way to efficient and effective learning. During social isolation, remote learning played a great role in the prevention of viral infections. The benefits also included the easy and stress-free administration, the respected instructors can check up on the learners through live video

coverage over the online platform so that every learner can learn the best quality content. Along with those students, those who are not so confident communicating can easily interact through online portals and also online communication mediums. This helps the student and medical staff to interact confidently. This also acts as a strategy to regulate the motivation among the learners. The online mode of learning provides a comfortable environment for the learners to share their experiences and thoughts about the courses learned. The knowledge of the learners was checked using online assessment tools. In addition to these advantages of E-learning, there is another essential benefit of student-centred learning, which involves the pre-recorded lecture videos and materials in the university portals and enables the student to undergo a self-learning process in this method education dependency towards the instructor and faculties gets reduced.

A research article has identified that an outbreak of the novel coronavirus changed various aspects of life. In addition to these changes comedy, 19 has changed the way of education system developed a better way of learning without exposure to social gatherings through the online mode of education also termed the E-learning process (Bączek, et al., 2021, p. 13). According to the author, E-learning is oriented with advantages that benefit both the instructor and learner among several benefits one of the major benefits of online education during the pandemic was the flexibility of the system which provides no specific time for studying and learning set the time and schedule as per their preferences. Other benefit includes the burden of the instructor got reduced as the attendance is automated through the online system and the assessment of the quizzes is also automated using different technologies (Bączek, et al., 2021, p. 15). Moreover, this online mode of learning is very much accessible, which refers to students' approaches to the instructor through various modes of communication. E-learning is also considered a cost-effective system of education and learning by which both the student and the instructor saved various costs oriented through transportation and traditional l learning methods. Moreover, the online learning process involves effective and innovative learning through which the student or the learner understands the topic of discussion rapidly and efficiently.

3.7 Problem Statement

COVID-19 brought about a lot of issues and a range of negative experiences. It was not just about the mortality rate but it was about how the pandemic disrupted the entire economy of the world. It created a lot of problems in several industries as many people lost their jobs,

hospitals were full of patients and the education system completely stopped. There was a lot of issue in figuring out strategies about how to develop the best method for enabling systems back to normal. With the changing circumstances and scenarios, every day and with the higher rate of mortality covid-19 became a very difficult situation to control (Alqahtani, et al., 2020, p. 20). Just like it affected other industries, the education industry was usually affected because the entire system collapsed. There were only some universities or schools in the entire world that promoted the constant E-learning mode of education. However, in cases where the traditional mode was the only way of promoting education, it became very difficult for those countries and those regions to suddenly shift into E-learning.

3.8 Problem Summary

The pandemic has taught a lot today to the education system and industry because of its unprecedented crisis. It is not just about the online learning experience but also about the uncertainties that the students have faced. This is equally about the investigation of the studies and determining the area with limited information. It took a lot of time itself to settle up with the strategies and to bring about rules and regulations for bringing the education system once again with the E-learning platform. This challenge requires to be overcome because other than that the online mode of learning would not become enjoyable or appreciable either. There are many types of students starting from elementary school students to university medical students as mentioned here. The university medical staff would face a different kind of problem regarding the E-learning platform while on the other hand, the elementary school students will find other learning challenges. The most important component, however, is for the tutors to make proper student engagement. This is necessary for indicating a good E-learning experience and for reducing the number of challenges faced during the process. This means with very the number of students and with greater E-learning platforms the competency and the technology would not remain a challenge.

Digital literacy is a necessary issue. Utilization of the digital media and the online platform for education comes with different strategies that have to be implemented by the students. E-learning influences students and educators in different ways. It is not just about the E-learning environment that makes everything synchronous but also the nature of the students and the scenario. With the pandemic, it became very important to underline new methods through technology constructs only to help students continue with their education by maintaining the aspect of social distancing. In the physical classrooms, it became very

difficult. Hence, technology and literacy are a necessity. Even today, after 2 years of the COVID-19 outbreak the world is still suffering from its after months, and their many people who are getting affected by Covid-19, every day, even now. This means it will take a very long period to stabilize everything and to bring proper treatment and medicines to cure people affected by covid-19. The education systems can't remain shut for that long period, with greater support systems and for academic reasons themselves the use of technology became a must (Gumantan, et al., 2021, p. 14). There are greater impacts made on professional development with the concept of E-learning because the technology is getting upgraded and it is all about digital transformation. In organizations and even in the education and health care systems, digital transformation becomes a necessity. As it is found from the research, this is equally related to the conventional way of teaching because embracing technology gets difficult as it is stereotypical and it takes a lot of time to embrace the entire aspect.

However, with E-learning, everything has become much more disciplined and self-regulated. There are conventional ways in which the teaching is continued even today academically. According to the instructions of the World Health Organization, teaching during the Covid-19 pandemic should be done using the online mode. This is equally about the relative construct of embracing technology and finding out ways that can psychologically impact management and governance structures for the education systems. Making the students digitally literate and upgrading teachers and faculty members in different universities becomes necessary. In a general science study or something that relates to the upgradation of a nation or the entire world. The research explains, just like there is professional development necessary with the concept of digital transformation, the education system also requires it. Proper emotional functioning and proper behavioral context E-learning are great methods. Students, however, are facing a lot of challenges like problems regarding attitude or regarding the issues of effective internet availability. Moreover, there are a lot of problems regarding the technological complexities as has been mentioned which is making the experience bitter (Almaiah, et al., 2020, p. 9). This is equally about the potential challenges and also about underlining the online classes which come in clusters but are difficult to set up at the beginning.

The component of online learning is the aspect of emergency because the students experience a comprehensive list of problems and their solutions as well. At times the challenges are aggregated while during other times the challenges are solved by a certain

quality of technical expertise. This is also related to the conclusive findings concerning the perspectives of the students and the educators. The basic concept of confidentiality of the information and also about anonymity or necessity but at the same time the involvement brings in an oriented context of technology involvement (Pustika, 2020, p. 5). Online learning has become an official system in various countries and various schools and universities. When talking about medical students it has become easier to underline medical technology through online learning. As per the research analysis, different protocols are followed and other aspects of attitude enhancement for providing psychological support to medical students. Psychological support and resource management deal with aptitude enhancement. Therefore, for medical students, it becomes necessary to underline the student's experience with E-learning along with their peers and teachers. The basic concept is about identifying the restrictions and also aggravating the learning spaces because these are necessarily important to deal with. It is also about the peers and the Teachers along with the learning experience of the students whose interactions are aggravated. Hence, as per the learnings from the Covid-19 pandemic and the university medical staff, it is very prominent that E-learning has not just affected them positively but also negatively (Mseleku, 2020, p. 13).

Among a lot of negative consequences, the largest socio-economic strata got uplifted through E-learning. This is beyond the technical and psychological challenges because the university medical staff have overcome this problem through the implementation of decision-making and bringing in effective policy the socio-economic strata for lower-income and higher-income countries have been brought together through E-learning or e-education platforms. These are greatly acknowledged along with its robustness and its exclusively focused perspectives.

4 Practical Part

4.1 Research Questions

- What are the challenges faced by the University medical staff when continuing their education through the E-learning platform?
- What are the barriers to adapt E-learning for university medical staff?
- What impact does the E-learning platform have on the University medical staff?
- Which effective E-learning strategies have added value to the university medical staff?

4.2 Data collection

A cross-sectional study was carried out at the GMERS Medical College, Ahmedabad, India to collect the data from 1st December 2022 to 31st December 2022.

4.3 Study population and sample size

Participants in the study were invited to be members of the medical staff from the different departments who are involved in the creation and instruction of online courses. While those who declined to participate, retired, or were on leaves (such as maternity, illness, or other types of leaves) were not allowed to participate. 320 staff members were determined to be the necessary sample size. The total staff of the faculty of medicine at GMERS Medical College, Ahmedabad in the basic science departments was 2130 at the time.

4.4 Tools used for data collection.

Four sections of a semi-tailored electronic questionnaire were employed.

First Part: Participants' age, gender, marital status, place of residence, line of work (academic or clinical), current employment status, number of years of teaching experience, whether they have previously taught an online course, and length of experience is all sociodemographic and occupational data that are asked about.

Second part: Questions modified from a prior study about the opinions and experience of university staff with online courses. The staff members could express their degrees of

agreement by rating the questions on a scale of 1 to 5, with 5 being the strongest level of agreement.

Third Part: Questions about the difficulties of online learning. On a scale of 1 to 10, with 1 being the least serious and 10 being the most serious, medical staff should rate the difficulties faced by distance learning in order of their seriousness.

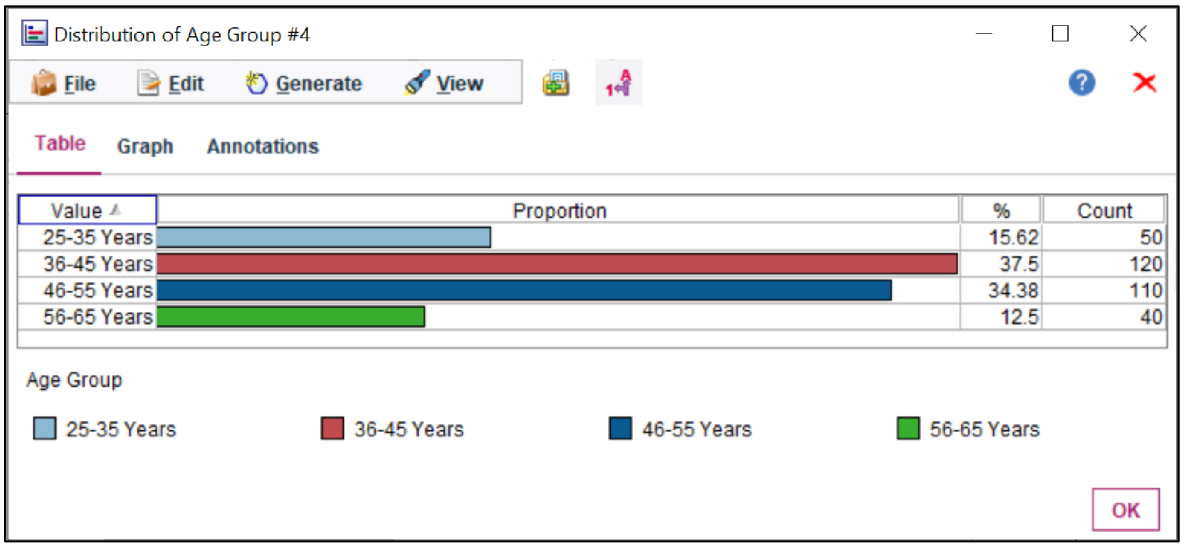
Fourth part: Questions for examining factors influencing the acceptance and usage of E-learning as a teaching tool by university medical professionals, based on the established Technology Acceptance Model. Perceived utility, perceived ease of use, and acceptance were the three components on a 5-point scale ranging from "strongly disagree" to "strongly agree." According to the median (median = 2.5), acceptance was divided into two categories: accept and don't accept. Scores above 2.5 indicate acceptance, while scores below 2.5 indicate refusal. In their work, the data analysis methods used to determine the percentage of respondents' responses are described in detail.

The range of results was compared to the following categories: Strongly Agree: 0–25%, Disagree: 26–50%, Agree: 51–75%, Strongly Agree: 76–100%.

4.5 Data Analysis

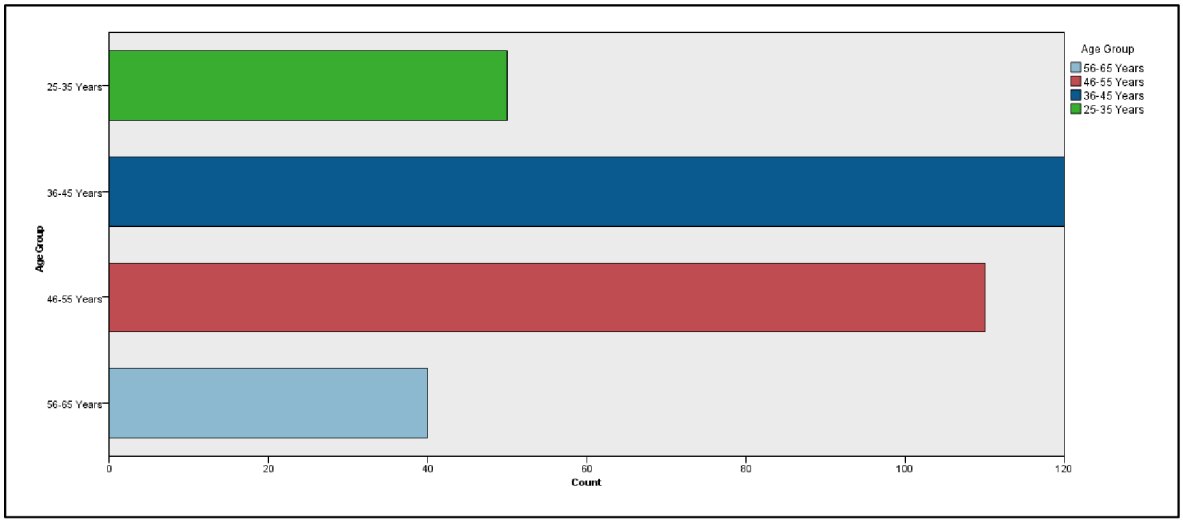
Age of the participants:

Table 1: Details of Age of participants



Source: Own processing

Figure 1: Graph of Age of participants



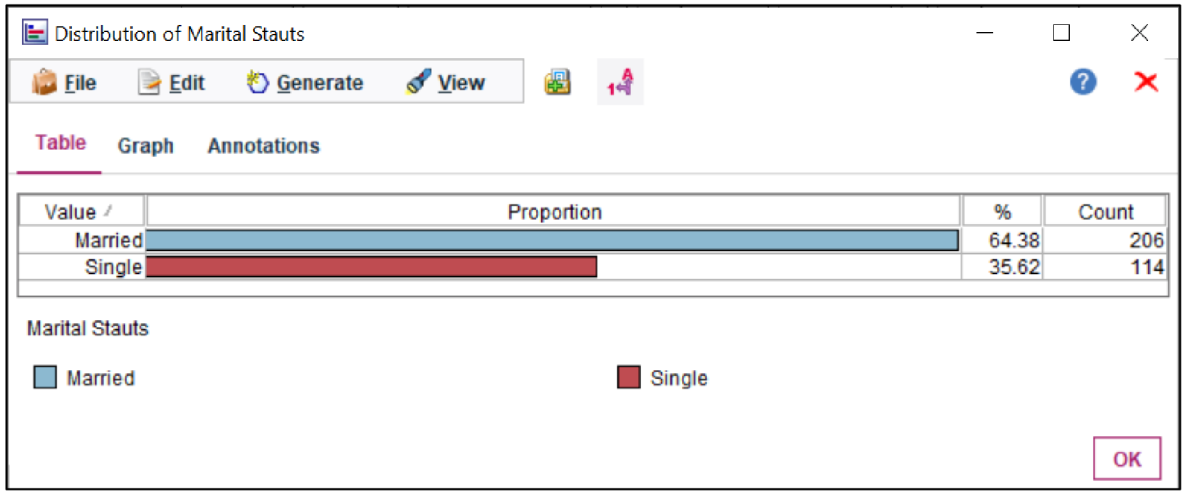
Source: Own processing

Analysis: The total number of the population selected for this study was 320 staff. They were categorized into four classes according to their age group. Upon analysis of this data, results were obtained which illustrate that 16% of the total population studied belongs to the age group of 25 years to 35 years of age. In addition to these data, the result also illustrates that 34% of the staff were from the age group of 46 years to 55 years of age, few of the staff were aged as the result shows that only 13% of staff were from the age group of 56 years to

65 years of age. Though most of the age group belongs to the age group of 36 years to 45 years of age. The mean age of the medical staff who participated in this study was found to be 45 years old.

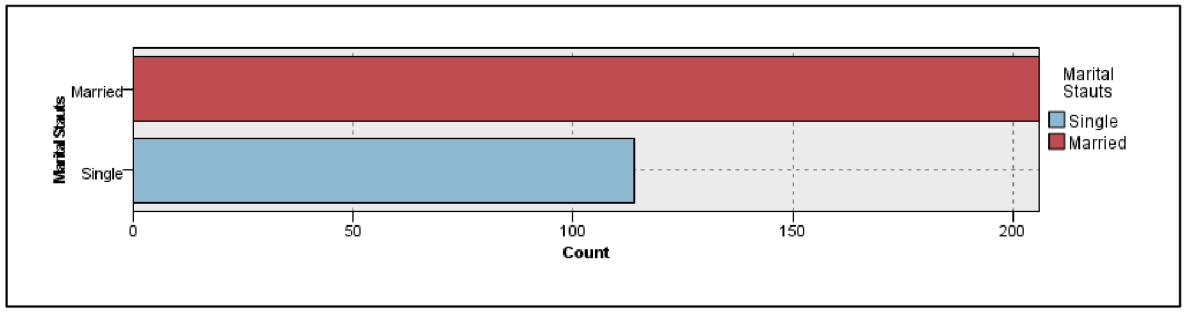
Marital status of the participants:

Table 2: Details of Marital status of participants



Source: Own processing

Figure 2: Graph of Marital status of participants

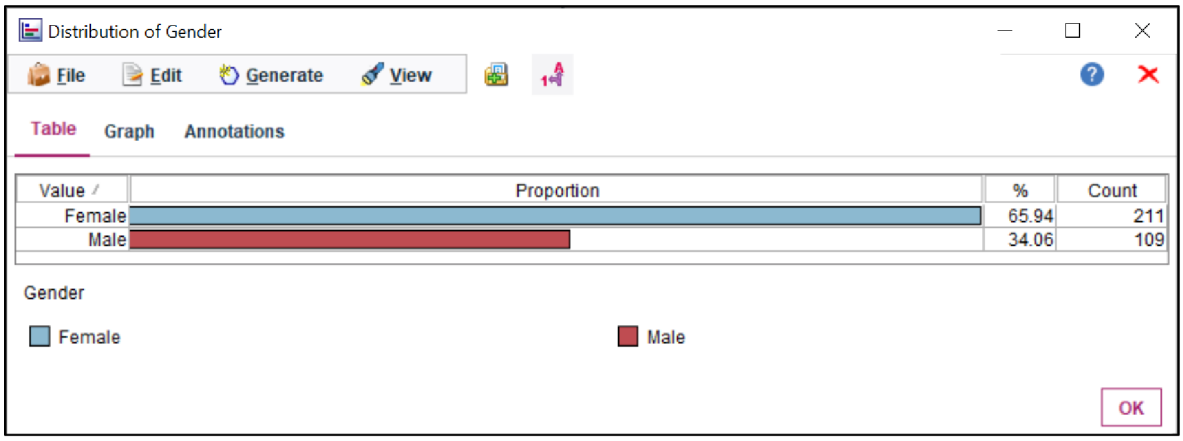


Source: Own processing

Analysis: The total number of medical staff took part in this study was 320 participants. These medical staff was analyzed based on their marital status and hence categorized into two division, which comprises married staff and unmarried staff. The analysis came up with the result portraying that majority of the medical staff, which comprises 64% of the population were married and the rest of the medical staff included in this study, which comprises 36% of the population were found to be single.

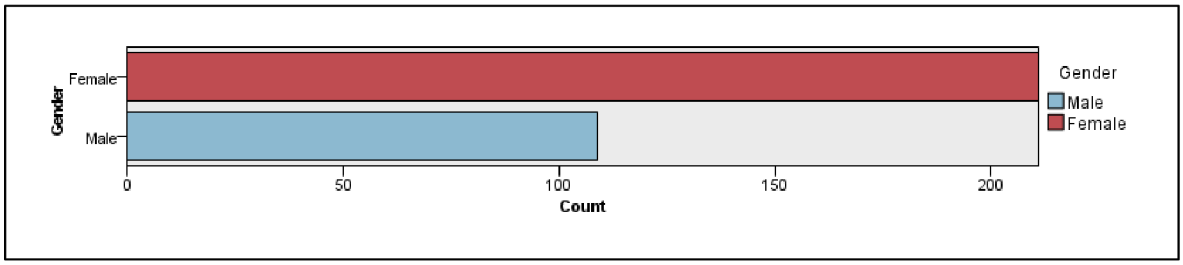
Gender of the participants:

Table 3: Details of Gender of participants



Source: Own processing

Figure 3: Graph of gender of participants

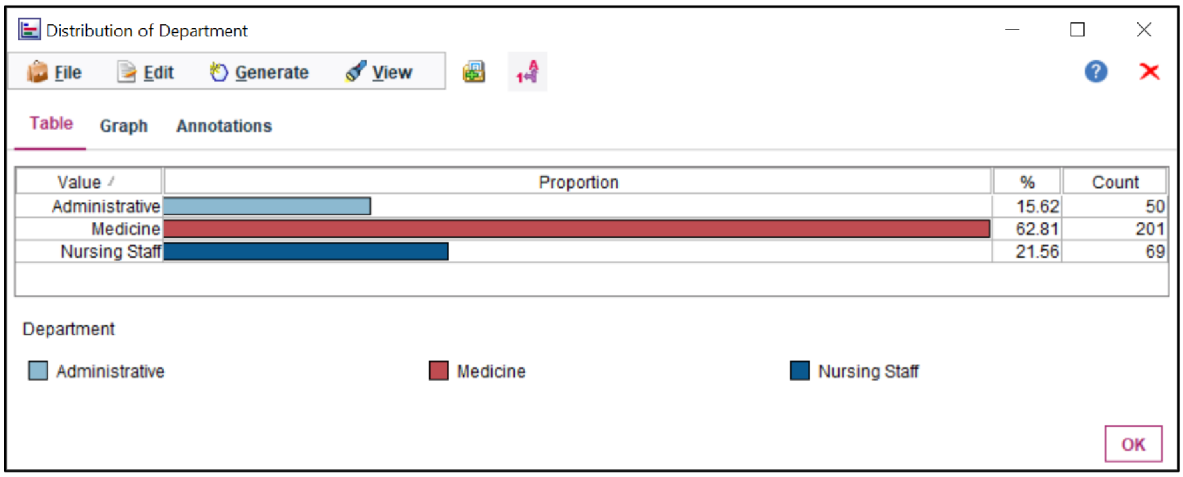


Source: Own processing

Analysis: The total number of medical staff who participated in this study was categorized according to the respective gender they belong. According to the graph obtained by analysing the observed data, it was found that most of the staff were women as 66% of the population belong to the female group, and the rest of the staff, which stands for 34% of the studied population belong to the male group.

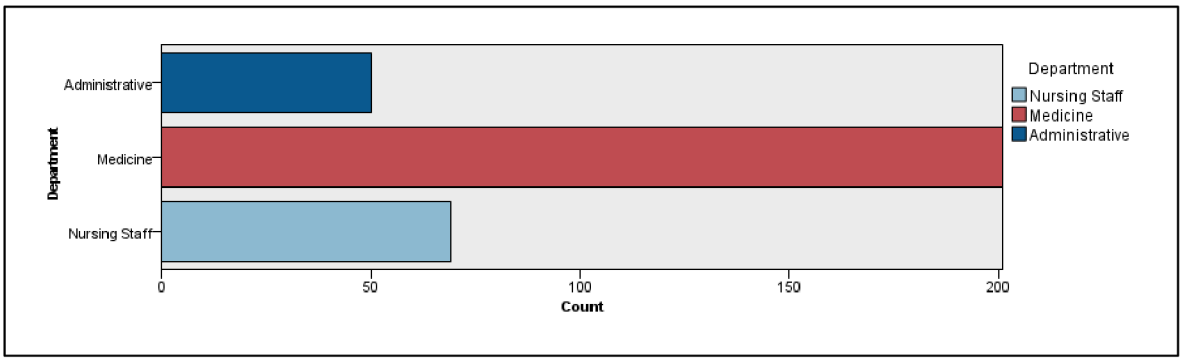
Department of the medical staff:

Table 4: Details of Department of the medical staff



Source: Own processing

Figure 4: Graph of Department of the medical staff

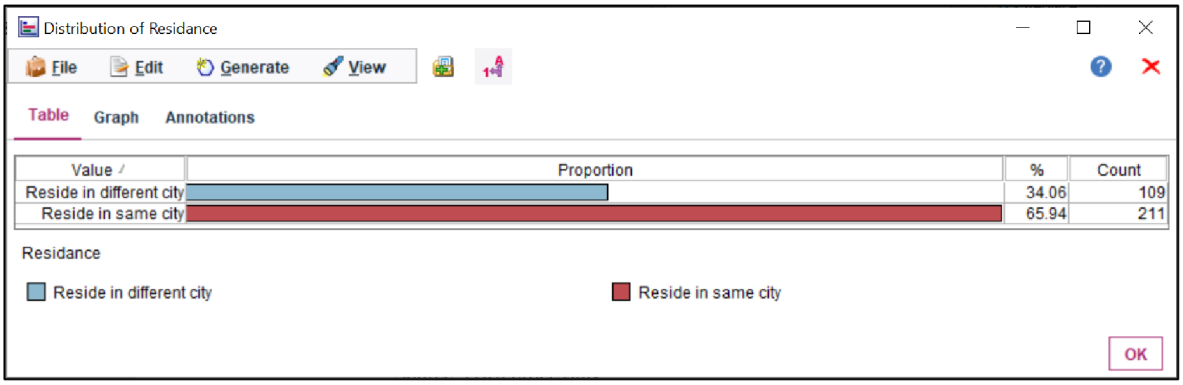


Source: Own processing

Analysis: Analysis of the department of the medical staff participating in this study included the categorization of the participants based on their department. 320 medical staff participated in this study which categorized them among three departments. The majority of the staff, which represent 62% of the population belong to the basic medical department, 22% of the medical staff participated belonged to the administrative department and very few ratios of the population of nursing staff (16%).

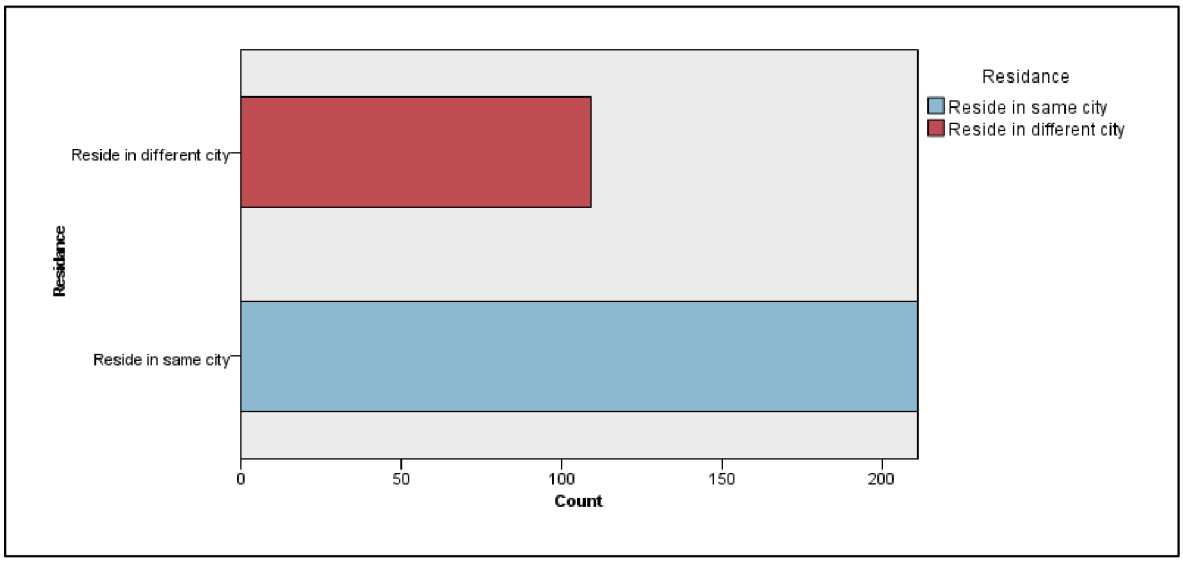
Residence of the medical staff:

Table 5: Details of Residence of medical staff



Source: Own processing

Figure 5: Graph of Residence of medical staff

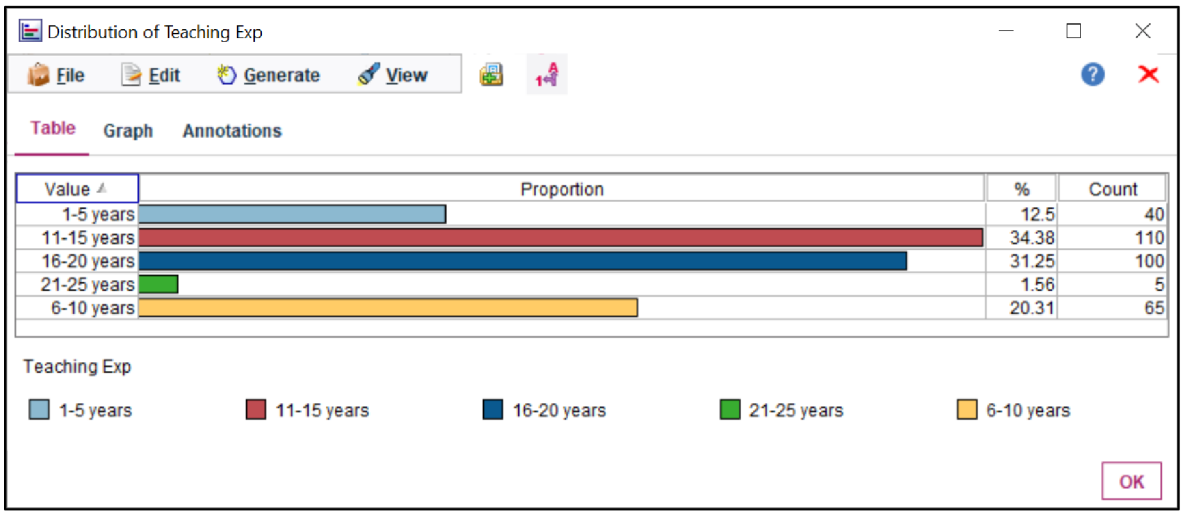


Source: Own processing

Analysis: The total population of medical staff who participated in this analysis was counted to be 320 medical staff, which included medical staff from different gender, different department, and different age groups. This analysis was performed based on the residence location of the medical staff and the result depicted that the majority of the medical staff resided in the same city which comprised 66% strength of the total population studied. Furthermore, the analysis also shows that 34% of the total population was residing in different cities during the time of data collection for this study.

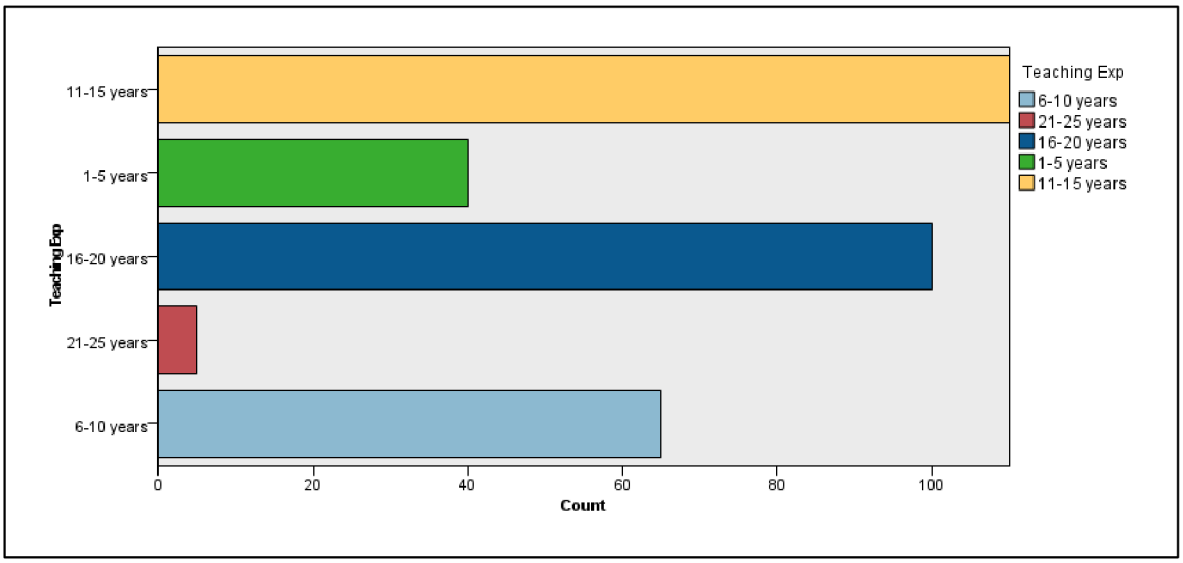
Teaching experience:

Table 6: Details of teaching experience of participants



Source: Own processing

Figure 6: Graph of teaching experience of participants

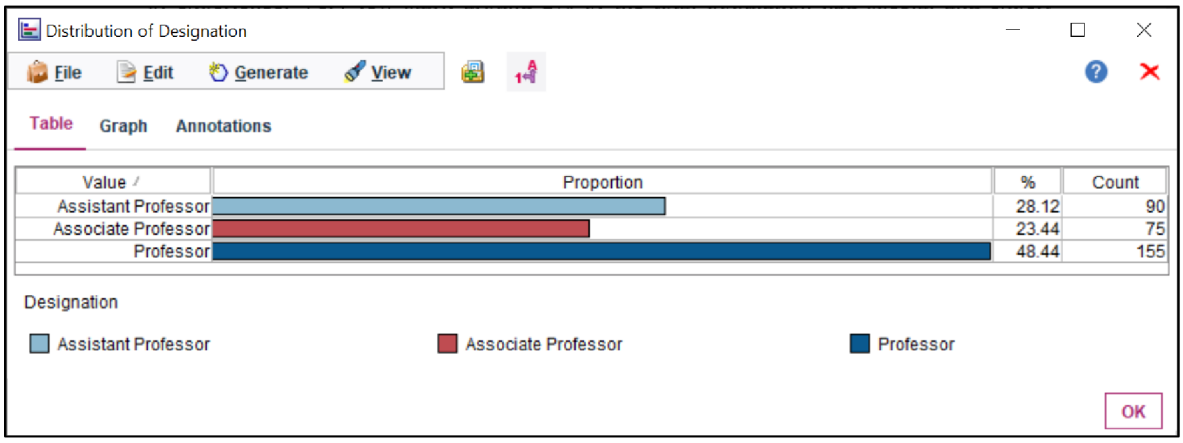


Source: Own processing

Analysis: Teaching experience in the medical field is very much essential in the medical field providing medical training, concentrating on this fact the analysis of the teaching experience of the medical staff was performed. For this analysis, the total number of participants, i.e. 320 medical staff were divided into five groups according to their years of experience in teaching. The results depicted that 13% of the total population were staff those who hold one to five years of teaching experience, and 20% of the total staff who participated had teaching experience between 6 to 10 years. The majority of staff had a teaching experience in the medical field of 11 to 15 years, which holds 34% of the total population. There is another group that holds a large ratio of the population that is 31% of the medical staff had experience teaching for more than 16 years and ranges between 16 years to 20 years of experience. Very few staff, around 2% of the total population had special and expert experience in teaching for more than 20 years. This teaching experience helps a lot in overcoming barriers to providing training to the learners.

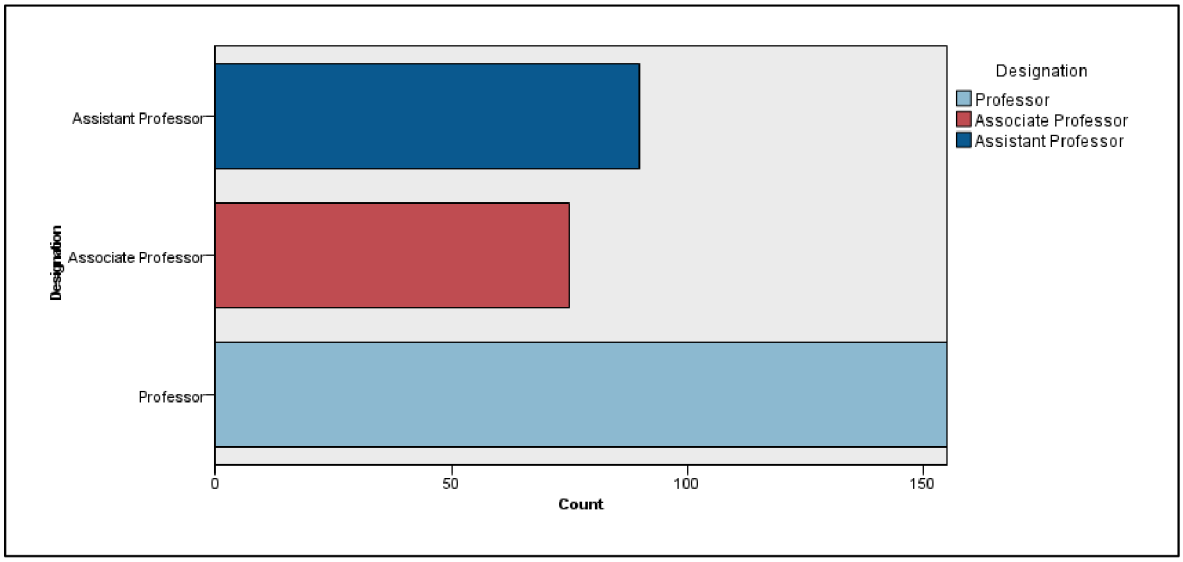
Designation of the medical teacher:

Table 7: Details of designation of participants



Source: Own processing

Figure 7: Graph of designation of participants

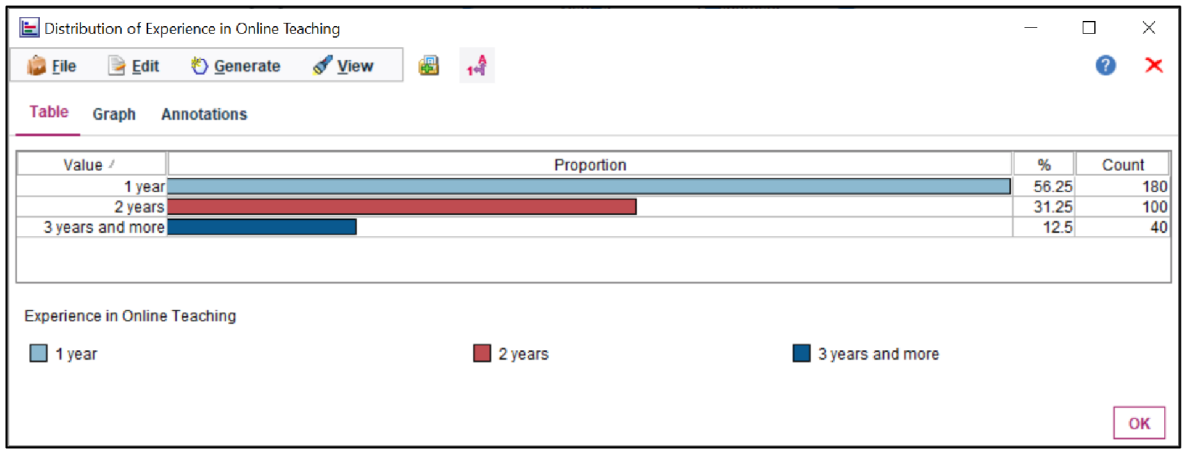


Source: Own processing

Analysis: When the participants were categorized according to their teaching designation it was found that there were three types of categories namely associate professor, assistant professor, and the designation of the professor. Through analyzing data it was found that almost half of the population (49%) were designated as a professor, 28% of staff among the total population were assistant professors, and very few ratios of the population, about 23% were posted as an associate professor.

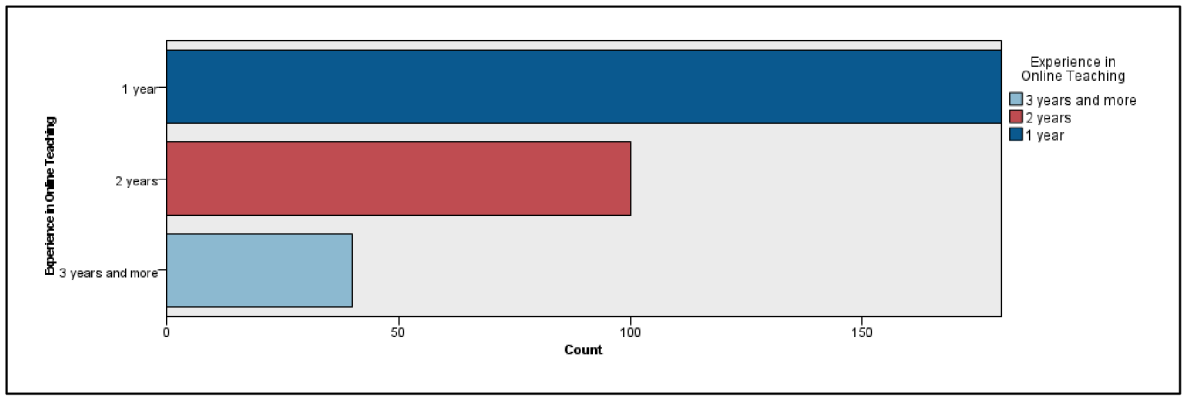
Experience in online teaching:

Table 8: Details of experience in online teaching



Source: Own processing

Figure 8: Graph of experience of participants



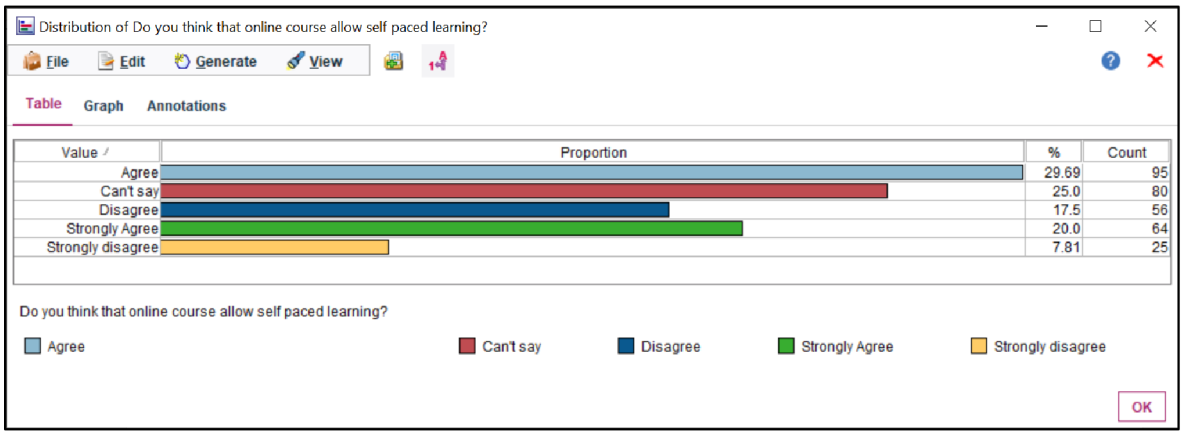
Source: Own processing

Analysis: The result obtained from the collected data was analyzed based on the categorization of participants according to their experience in online teaching and training. As online teaching is evolved to a significant level with the initiation of the COVID-19 pandemic. Thus, the long-term experience was not common among the participants. Though the result shows that the majority of the staff have 1 to 2 years of experience in the online mode of teaching, this category includes around 87 percent of the total population. A rare percentage around 13% of the total population had better exposure to online teaching for 3 years and above.

4.6 Analysis of data collected from the Likert scale survey.

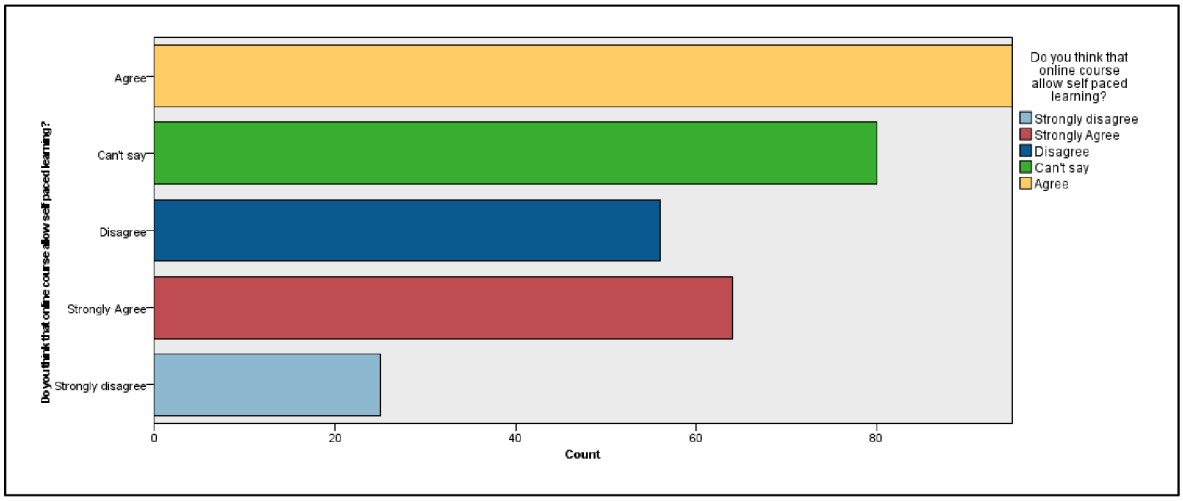
Question 1: Do you think that online courses allow self-paced learning?

Table 9: Details of Analysis of self-placed learning



Source: Own processing

Figure 9: Graph of Analysis of self-placed learning

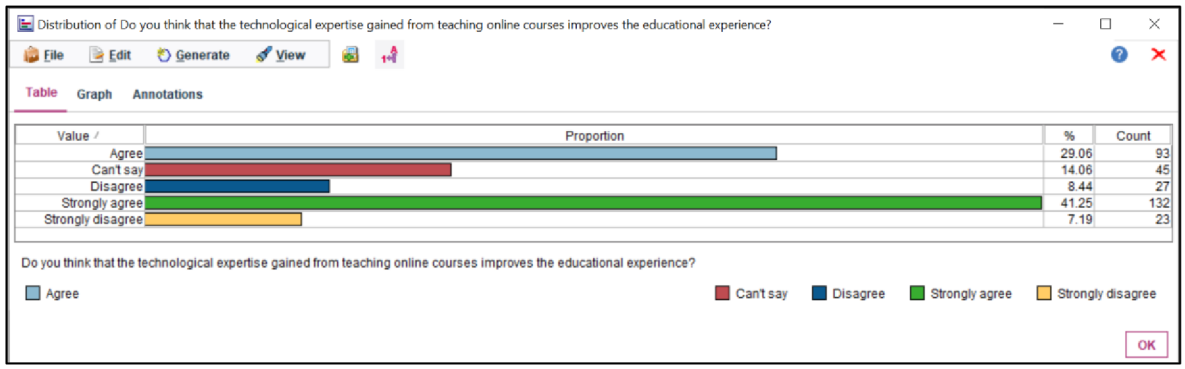


Source: Own processing

Analysis: The concerning question was to know about the participant's views on accepting that online education benefits self-paced learning. According to the analysis of the collected data, it was found that the majority of the medical staff with a strength of 30% had agreed and 20% of the population had strongly agreed that online education has a significant benefit in assistance of self-paced learning. Moreover, 25% of staff neither agreed nor disagreed with this question, these 25% of staff were not sure whether to agree or disagree that online education allows self-paced learning. 17% of the total population disagreed along with 8% of staff who strongly disagreed that online education consents to self-paced learning.

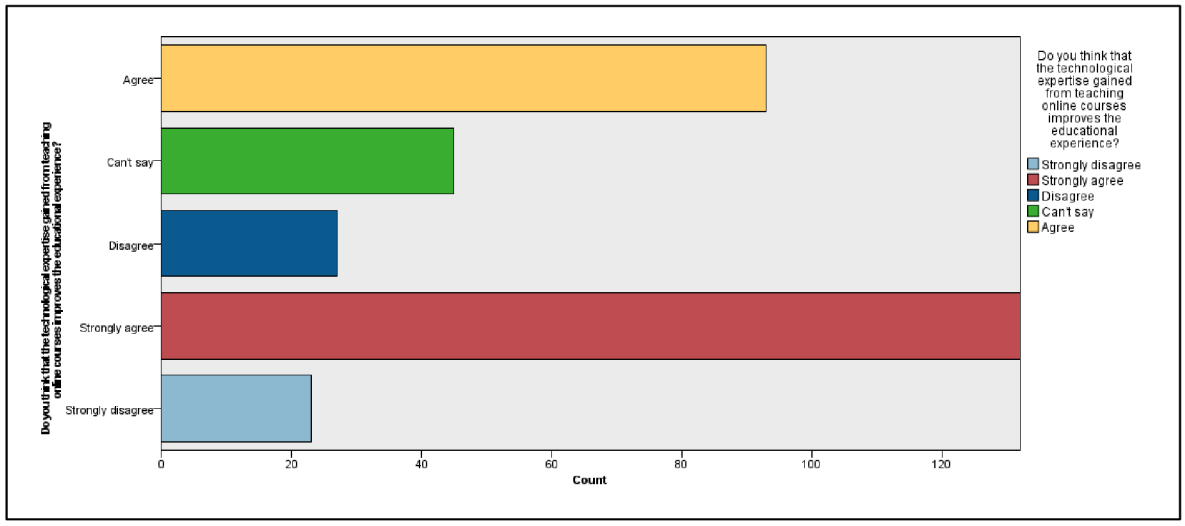
Question 2: Do you think that the technological expertise gained from teaching online courses improves the educational experience?

Table 10: Details of Analysis of usage of technological expertise



Source: Own processing

Figure 10: Graph of Analysis of usage of technological expertise

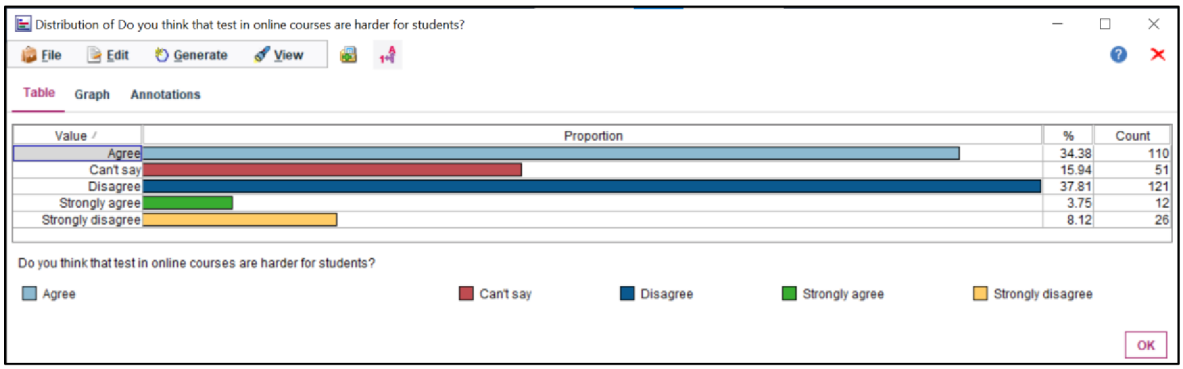


Source: Own processing

Analysis: The concerning question was to know about the participant's views on acceptance of the statement that technological expertise gained from teaching online courses improves the educational experience. According to the analysis of the collected data, it was found that the majority of the medical staff with a strength of 41% had strongly agreed and 29% of the population had just agreed that technological expertise gained from teaching online courses improves the educational experience. Moreover, 14% of staff neither agreed nor disagree with this question, and a few staff comprising 9% of the total population disagreed along with 7% of staff who strongly disagreed that educational experience gets improved through expertise gained in teaching an online course.

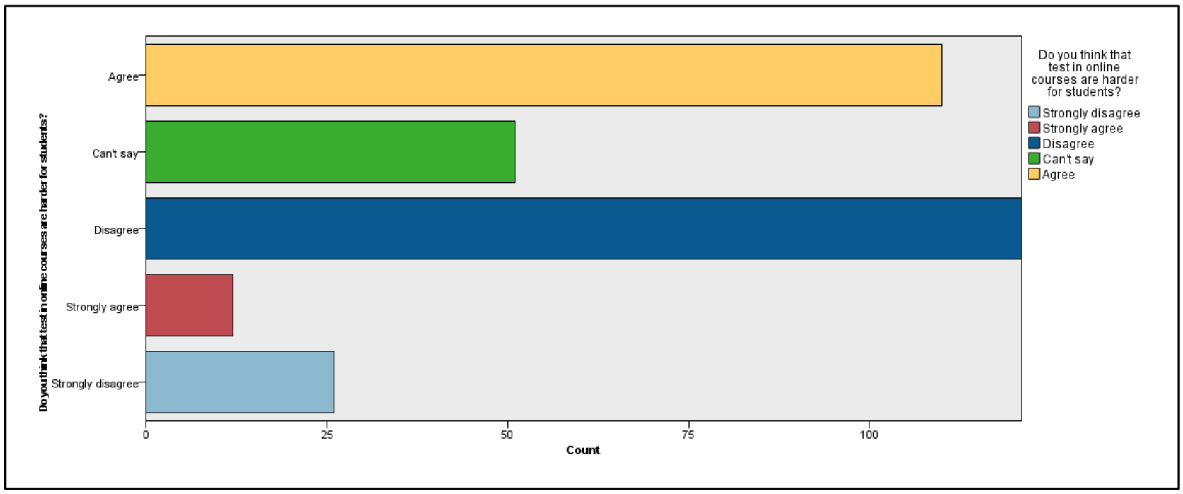
Question 3 Do you think that tests in online courses are harder for students?

Table 11: Details of Analysis of usage of online course



Source: Own processing

Figure 11: Graph of Analysis of usage of online course

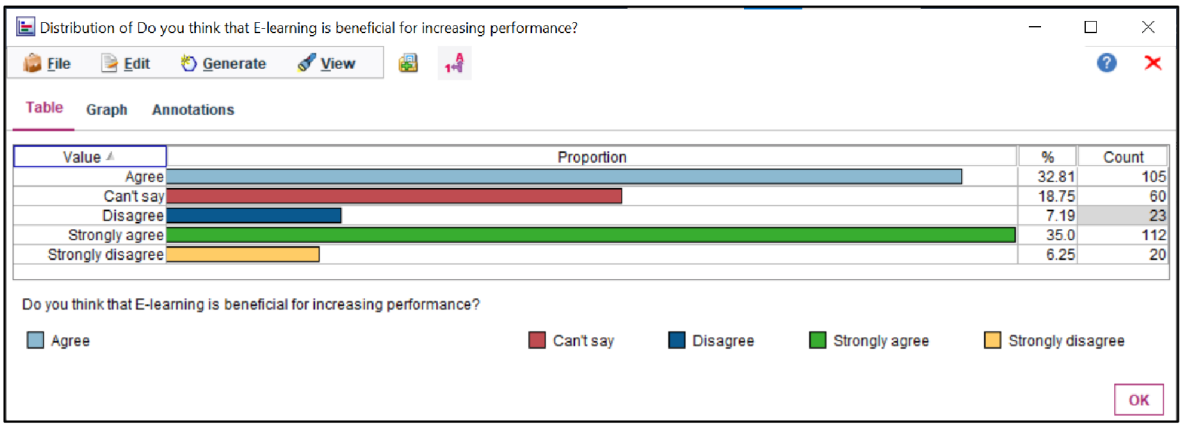


Source: Own processing

Analysis: The concerning question was to know about the participant's views on acceptance of the statement that tests in online courses are harder for students. According to the analysis of the collected data, it was found that the majority of the medical staff with a strength of only 4% had strongly agreed and 34% of the population had just agreed that online tests in online learning are harder. Moreover, 16% of staff give a neutral response to this question, and the majority of staff comprising 38% of the total population disagreed along with 8% of staff who strongly disagreed that tests in online courses are harder for students.

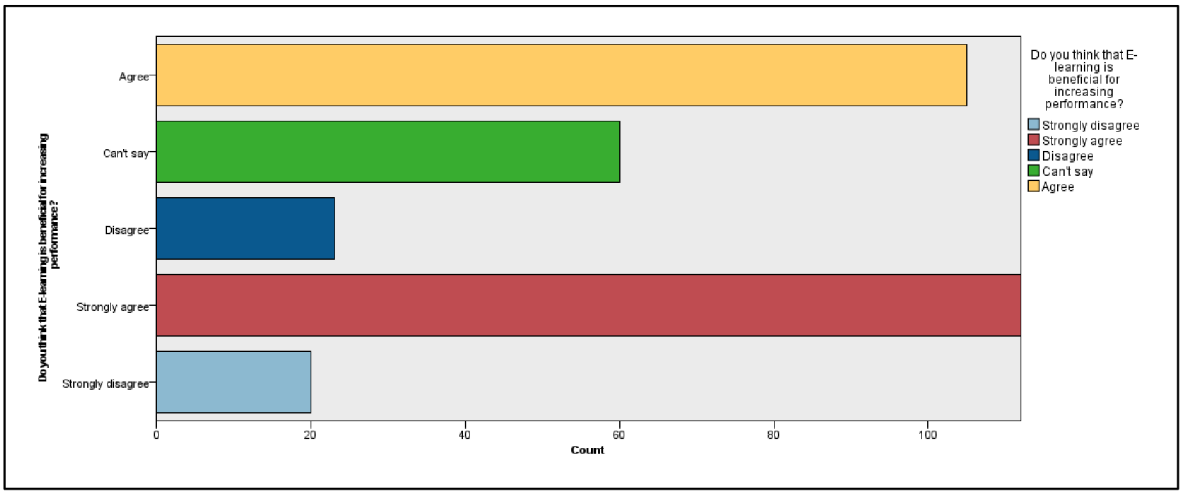
Question 4: Do you think that E-learning is beneficial for increasing performance?

Table 12: Details of Analysis of E-learning benefits



Source: Own processing

Figure 12: Graph of Analysis of E-learning benefits

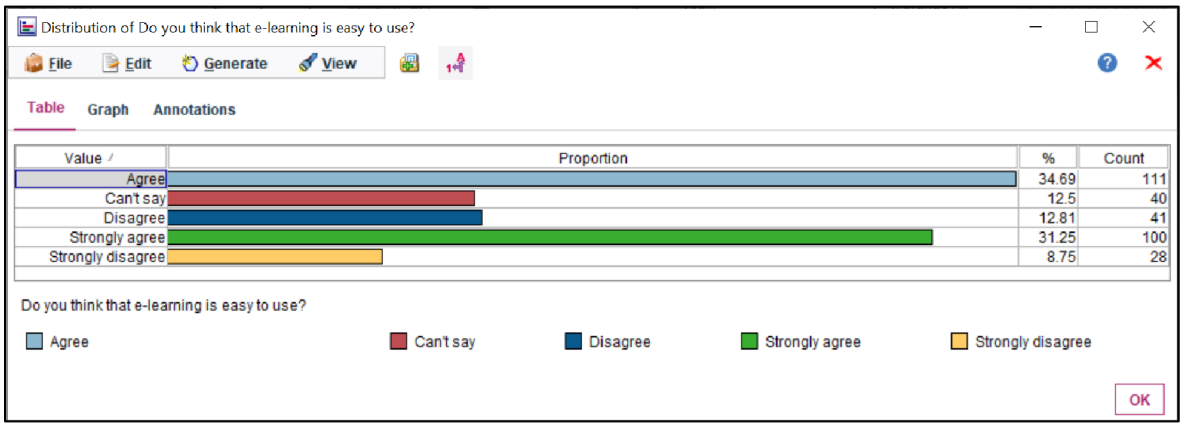


Source: Own processing

Analysis: The concerning question was to know about the participant's views on acceptance of the statement that E-learning is beneficial for increasing performance. According to the analysis of the collected data, it was found that the majority of the medical staff with a strength of 35% had strongly agreed and 33% of the population had just agreed that E-learning is beneficial for performance increment. Moreover, 19% of staff give a neutral response to this question, and few strength of staff comprising 7% of the total population disagreed along with 6% of staff who strongly disagreed that E-learning is beneficial for increasing performance.

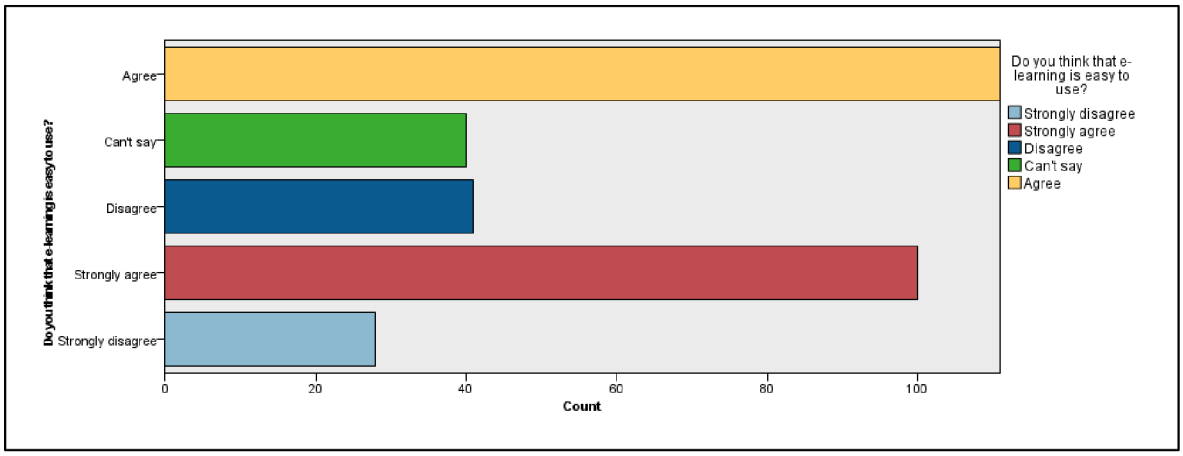
Question 5: Do you think that E-learning is easy to use?

Table 13: Details of Analysis of E-learning use



Source: Own processing

Figure 13: Graph of Analysis of E-learning benefits

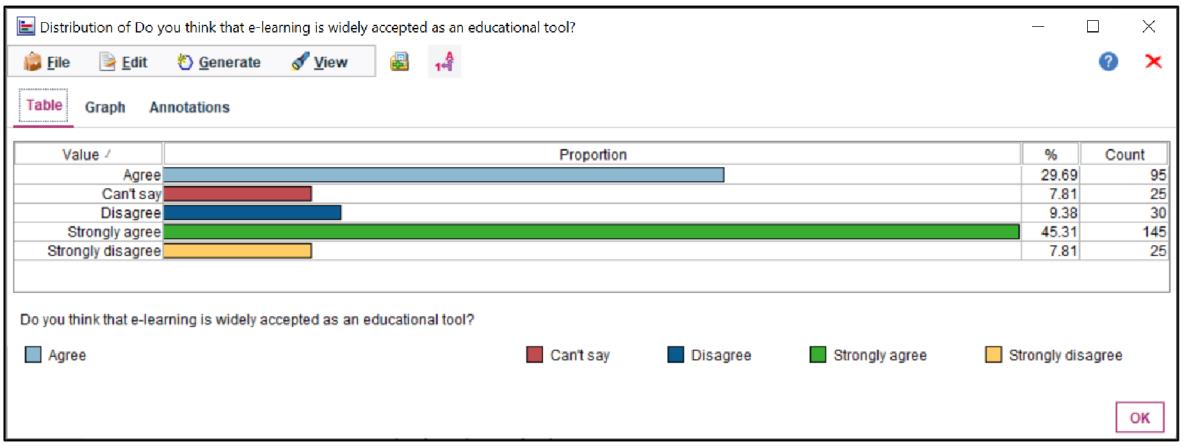


Source: Own processing

Analysis: Implementation of the Technology Acceptance Model to acquire responses revealed few data related to the aspects of acceptance of E-learning. The concerning question was to know about the participant's views on acceptance of the statement that E-learning is easy to use. According to the analysis of the collected data, it was found that the majority of the medical staff with a strength of 66% had agreed to the question comprising 31% strongly agreeing and 35% had only agreed that E-learning is easy to use. Moreover, 12% of staff give a neutral response to this question, and a few strengths the staff comprising 13% of the total population disagreed along with 9% of staff who strongly disagreed that the system of online learning is easy to use.

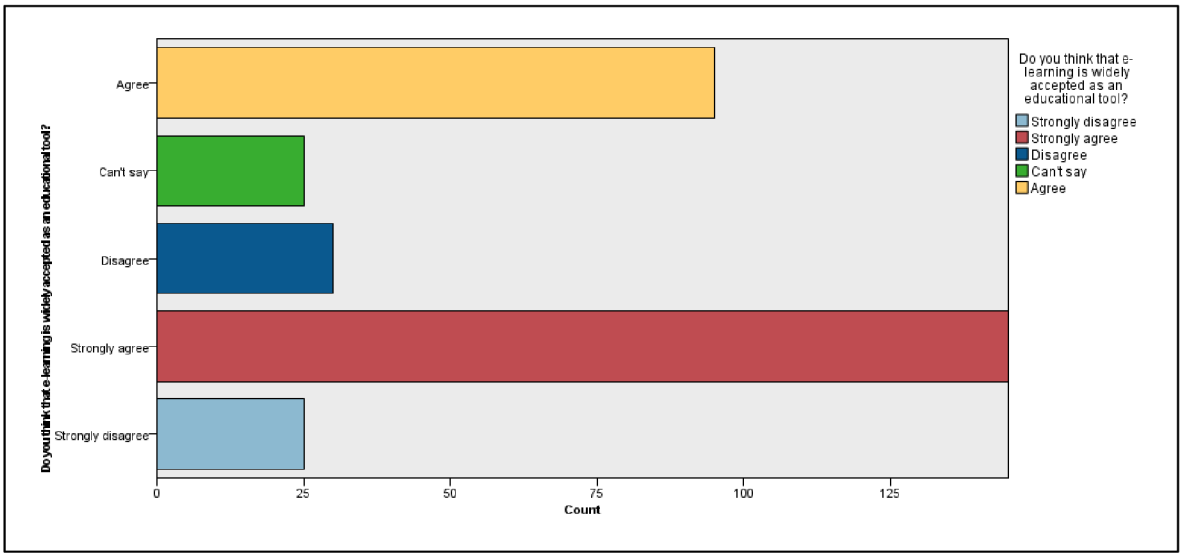
Question 6: Do you think that E-learning is widely accepted as an educational tool?

Table 14: Details of Analysis of E-learning acceptance



Source: Own processing

Figure 14: Graph of Analysis of E-learning acceptance

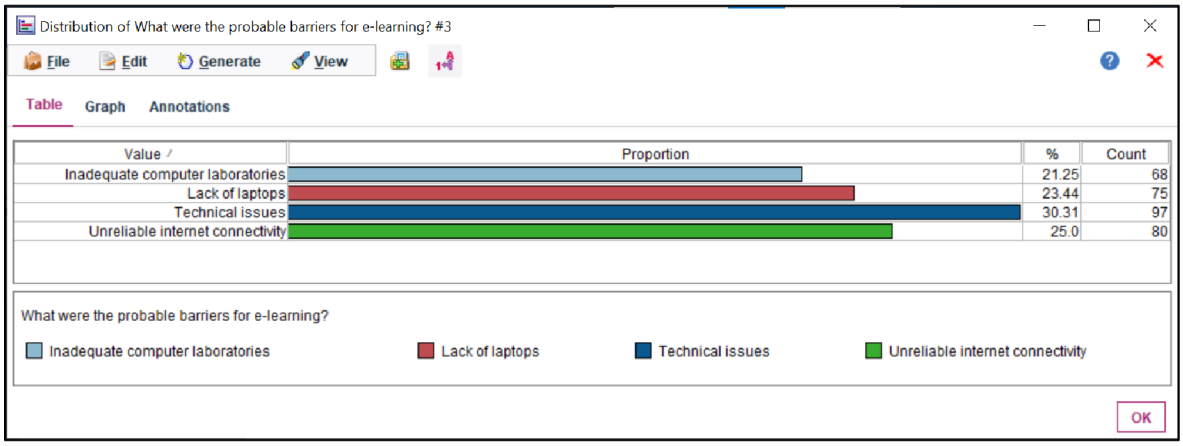


Source: Own processing

Analysis: The concerning question was to know about the participant's views on the statement that E-learning is widely accepted as an educational tool. According to the analysis of the collected data, it was found that the majority of the medical staff with a strength of 75% had agreed to the question comprising 45% strongly agreeing and 30% had only agreed that E-learning is accepted as an educational tool. Moreover, 8% of staff were not ensured E-learning has the potential to be considered as an educational tool, and low strength of staff comprising 9% of the total population disagreed along with 8% of staff who strongly disagreed that online learning is not considered as a primary tool for education.

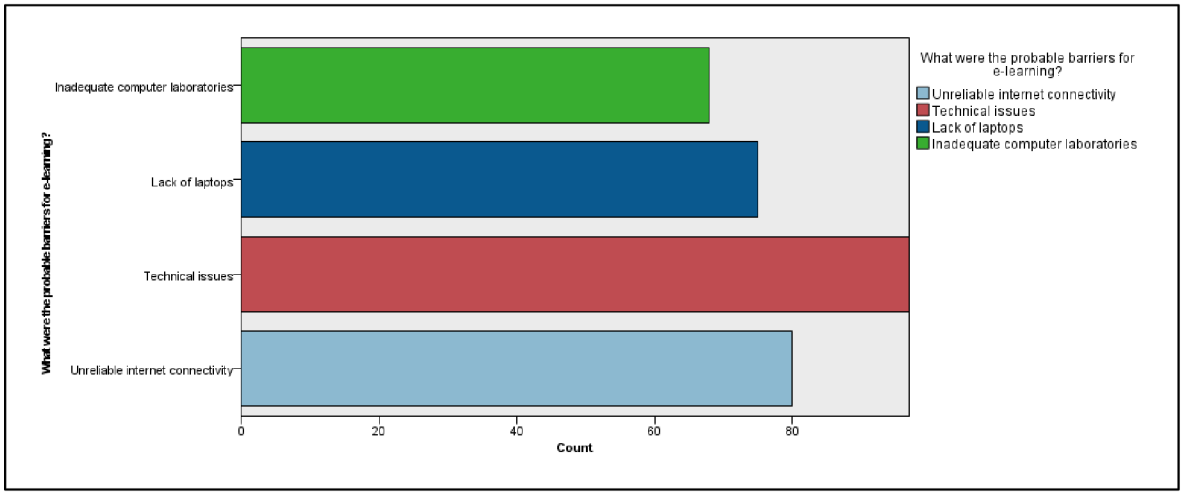
Question 7: What were the probable barriers to E-learning?

Table 15: Details of Analysis of E-learning barriers



Source: Own processing

Figure 15: Graph of Analysis of E-learning barriers



Source: Own processing

Analysis: The concerning question was to know about the participant's views on the problems faced during handling the system of E-learning. According to the analysis of the collected data, it was found that the majority of the medical staff with a strength of 30% had faced technical issues as a barrier in acquiring education through the online platforms, 21% of staff faced problems of inadequate amount of computer laboratories correspondingly 24% of the population faced the shortage of electronic devices, especially lack laptops act as a huge barrier in an E-learning system. Moreover, 25% of staff faced problems related to internet connectivity, among which the major problem was caused by unstable internet connectivity.

4.7 SWOT Analysis

Table 16: SWOT Analysis

STRENGTH	WEAKNESSES
• Students' optimism Regarding the Online Learning Environment's Technological Advancements: During home confinement, students may fully realise the advantages of technology-based tools and equipment if they are engaging and not dull online lessons. • The ability to study and navigate independently using modern technologies and a low time commitment: As a result, it may cover a wide area at a lower cost than conventional classroom instruction. • E-learning classes that are both individualised and organised Teachers and professors may now tailor and organise the online education they provide their students with the help of various platforms, allowing for more time spent on academic pursuits. • Possibility of more rapid and clear contact with students: The online environment allows teachers to incorporate their own teaching approaches and strengths into their	• Because of the inherent tension between online and in-person learning, it is difficult for E-learning management systems to successfully integrate the technology-based framework of training services with the underlying psychological mechanism. • Poor online lecture access during E-learning sessions and other online teaching activities. Potentially detrimental to mentees' learning and development in the realm of electronic learning. • The trainer and student don't have a lot of face-to-face time together, which might inhibit their ability to learn from one another and foster a culture of isolation. • Despite the extensive internet preparation, teachers of face-to-face classes are more highly rated by their students. educators who are unfamiliar with online systems and have little experience with technology-based platforms for teaching might make matters worse for their students.

sites, which improves communication with students.	
OPPORTUNITIES • According to a number of educators, online and distance education are steadily gaining ground on traditional classroom instruction. Save money on your E-learning courses and make better use of the material by reusing it in several formats. The financial and time commitment required to complete an E-learning project course has been reduced. Faculty members who have received online teaching training have a possible advantage over their non-trained face-to-face counterparts. The availability of highly qualified, technologically savvy professors and the freedom to create flexible class schedule. • Once taught, this system has the potential to provide departments with more scheduling freedom. Some departments may be able to provide more flexible hours to teachers who have received extensive training in the use of online platforms in the classroom and who regularly engage in E-learning themselves.	**THREATS** • Students' lack of drive, brought on by too many study options: Multiple studies also highlight instructors' lack of desire to participate in and promote E-learning by developing and using E-learning resources. • The varying effects of E-learning across organisations and contexts can be traced back to a number of factors, including the absence of government policies and legislation regarding courses and E-learning contents, as well as a lack of quality standards, quality controls, and standardisation of e-content production and delivery mechanisms. • University have concerns regarding the reliability and usefulness of E-learning and online instruction for students: Faculty members around the country are still sceptical about the legitimacy of online courses. • Because of the rise of virtual classrooms, face-to-face interactions between educators and their pupils have decreased. In the same way that people go to school on a regular basis, where they are

	expected to acquire new material in a structured environment, online courses may be accessed by students in the same manner.

Source: Own processing

5 Results & Discussion

5.1 Results – Summary/Evaluation

The results of the data analysis may provide valuable insights into the challenges and successes of using e-learning as a tool for teaching during the COVID-19 pandemic among medical staff at GMERS Medical College Gujarat. These findings could be used to resolve the challenges for future approaches to online teaching and learning in similar settings.
They are as following:

- Many medical staff at GMERS Medical College Gujarat had experience with e-learning prior to the COVID-19 pandemic, which may have facilitated their transition to online teaching.
- The most significant challenge encountered by medical staff was the lack of interaction and engagement with students in an online setting. This may have been due to a lack of experience with online teaching methods and difficulties in adapting to new technologies.
- Overall, medical staff at GMERS Medical College Gujarat had a positive attitude towards e-learning as a tool for teaching during the COVID-19 pandemic, with many reporting that it was an effective way to deliver content and maintain continuity of education.
- Medical staff who received training and support on e-learning reported higher levels of satisfaction and effectiveness in using this method for teaching during the COVID-19 pandemic.
- This study reported that technical barriers like lack of devices, poor internet connectivity and inadequate technical support which are the main barriers. Also, there are some resource constraints like content development, staff training and ongoing technical support required for medical staff as well for smooth adaption of E-learning.
- Recommendations for improving the use of e-learning as a tool for teaching among medical staff in GMERS Medical College Gujarat during the COVID-19 pandemic may include providing additional training and resources for online teaching, increasing opportunities for interaction and engagement with students in online

settings, and implementing a more structured approach to online teaching and assessment.

5.2 Discussion

Over the past decade, a growing international tendency to adopt electronic learning, or e-learning, and some bigger education institutions in developing countries have freshly joined the change. However, not all people and civilizations have access to the machinery fairly. Since the WHO announced the COVID-19 a pandemic, there has been an abrupt change to online education and e-learning. Moreover, the imminent in terms of retreat to ordinary life and stopping the pandemic is uncertain, with the greatest reliance on e-learning, especially in above information.

Like other countries, the United States has faced great difficulties in above improvement and has moved to basic research environments. Providing online face-to-face courses at universities presented exceptionally critical challenge. We examined aspect that predict whether to use e-learning as an educational strategy during covid-19. It's not a comprehensive strategy. Most applicants (32.1%) firmly agreed (56.1%) that the technical know-how for delivering online courses enhances the academic value of the aptness action. The results of these studies alike corroborate those of previous studies. The mass of candidates (59.5%) felt that cultivation online courses had dominance in terms of time flexibility. In contrast, other previous studies have found that professors believe that e-learning is stagnant, poses issue for student supervision, and may reduce interest in direct conventional instruction. indicated.

The urgency for academic training and plant to use different technical methodologies and platforms to enhance e-learning activities is due to the varying technical knowledge and skills of participants, e-learning Highlighted by these different perceptions related to media ignorance. Different approach of participants' familiarity with it. According to the results of the current survey, 36.1% of his and 63.9% of her participants respectively definite and actively agreed that online courses allow employees to teach at their own pace. Self-direction of online learning was also appreciated, as in this study. Furthermore, most participants (44.2%) clash or firmly dissent that assessment in online courses was more difficult for students. The fact that the bulk of networked exams use multiple-choice inquiry, rather than article investigation, allows a large number of students to be tested quickly and with a large amount of information, and this staffing perspective It may be underlying. Automated exam

scoring also saves employees time and effort. On the other hand, in another study done by Hannafin, et al. (2004, p. 13), highlighted that many collective and factual assessments of area learning presented challenges.

According to Oncu, and Cakir (2011, p. 3) found that relaxed estimate can be difficult for online teachers because there is no face-to-face connection. However, there are approach and best practices for conducting online assessments safely and reliably and having a security system in place.

The Technology acceptance model was enforced to applicants in the ongoing study and results indicated that the majority of suspect certain with the recognized practicality of E-learning of accepted teaching and learning processes. A previous study found that some local university applicants were not fully accustomed to using e-learning as a teaching tool. They attribute this perception to a change of aspect, as well as technical issues, difficult communication and analysis with students, poor internet accordance, and particular information choice. In contrast to survey results indicate that a bulk of defendant agree that e-learning is easy to use, suggesting that health professionals. (Chokri, 2021, p. 41)

This indicates that the strength of the software is judged by its ease of use. This may be due to the fact that the university has just launched a new learning program that associate e-learning technology with traditional face-to-face classes. All staff accepted extensive training in online courses, and the plan and design of teaching materials took place before the program was formally launched to admission. Synchronous (live or real-time) and asynchronous (recorded or self-paced) e-learning methods were used at universities using culture authority systems (LMS) and identical applications (e.g., Zoom and Microsoft Teams). In the two limited and large groups, contemporaneous e-learning was conditional in the form of collective instruction and discussion of analytic cases. Course inputs were adapted for serial e-learning prior to student access (e.g., recorded lectures, supporting videos, external links to approved websites, and further backing such as e-books).

These make it easier for staff to absorb new technologies and incorporate them into lessons. The survey revealed that e-learning systems are widely used. In extension to the anticipated amount and modesty of e-learning systems, several studies controlled in different community show that user acceptance and approval of e-learning depends on different individuals (e.g., willingness to use e-learning). collective (such as the influence of trainers within a particular culture), and bureaucratic (technical equipment, financial, infrastructure, etc.) factors. Inadequate or dubious internet access, poor PC room conditions, lack of

computers or laptops, and mechanical issues emerged as the top challenges in e-learning adoption, according to a survey of barricade to e-learning doing.

According to a recent study by Nguyen et al., (2021, p. 19), persistent with this arraignment, the main barriers to e-learning are the multi-stakeholder aspect related to framework, automation, administration, agency, gassing, and educational aspect. is due to Another study showed that to gain user trust and increase e-learning acceptance, an e-learning solution must meet user needs. Additional research categorized variables requiring more collaboration for resolution into student, teacher, curriculum, organization, and constitutional barriers to e-learning. A logistic regression analysis found that the top three variables conditioning e-learning adoption were male, age under 40, and coaching experience less than his 10 years. This is perhaps made more evident by the fact that younger employees are more comfortable with using technology than older employees, increasing their ability, willingness, and receptivity to use other e-learning technologies. Moreover, this result is consistent with Kanwal et al., (2020, p. 6), he argued that older workers with greater experience in traditional education tend to be less exposed to technology and lack the necessary skill evolution. According to Adamus et al. (2021, p. 12) Women are more receptive to e-learning than men. However, in earlier schedule, women reported mental fatigue, stress, and work-life balance issues. In comparison, some studies have found little difference in desire, indulgence, and use of e-learning amid women and men. This inequality may, according to certain theories, be the result of different gender representations in the study.

Risk factors were discovered using analytical analysis on unadjusted order. The main encouragement of whether people will adopt e-learning were teaching action (years), wired line they were teaching before COVID-19, age (years), and industry (academic or clinical). A logistic regression analysis was conducted to explore the compelling autonomous factors conditioning e-learning acceptance. The results showed that being male, under 40 years of age, and having less than 10 years of teaching experience were the most important gauge of e-learning acknowledgment.

5.3 Limitations of the study

There may be some restrictions on this study. As a cross-sectional study, the perspectives of the participants could evolve with time. Therefore, more longitudinal research is needed to better understand the factors that influence the uptake of E-learning systems in contemporary

society. The current investigation was also carried out at a single medical school. Therefore, further research will need to be done in the future to evaluate the adoption and acceptance of E-learning at higher education institutions employing subjects from different universities.

6 Conclusion

In the past, E-learning was underutilized, particularly in underdeveloped nations. However, the COVID-19 pandemic disaster has forced everyone in the world to rely on it for education. The majority of participants in the current study strongly agreed with the perceptions of the usefulness, usability, and acceptance of E-learning. The biggest obstacles to E-learning adoption were poor or unreliable internet connectivity, subpar computer laboratories, a shortage of computers and laptops, and technical difficulties. Being of an age under 40, having a teaching experience under 10 years, and male gender were the key factors influencing adoption of E-learning. This study identifies the barriers to adoption of E-learning as a teaching tool in higher education in developing nations as well as the factors influencing that acceptance. Its findings could influence the strategic design and use of E-learning in the days to come.

The COVID-19 pandemic forced medical staff at GMERS Medical College Gujarat to quickly adapt to online teaching methods, with varying degrees of success. Despite the challenges encountered, such as difficulties in engaging students in online settings and the lack of experience with online teaching methods, medical staff generally had a positive attitude towards e-learning as a tool for teaching during the pandemic. Providing training and support to medical staff on e-learning methods and technologies may improve their effectiveness and satisfaction with online teaching. There may be a need to implement a more structured approach to online teaching and assessment in order to maintain educational standards and ensure that students are achieving the desired learning outcomes. The experiences and insights gained from the use of e-learning during the COVID-19 pandemic could inform future approaches to medical education, including the potential for hybrid models of teaching that combine online and in-person learning.

Overall, the conclusions of the study could contribute to a better understanding of the challenges and successes of using e-learning as a tool for teaching during a crisis, such as the COVID-19 pandemic, among medical staff at GMERS Medical College Gujarat. The findings may be useful for future approaches to online teaching and learning in medical education, and for enhancing the resilience of the healthcare workforce in times of crisis.

7 References

- ABBASI, Sahar, AYOOB, Tahera, MALIK, Abdul and MEMON, Shabnam Iqbal, 2020. *Perceptions of students regarding E-learning during Covid-19 at a private medical college: Perceptions of students regarding E-learning*. Pakistan Journal of Medical Sciences. Online. 18 May 2020. Vol. 36, no. COVID19-S4. [Accessed 22 October 2022]. DOI 10.12669/pjms.36.COVID19-S4.2766.

- ADAMUS, Tanja, KERRES, Dr Michael, GETTO, Barbara and ENGELHARDT, Nicole. *Gender and E-Tutoring – A Concept for Gender Sensitive E-Tutor Training Programs*.

- AINI, Qurotul, BUDIARTO, Mukti, PUTRA, P. O. H. and RAHARDJA, Untung, 2020. *Exploring E-learning Challenges During the Global COVID-19 Pandemic: A Review*. Jurnal Sistem Informasi. 31 October 2020. Vol. 16, no. 2, p. 57–65. DOI 10.21609/jsi.v16i2.1011.

- ALHARAHSHEH, Husam, PIUS, Abraham and GUENANE, Imad, 2021. *Perceptions of Challenges Associated to Develop Employability Skills In Business Management Students*. 22 March 2021.

- ALMAIAH, Mohammed Amin, AL-KHASAWNEH, Ahmad and ALTHUNIBAT, Ahmad, 2020. *Exploring the critical challenges and factors influencing the E-learning system usage during COVID-19 pandemic. Education and Information Technologies.* 1 November 2020. Vol. 25, no. 6, p. 5261–5280. DOI 10.1007/s10639-020-10219-y.

- ALQAHTANI, Ammar Y. and RAJKHAN, Albraa A., 2020. *E-Learning Critical Success Factors during the COVID-19 Pandemic: A Comprehensive Analysis of E-Learning Managerial Perspectives.* Education Sciences. September 2020. Vol. 10, no. 9, p. 216. DOI 10.3390/educsci10090216.

- AMBROSE, Arinaitwe, 2022. *An analysis of the adoption of online learning in universities; a case of the Cavendish University Learning Platform (CU-LP). Journal of Social Review and Development.* 4 October 2022. Vol. 1, no. 2, p. 25–31. Uganda

- ARKORFUL, Valentina and ABAIDOO, Nelly, 2014. *The role of e-learning, the advantages and disadvantages of its adoption in Higher Education*. 2014. Vol. 2, no. 12.

- AZUNGAH, Theophilus and KASMAD, Rulinawaty, 2020. *Qualitative Research Journal Article information: For Authors Qualitative research: deductive and inductive approaches to data analysis*. 8 August 2020.

- BĄCZEK, Michał, ZAGAŃCZYK-BĄCZEK, Michalina, SZPRINGER, Monika, JAROSZYŃSKI, Andrzej and WOŻAKOWSKA-KAPŁON, Beata, 2021. *Students' perception of online learning during the COVID-19 pandemic. Medicine.* 19 February 2021. Vol. 100, no. 7, p. e24821. OI 10.1097/MD.0000000000024821.

- BELL, Judith, 2010. *Doing your research project: a guide for first-time researchers in education, health and social science*. Maidenhead: McGraw-Hill, Open Univ. Press. Open UP study skills. ISBN 978-0-335-23582-7.

- BUZZETTO-HOLLYWOOD, Nicole, 2007. *Advanced Principles of Effective e-Learning*. . ISBN 978-1-932886-02-3.

- CHOKRI, Barhoumi, 2012. *Factors influencing the adoption of the e-learning technology in teaching and learning by students of a university class.* European Scientific Journal, ESJ. Online. 28 December 2012. Vol. 8, no. 28. [Accessed 15 February 2023]. DOI 10.19044/esj.2012.v8n28p%p.

- COHEN, Jacob, 1988. *Statistical power analysis for the behavioral sciences*. . 2nd ed. Hillsdale, N.J: L. Erlbaum Associates. ISBN 978-0-8058-0283-2. HA29 .C66 1988

- COUSIN, Glynis. *Researching Learning in Higher EducaϴOn. An Introduction to Contemporary Methods and Approaches.* Routledge: Taylor & Francis Group, 2009. 272 p. ISBN: 9780415991650

- DANNELS, Sharon Anderson, 2018. *Research Design. In: The Reviewer's Guide to Quantitative Methods in the Social Sciences.* 2. Routledge. ISBN 978-1-315-75564-9.

- DENSCOMBE, Martyn, 2003. *The good research guide: for small-scale social research projects*. 2nd ed. Maidenhead, Berkshire, England ; New York: Open University Press. ISBN 978-0-335-21303-0. H61 .D35 2003

- FAVALE, Thomas, SORO, Francesca, TREVISAN, Martino, DRAGO, Idilio and MELLIA, Marco, 2020. *Campus traffic and e-Learning during COVID-19 pandemic. Computer Networks.* 20 July 2020. Vol. 176, p. 107290. DOI 10.1016/j.comnet.2020.107290.

- GILLETT-SWAN, Jenna, 2017. *Supporting and Engaging the Isolated Learner. Journal of Learning Design.* 2017. Vol. 10, no. 1.

- GOHIYA, Poorva and GOHIYA, Ashish, 2020. *E -learning during Covid 19 Pandemic.* Online. preprint. In Review. [Accessed 4 November 2022].

- GUMANTAN, Aditya, NUGROHO, Reza Adhi and YULIANDRA, Rizki, 2021. *Learning during the covid-19 pandemic: Analysis of e-learning on sports education students.* Journal Sport Area. Online. 25 March 2021. [Accessed 15 October 2022]. Available from: https://journal.uir.ac.id/index.php/JSP/article/view/5397

- HANNAFIN, Michael J., KIM, Minchi C. and KIM, Hyeonjin, 2004. *Reconciling research, theory, and practice in web-based teaching and learning: The case for grounded design.* Journal of Computing in Higher Education. 1 March 2004. Vol. 15, no. 2, p. 3–20. DOI 10.1007/BF02940927.

- HERMAWAN, Daniel, 2021. *The Rise of E-Learning in COVID-19 Pandemic in Private University: Challenges and Opportunities* | IJORER : International Journal of Recent Educational Research. Online. 2021. [Accessed 15 October 2022]. Available from: https://journal.ia-education.com/index.php/ijorer/article/view/77

- HUYNH, Roy, 2017. *The Role of E-Learning in Medical Education. Academic Medicine*. April 2017. Vol. 92, no. 4, p. 430. DOI 10.1097/ACM.0000000000001596.

- IBRAHIM, Nahla Khamis, AL RADDADI, Rajaa, ALDARMASI, Moroj, AL GHAMDI, Abdullah, GADDOURY, Mahmoud, ALBAR, Hussain M. and

RAMADAN, Iman Kamal, 2021. *Medical students' acceptance and perceptions of e-learning during the Covid-19 closure time in King Abdulaziz University, Jeddah.* Journal of Infection and Public Health. 1 January 2021. Vol. 14, no. 1, p. 17–23. DOI 10.1016/j.jiph.2020.11.007.

- IONESCU, Constantin Aurelian, PASCHIA, Liliana, GUDANESCU NICOLAU, Nicoleta Luminita, STANESCU, Sorina Geanina, NEACSU STANCESCU, Veronica Maria, COMAN, Mihaela Denisa and UZLAU, Marilena Carmen, 2020. *Sustainability Analysis of the E-Learning Education System during Pandemic Period—COVID-19 in Romania. Sustainability.* January 2020. Vol. 12, no. 21, p. 9030. DOI 10.3390/su12219030.

- JACQUES, Sébastien, OUAHABI, Abdeldjalil and LEQUEU, Thierry, 2021. *Synchronous E-learning in Higher Education during the COVID-19 Pandemic. In: 2021 IEEE Global Engineering Education Conference (EDUCON).* April 2021. p. 1102–1109. DOI 10.1109/EDUCON46332.2021.9453887.

- JILCHA, Kassu, 2019. *Research Design and Methodology.* In: . p. 27. ISBN 978-1-78985-857-0.

- KANWAL, Faria and REHMAN, Mariam, 2017. *Factors Affecting E-Learning Adoption in Developing Countries–Empirical Evidence From Pakistan's Higher Education Sector*. IEEE Access. 2017. Vol. 5, p. 10968–10978. DOI 10.1109/ACCESS.2017.2714379.

- KAUR, Nimarpreet, DWIVEDI, Deepti, ARORA, Jyoti and GANDHI, Asha, 2020. *Study of the effectiveness of e-learning to conventional teaching in medical undergraduates amid COVID-19 pandemic.* National Journal of Physiology, Pharmacy and Pharmacology. 2020. Vol. 10, no. 7, p. 1. DOI 10.5455/njppp.2020.10.04096202028042020.

- KHAN, Mohammed Arshad, VIVEK, NABI, Mohammed Kamalun, KHOJAH, Maysoon and TAHIR, Muhammad, 2021. *Students' Perception towards E-Learning during COVID-19 Pandemic in India: An Empirical Study. Sustainability.* January 2021. Vol. 13, no. 1, p. 57. DOI 10.3390/su13010057.

- MAAROUF, Heba, 2019. *Pragmatism as a Supportive Paradigm for the Mixed Research Approach: Conceptualizing the Ontological, Epistemological, and Axiological Stances of Pragmatism. International Business Research*. 2019. Vol. 12, no. 9, p. 1–12.

- MAATUK, Abdelsalam M., ELBERKAWI, Ebitisam K., ALJAWARNEH, Shadi, RASHAIDEH, Hasan and ALHARBI, Hadeel, 2022. *The COVID-19 pandemic and E-learning: challenges and opportunities from the perspective of students and instructors.* Journal of Computing in Higher Education. 1 April 2022. Vol. 34, no. 1, p. 21–38. DOI 10.1007/s12528-021-09274-2.

- MAHMODI, Mahdi, 2017. *The Analysis of the Factors Affecting the Acceptance of E-learning in Higher Education.* Interdisciplinary Journal of Virtual Learning in Medical Sciences. Online. 1 March 2017. Vol. 8, no. 1. [Accessed 15 October 2022]. DOI 10.5812/ijvlms.11158.

- MAHYOOB, Mohammad, 2020. *Challenges of e-Learning during the COVID-19 Pandemic Experienced by EFL Learners.* Arab World English Journal. 15 December 2020. Vol. 11, p. 351–362. DOI 10.24093/awej/vol11no4.23.

- MARDIAH, Henny, 2020. *The Use of E-Learning to Teach English in the Time of the Covid-19 Pandemic.* English Teaching and Linguistics Journal (ETLiJ). 27 July 2020. Vol. 1, no. 2, p. 45–55. DOI 10.30596/etlij.v1i2.4894.

- MISHRA, Dr. Shanti, ALOK, Dr. Shashi. *Handbook of research methodology.* Educreation Publishing, August, 2017. 137 p. ISBN: 978-1-5457-0340-3.

- MSELEKU, Zethembe, 2020. *A Literature Review of E-Learning and E-Teaching in the Era of Covid-19 Pandemic.* International Journal of Innovative Science and Research Technology. 2020.

- MUKHTAR, Khadijah, JAVED, Kainat, AROOJ, Mahwish and SETHI, Ahsan, 2020. *Advantages, Limitations and Recommendations for online learning during COVID-19 pandemic era.* Pakistan Journal of Medical Sciences. May 2020. Vol. 36, no. COVID19-S4, p. S27–S31. DOI 10.12669/pjms.36.COVID19-S4.2785.

- NAPITUPULU, Darmawan, et al. *Proceedings of the 2017 International Conference on Education and Technology* (2017 ICEduTech). Atlanics Press, 2017. 247-251 p. ISBN: 978-94-6252-572-6.

- ONCU, Semiral and CAKIR, Hasan, 2011. *Research in online learning environments: Priorities and methodologies - Computers & Education.* 1 August 2011. Vol. 57, no. 1, p. 1098–1108. DOI 10.1016/j.compedu.2010.12.009.

- POUCHER, Zoe, TAMMINEN, Katherine, CARON, Jeff and SWEET, Shane, 2019. *Thinking through and designing qualitative research studies: a focused mapping review of 30 years of qualitative research in sport psychology*. International Review of Sport and Exercise Psychology. 27 August 2019. Vol. 13, p. 1–24. DOI 10.1080/1750984X.2019.1656276.

- PUSTIKA, Reza, 2020. *Future English Teachers' Perspective towards the Implementation of E-Learning in Covid-19 Pandemic Era.* Journal of English Language Teaching and Linguistics. 29 December 2020. Vol. 5, no. 3, p. 383. DOI 10.21462/jeltl.v5i3.448.

- RAPANTA, Chrysi, BOTTURI, Luca, GOODYEAR, Peter, GUÀRDIA, Lourdes and KOOLE, Marguerite, 2020. *Online University Teaching During and After the Covid-19 Crisis: Refocusing Teacher Presence and Learning Activity.* Postdigital Science and Education. 1 October 2020. Vol. 2, no. 3, p. 923–945. DOI 10.1007/s42438-020-00155-y.

- SALLOUM, Said A., QASIM MOHAMMAD ALHAMAD, Ahmad, AL-EMRAN, Mostafa, ABDEL MONEM, Azza and SHAALAN, Khaled, 2019. *Exploring Students' Acceptance of E-Learning Through the Development of a Comprehensive Technology Acceptance Model.* IEEE Access. 2019. Vol. 7, p. 128445–128462. DOI 10.1109/ACCESS.2019.2939467.

- SATHISHKUMAR, V., ..RADHA, Dr, ..SARAVANAKUMAR, Dr and MAHALAKSHMI, K., 2020. *E-Learning during Lockdown of Covid-19 Pandemic: A Global Perspective.* International Journal of Control and Automation. 1 June 2020. Vol. 13, p. 1088–1099.

- SHAWAQFEH, Mohammad S, AL BEKAIRY, Abdulkareem M, AL-AZAYZIH, Ahmad, ALKATHERI, Abdulmalik A, QANDIL, Amjad M, OBAIDAT, Aiman A, AL HARBI, Shemylan and MUFLIH, Suhaib M, 2020. *Pharmacy Students Perceptions of Their Distance Online Learning Experience During the COVID-19 Pandemic: A Cross-Sectional Survey Study.* Journal of Medical Education and Curricular Development. January 2020. Vol. 7, p. 238212052096303. DOI 10.1177/2382120520963039.

- SINGH, Vandana and THURMAN, Alexander, 2019. *How Many Ways Can We Define Online Learning? A Systematic Literature Review of Definitions of Online Learning (1988-2018).* American Journal of Distance Education. 2 October 2019. Vol. 33, no. 4, p. 289–306. DOI 10.1080/08923647.2019.1663082.

- THOMAS, Olajide and LAWAL, Oloyede, 2020. *Exploratory Research Design in Management Sciences: An X-Ray of Literature.* Annals of Dunarea de Jos University of Galati. Fascicle I. Economics and Applied Informatics. 31 August 2020. Vol. 26, p. 79–84. DOI 10.35219/eai15840409109.

- THUY TO NGUYEN, Quyen Le Hoang, NGUYEN, Phong Thanh, HUYNH, Vy Dang Bich and NGUYEN, Luong Tan, 2020. *Application Chang's Extent Analysis Method for Ranking Barriers in the E-Learning Model Based on Multi-Stakeholder Decision Making.* Universal Journal of Educational Research. May 2020. Vol. 8, no. 5, p. 1759–1766. DOI 10.13189/ujer.2020.080512.

- TURNBULL, Darren, CHUGH, Ritesh and LUCK, Jo, 2021. *Transitioning to E-Learning during the COVID-19 pandemic: How have Higher Education Institutions responded to the challenge?* Education and Information Technologies. 1 September 2021. Vol. 26, no. 5, p. 6401–6419. DOI 10.1007/s10639-021-10633-w.

- WHO: Coronavirus disease (COVID-2019) situation report. [cit. 2020/03/28]. Available at: https://www.who.int/emergencies/diseases/novel-coronavirus-2019/situation-reports

- ZALAT, Marwa Mohamed, HAMED, Mona Sami and BOLBOL, Sarah Abdelhalim, 2021. *The experiences, challenges, and acceptance of e-learning as a tool for teaching during the COVID-19 pandemic among university medical staff*. Plos One. 26 March 2021. Vol. 16, no. 3, p. e0248758. DOI 10.1371/journal.pone.0248758.

8 List of figures and tables

8.1 List of figures

8.2 List of Tables

Appendix

Electronic questionnaires form:

1. Age group
    - 25-35 Years
    - 36-45 Years
    - 46-55 Years
    - 56-65 Years
2. Gender
    - Male
    - Female
3. Department
    - Medicine
    - Administrative
    - Nursing Staff
4. Marital Status
    - Single
    - Married
5. Residence
    - Reside in same city
    - Reside in different city
6. Teaching Exp
    - 1-5 Years
    - 6-10 Years
    - 11-15 Years
    - 16-20 Years
    - 21-25 Years
7. Designation
    - Assistant Professor
    - Associate Professor
    - Professor
8. Experience in Online Teaching
    - 1 Year

- 2 Years
- 3 Years and more

9. Do you think that online course allows self-paced learning?
    - Strongly Agree
    - Agree
    - Can't say
    - Disagree
    - Strongly Disagree
10. Do you think that the technological expertise gained from teaching online courses improves the educational experience?
    - Strongly Agree
    - Agree
    - Can't say
    - Disagree
    - Strongly Disagree
11. Do you think that test in online courses is harder for students?
    - Strongly Agree
    - Agree
    - Can't say
    - Disagree
    - Strongly Disagree
12. Do you think that E-learning is beneficial for increasing performance?
    - Strongly Agree
    - Agree
    - Can't say
    - Disagree
    - Strongly Disagree
13. Do you think that e-learning is easy to use?
    - Strongly Agree
    - Agree
    - Can't say
    - Disagree
    - Strongly Disagree

14. Do you think that e-learning is widely accepted as an educational tool?
    - Strongly Agree
    - Agree
    - Can’t say
    - Disagree
    - Strongly Disagree
15. What were the probable barriers for e-learning?
    - Lack of laptops
    - Technical issues
    - Unreliable internet connectivity
    - Inadequate computer laboratories