Perception towards online teaching platforms among tutors and students in the era of COVID-19 pandemic

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ABSTRACT

The aim of the study is to determine the perception toward online teaching platforms among tutors and students in COVID-19 pandemic. The outbreak of Corona Virus Disease 2019 (COVID-19) in various countries at the end of last year has transferred traditional face-to-face teaching to online education platforms, which directly affects the quality of education. In this Paper, we have worked on three objectives to find out the perception of teachers and students. First, To explore the factors affecting online teaching from students and teachers perspective. Second, To study the satisfaction level of students and teachers towards online teaching. Third, To identify the most common features of online teaching platforms used by students and tutors. All the three objectives were reached and the conclusion shows that the online teaching is satisfying for both teachers and students in this Covid-19 pandemic.

Key Words: Online teaching platform, COVID-19, Pandemic, Perception

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1.1 Introduction:

E-learning is an education via the web, network, or standalone computer. It is essentially the network-enabled convey of skills and knowledge. It refers to using electronic applications and processes to find out. E-learning includes all sorts of electronically supported learning and teaching (Tirkes,G,2010). E-learning facilitates

and enhances the learning process through the use of devices based on computer and communications technology and covers a broad category of applications and processes. . Usually the e- learning term is understood as online education (web based learning) and online courses. CConsidering this aspect, the computer based learning process can be seen as an e-learning component which does not require a continuous interaction with an instructor and other students.(Smeureanu & Isaila, 2008) E-learning ,people often think it is a form of distance learning because the participants and the instructor can reside in different locations, and the interaction is mostly asynchronous. E-learning is not the new or just adopted technology but it came into existence in 1960s and developing year by year. In 2010 a new wave of mobile based e-learning process have been adopted and in 2020 it has been found that collaborative mobile, on-demand and blended learning securing a position. At the beginning 2020 a report has been done by World Economic Forum shows that only 0.20 billion students or number of learners are using digital platforms for educational purpose but eventually the situation changes drastically due to the novel coronavirus which is also known as Covid-19. The infectious disease Corona Virus also known as Covid-19 has deeply affected the global economy of the world .No country save themselves from this virus. This tragedy has also shaken up the education sector, and this fear is likely to boom across the education sector globally. According to the report of World Economic Forum (WEF) which has been published in April 2020, it showsthat:-

- The Covid-19 has resulted in schools shut all across the world. Globally over 1.2 billion students are out of theclassroom

- As a result, education has changed dramatically, with the distinctive rise of e-learning, whereby teaching is undertaken remotely and on digitalplatforms.

- Research suggests that online learning has been shown to increase retention of information, and take less time, meaning the changes coronavirus have caused might be here tostay.

Later on most of the countries started to offer online teaching to students by using various online teaching platforms like Google meet, Zoom, Skype, Cisco WebEx, my class etc in order to promote online education and restore the normal teaching order.

Thus the usage of online teaching platforms significantly increasing day by day.
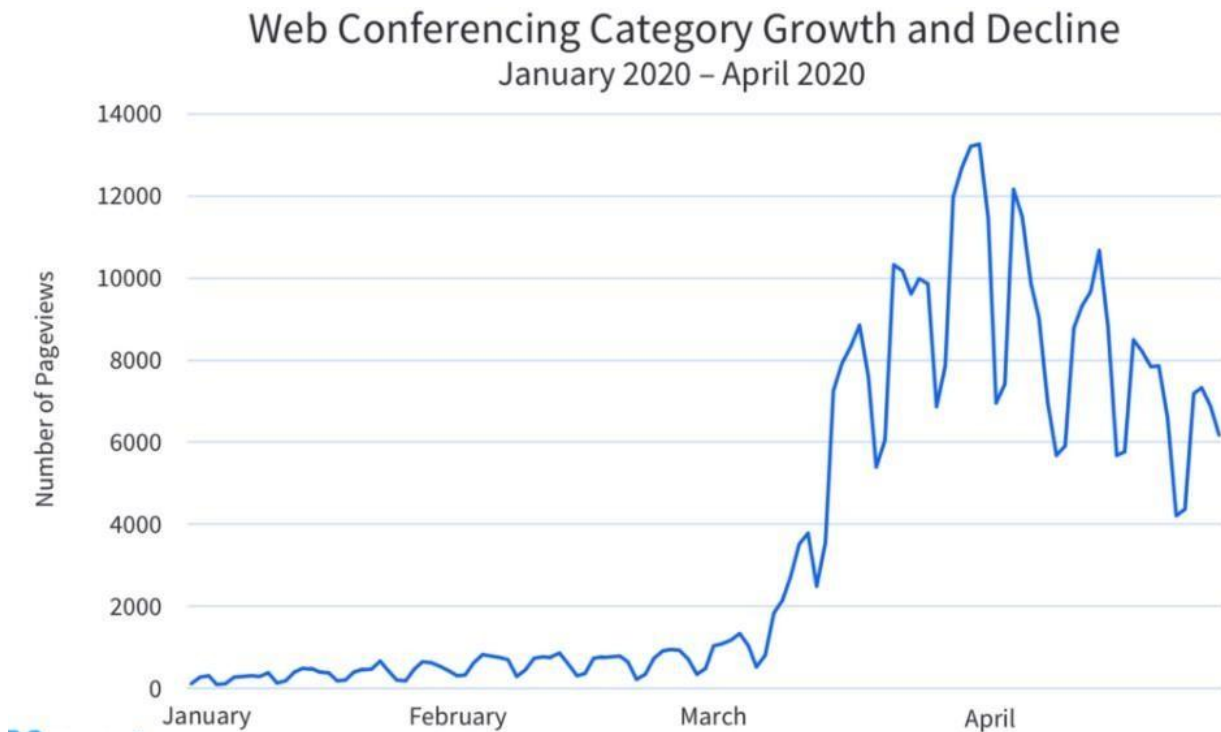

Fig:1

According to a report of Trustradius the growth of web conferencing and various other online platforms interest in video conferencing technology has exploded over the past few months and found that this category grow by 120% from January to February and increase 1080% from February to March. Traffic numbers for the web conferencing category are still much higher than they were before the pandemic. But interest in this type of software peaked at the beginning ofApril.

The same report shows that even before Covid-19 there was already high growth and adoption in education technology, with global edtech investments reaching US$18.66 billion in 2019 and the overall market for online education projected to reach $350 Billion by 2025 whether it is virtual tutoring,video conferencing tools,language applications or

online learning software there has been an outstanding roll in usage since Covid-19. The software making companies highly invested in their technology to provide as per

institutional demands and hence it started growing the uses of digital platforms. Also in response to significant demand many online platforms free services to their materials including like platforms BYJU'S and then the company seen an 200% increases in the number of new students according to a report done by World Economic Forum. Schools and Colleges starts using online teaching platforms to move the education system forward and initially most of the schools and colleges used platforms like Google Meet, Zoom, Cisco and Microsoft teams but after few months institutions started searching for web conferencing software. Educational institutions alike needed a fast solution to help them deal with the rapidly changing environment brought on byCOVID-19.

Hence, the situation of Covid-19 and education system goes with the flow of these teaching platforms and now students and teachers are very much comfortable and wisely adopted it.

Now this study will talk about the **PERCEPTION TOWARDS ONLINE TEACHING PLATFORMS AMONG TUTORS AND STUDENTS IN THE ERA OF COVID-19 PANDEMIC** as online teaching is no more option, it is a necessity.

There are several arguments associated with e-learning. Accessibility, affordability, flexibility, learning pedagogy, life-long learning, and policy are some of the arguments related to online pedagogy. It is said that online mode of learning is easily accessible and can even reach to rural and remote areas. It is considered to be a relatively cheaper mode of education in terms of the lower cost of transportation, accommodation, and the overall cost of institution-based learning. Flexibility is another interesting aspect of online learning; a learner can schedule or plan their time for completion of courses available online.

Combining face-to-face lectures with technology gives rise to blended learning and flipped classrooms; this type of learning environment can increase the learning potential of the students. Students can learn anytime and anywhere, thereby developing

new skills in the process leading to life-long learning. The government also recognizes the increasing importance of online learning in this dynamic world. (Shivangi Dhawan) but every coin has two faces as There are n number of technologies available for online education but sometimes they create a lot of difficulties. These difficulties and problems associated with modern technology range from downloading errors, issues with installation, login problems, problems with audio and video, and so on. Sometimes student finds online teaching to be boring and unengaging. Online learning has so much of time and flexibility that students never find time to do it. Personal attention is also a huge issue facing online learning. Students want two-way interaction which sometimes gets difficult to implement. The learning process cannot reach its full potential until students practice what they learn. Sometimes, online content is all theoretical and does not let students practice and learn effectively. Mediocre course content is also a major issue. Students feel that lack of community, technical problems, and difficulties in understanding instructional goals are the major barriers for online learning (Song et al., 2004). In a study, students were found to be not sufficiently prepared for balancing their work, family, and social lives with their study lives in an online learning environment. Students were also found to be poorly prepared for several e-learning competencies and academic-type competencies. Also, there is a low-level preparedness among the students concerning the usage of Learning Management Systems (Parkes et al., 2014). These platforms provide end number of features to teachers as well as students like:-

- White board forboth
- raise hand to students when a students is indoubt,
- chat option available for both if there is noiseissues,
- presentation rights for both so they canpresent,
- Lecturerecording
- Face to faceinteraction
- Pollingoption
- Microphone can be on/off whenever teachersneed
- Students can also switch on/off theirmicrophone

- Download option available for readingmaterials

- Teachers have right to remove students at any point of time during meeting and so on…

Benefit of these platforms

- It shows the overall participation index ofstudents
- Shows number of polls attended bystudents
- Shows the actual duration presence in themeeting
- Shows the interaction level during the sessions with the help of no. of messages typed by students and how much duration studentspoke
- Shows daily time table and soon…

The forward study carrying about the thought process or perspective of teachers and students in the field of online study and we are trying to find out the factors affecting online teaching from students and teachers perspective, the satisfaction level of both towards online teaching and able to identify the most common features of online teaching platforms used by teachers andstudents.

1.2 <u>Below given are the list of products used by the Consumers (Students & Teachers) used as an online teaching application during the pandemic COVID-19:</u>
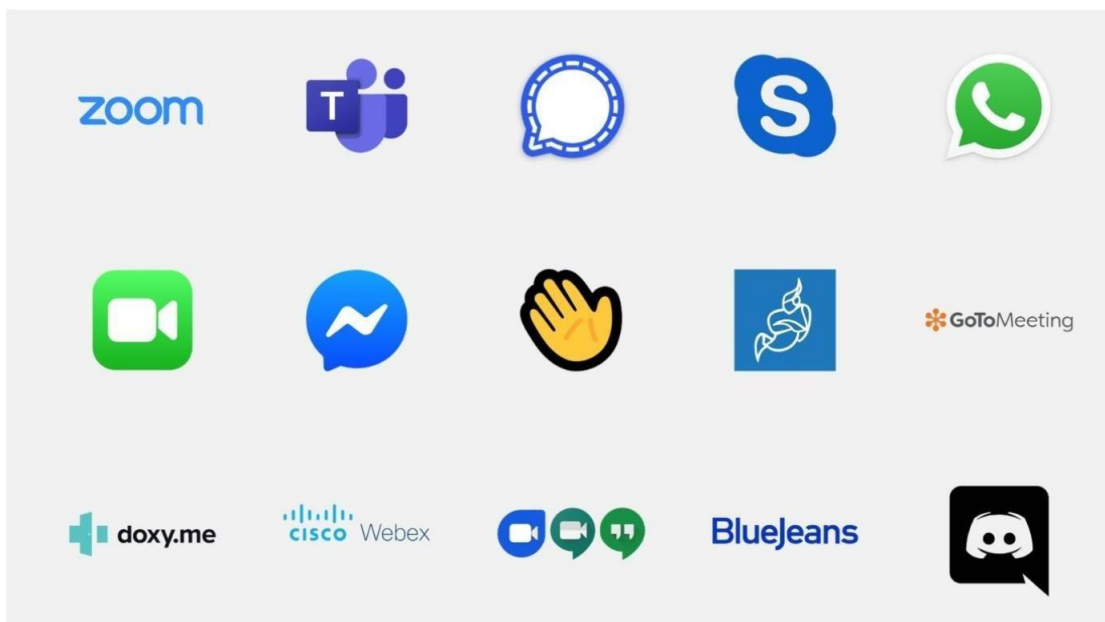
Review of Literature:

With the vigorous development of the online education industry, many experts and scholars from different countries have conducted research on online teaching platforms. Some study are as follows: In the view of online teaching platforms,

Wang Zhuzhu,Zhang Weiyuan(2005) in their study, they examined the features and functions of existing teaching platforms and hoped that this study would enable educational institutions to better understand the differences between online teaching platforms and other types of platforms, thus enhancing existing teaching platforms to improve the effectiveness of teaching. The sample was taken from 53 teaching platforms and websites used by online colleges in China.They used an analytic framework which included three general functions (design, interaction and collaboration, and administration and management) and 22 sub- functions. They noticed that these networks have shifted away from the very basic functions of distribution of knowledge and sharing of resources to more complex functions, such as supporting the teaching process. Some universities are still carrying out online learning, but improvements in the design of websites and the use of teaching platforms are required. Finally, the researcher of this paper suggest that in the further development of online teaching platforms, the education authorities should play a leading role. Experts of online education may be hired to explore areas forchange.

Tinggui chen, Lijuan Peng (2020) in their study used a questionnaire survey and web crawler to gather online and offline user experience data and built a customer satisfaction index method by analysing emotions and existing quantitative analysis literature, and develops a neural network model of aback propagation (BP) to predict user satisfaction. They have coded 712 questionnaires and entered into SPSS statistical software and performed descriptive, reliability and validity analysis. In the conclusion this paper shows that users' personal factors have no direct influence on teacher and student satisfaction, while the availability of the platform has the greatest effect on teacher and student satisfaction, it is proposed to increase the level of online teaching

during the COVID-19 pandemic and to encourage the reform of information-based education in order to enhance the online teaching platform.

Adnan, Muhammad(2020) researched how to understand the efficacy of online learning in Pakistan through the use of online survey techniques from the perspective of higher education students. They surveyed undergraduate and postgraduate students of various universities .The sample of the study included 126 higher education students in which 84 were female and 42 were male students. They have obtained Demographic data using the Likert scale and is reported in percentage of students responses and found that in underdeveloped countries like Pakistan, where a large number of students are unable to access the internet due to technical as well as monetary problems, online learning cannot produce the desired results. Among some other concerns highlighted by higher education students were the lack of face-to - face contact with the teacher, reaction time and lack of typical classroom socialisation.

Mohammad H Rajab, Abdalla M Gazal and Khaled Alkattan(2020) in their study they aimed to examine the effect of the COVID-19 pandemic on online education at the College of Medicine (COM) of Alfaisal University in Riyadh , Saudi Arabia by emailing a COM student and faculty survey. This study was a cross-sectional study with over 3,000 students from over 40 nations. The researcher developed a self-administered online questionnaire using Google Forms comprised a combination of closed and open ended questions. The closed ended questions included questions into participants demographics and their experiences before and during the COVID-19 pandemic. Open ended questions were planned to elicit descriptive feedback in the participants own wordsinstead of simple —yes‖ or —no‖ answers. After the survey, the reasearcher found that communication-related problems were included in online medical education during the COVID-19 pandemic included issues related to communication, student evaluation, use of technology instrument, online experience, pandemic-related anxiety or tension, effective planning, and technophobia and most of the respondents believed that the COVID-19 pandemic has boosted their faith in the effectiveness of online teaching. In short, this study showed that the COVID-19 pandemic had a largely positive effect on online teaching.

3.1 <u>NEED AND SCOPE OF THESTUDY</u>

Many researchers study online education and establish many evaluation models. However, in the process of carrying out online teaching during this epidemic. According to a report done by Insight Higher education found that hundreds of educational institute they are ending physical classroom and shifted to online education through various platforms and hence observed that online education has tremendously growing up and the report also shows that in the last 15-20 years, the way education is being delivered has gone into tremendoustransformation. These online platform not only provides information technology infrastructure for hosting online classes but also supports universities with the design, production,anddelivery of online courses. For each course, the training outcomes, topics, required reading, and assignments are standardized with iterative quality assurance from domain experts and psychometric evaluators. . Online teaching – learning system is not the conventional way of teaching so it cannot be solely accepted in education system in India. This online teaching process continues but there are some applications which has some problems such as system jams and inability to replay the classes. There are several arguments associated with e-learning. Accessibility, affordability, flexibility, learning pedagogy, life-long learning, and policy but at the same time as there are n numberoftechnologiesavailableforonlineeducationbutsometimestheycreate lot of difficulties. These difficulties and problems associated with modern technology range from downloading errors, issues with installation, login problems, problems with audio and video, and so on. Sometimes student finds online teaching to be boring and unengaging. Online learning has so much of time and flexibility that students never find time to do it. Personal attention is also a huge issue facing online learning. Students want two-way interaction which sometimes gets difficult to implement. The learning process cannot reach its full potential until students practice what they learn. Sometimes, online content is all theoretical and does not let students practice and learn effectively. It is very necessary to study andresearch whether these online teaching platform can meet the needs of tutors and students, what are the factors affecting online teaching from students and teachers perspective and also interested to know about the satisfaction level of students

and teachers towards online teaching and at last both students and tutors using common features of online teaching platforms. At present, there is no literature on the perception towards online teaching platforms among tutors and students in the era of covid-19 pandemic so therefore, there is a strong need to understand the perception of both tutors as well as students.

4.1 OBJECTIVES OF THE STUDY

The objective of this study is to investigate students and tutors understanding and perception of supporting and adopting e-learning initiatives and using various online teachingplatforms.

- To explore the factors affecting online teaching from students and teachers perspective.

- To study the satisfaction level of students and teachers towards onlineteaching.

- To identify the most common features of online teaching platforms used by students andtutors.

For our study we using three tools to reach a potential outcomes that is:-

1. **Factor Analysis**: Factor analysis is a way to take a mass of data and reduce it to a smaller data set that is more manageable and more understandable. It's a way to identify hidden patterns, show how these patterns intersect and show in different patterns what features are seen. It is often used (these sets of variables are called dimensions) to construct a collection of variables for similar objects in the collection. It can be a very useful tool for complex datasets involving psychological research, socio-economic status and other concepts involved.

   The "factor" is a set of variables observed that have similar patterns of response; they are associated with a hidden variable (called a confounding variable) that is not directly measured. Factors are listed based on factor loadings, or how much variation they can explain in the information.

2. **Anova:** ANOVA is used to compare differences of means among more than 2

groups. It does this by looking at variation in the data and where that variation is found. It compares the amount of variation between groups with the amount of variation within groups. It checks the impact of one or more factors by comparing the means of different samples. Another measure to compare the samples is called a t-test.

It is the most efficient parametric method available for the analysis of data from experiments.

For example, you're testing one set of individuals before and after they take a medication to see if it works or not. Two way ANOVA with replication: Two groups, and the members of those groups are doing more than one thing

3. **Descriptive Analysis**: Descriptive research is defined as a research method that describes the characteristics of the population or phenomenon studied. This methodologyfocusesmoreonthe―what‖oftheresearchsubjectthanthe―why‖of the researchsubject.

DATA ANALYSIS, INTERPRETATION AND FINDINGS

Data analysis of Teachers:-
Data analysis for (Objective-1) 'To explore the factors affecting online teaching from students and teachers perspective'

This chapter talks about the data interpretation and analysis which is the outcomes of the research. In this section we will use the factor analysis to proceed further to extract the conclusion. Data in this study was analyzed using SPSS statistics.

Step 1: After data entry, the first step was to know whether our data is adequate for the study or not, so that we can further continue with the process. For this we first conducted KMO and Bartlett's test.

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.714
Bartlett's Test of Sphericity	Approx. Chi-Square	420.323
	df	120

Sig.	.000

To know the sample is adequate for a particular study the KMO should come above 0.5 but as the table shows that the value of KMO is coming to 0.714, also the significance level came .000 which means both are quite adequate for further conducting our research.

Step2: In this step we will see the total variance explained by the data we have entered. The total variance explained is 74% which is quite good for further doing confirmatory factor analysis.

The figure is in the next page.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.780	36.123	36.123	5.780	36.123	36.123	3.817	23.856	23.856
2	2.282	14.260	50.384	2.282	14.260	50.384	3.259	20.367	44.223
3	1.574	9.836	60.219	1.574	9.836	60.219	1.957	12.229	56.452
4	1.170	7.313	67.532	1.170	7.313	67.532	1.502	9.389	65.842
5	1.051	6.567	74.100	1.051	6.567	74.100	1.321	8.258	74.100
6	.886	5.536	79.635						
7	.671	4.197	83.832						
8	.589	3.680	87.512						
9	.399	2.495	90.006						
10	.335	2.091	92.097						
11	.319	1.994	94.091						
12	.266	1.662	95.753						
13	.228	1.427	97.180						
14	.209	1.304	98.484						
15	.144	.898	99.382						
16	.099	.618	100.000						

Extraction Method: Principal Component Analysis.

Step 3: In this step we will see the communalities and at which extent it correlates with all other items. It has been found that higher the communalities are better If communalities for a particular variable are low (between 0.0-0.4), then that variable may struggle to load significantly on any factor but in this table all of our value is above 0.4 so we can proceed further.

Communalities

	Initial	Extraction
Easy use	1.000	.659
Attractive	1.000	.686
Interface design	1.000	.779
Navigation	1.000	.714
Functions	1.000	.706
Presentation	1.000	.763
Student's response	1.000	.842
Languages	1.000	.797
Delivery	1.000	.825
Operate Info	1.000	.772
Payment	1.000	.655
Online mode	1.000	.613
Adapted	1.000	.718

Online teaching	1.000	.843
Proctoring	1.000	.725
Comfortable	1.000	.757

Step 4: In this step we will see the scree plot formed by the SPSS at Eigenvalue 1 which determine the number of factors to retain in exploratory factor analysis or principal component analysis. In this plot we are able to see that at least four factors should be taken into account.
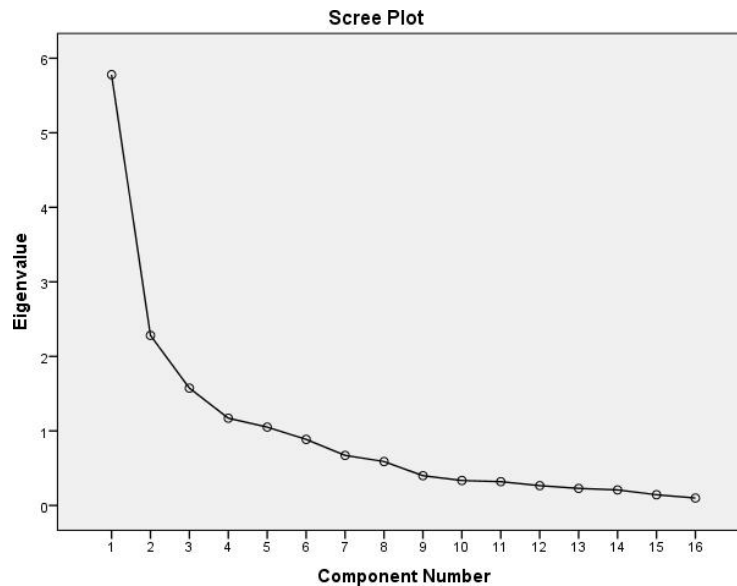
Step 5: After visualizing scree-plot we fond Rotated component matrix to have more clear idea about how many factors we will take and the table shows five factors but we will take four to reach the conclusion.

Rotated Component Matrix[a]

	Component				
	1	2	3	4	5
Easy use	.742	-.135	.124	.041	-.269
Attractive	.605	.011	.406	-.088	-.385
Interface design	.839	.194	-.008	.144	.127
Navigation	.782	.222	.130	-.145	-.121
Functions	.724	.265	.330	.039	-.037
Presentation	.765	.253	.231	.107	.223
Student's response	-.032	.046	.117	.901	.116
Languages	-.032	-.031	.009	.073	.889
Delivery	.119	-.043	.773	.444	.125
Operate Info	.359	.056	.794	.018	-.091
Payment	-.010	.791	-.122	.101	.061
Onlinemode	.191	.551	.491	-.170	-.054

Descriptives

Satisfied

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Adapted	.309	.547	.185	.436	-.313			
Online teaching	.394	.660	-.039	.431	-.255			
Proctoring	.160	.829	-.024	.026	.104			
Comfotable	.133	.811	.252	-.087	-.102			

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 7 iterations.

FACTOR-1	FACTOR-2	FACTOR-3	FACTOR-4
System accessibilty	**System execution**	**Service quality**	**Performance expectancy**
Interface design	Proctoring	Operate info	Student's response
Navigation	Comfortable	Delivery	Languages
Presentation	Payment		
Easy use	Online teaching		
Functions	Online mode		
Attractive	Adapted		

The same step will also followed for students.

Data analysis for (Objective-2) 'Satisfaction level among Teachers and Students in Online teaching with the help of One-way Anova':-

This chapter talks about the data interpretation and analysis which is the outcomes of the research. In this section we will use One-way Anova analysis to proceed further to extract the conclusion. Data in this study was analyzed using SPSS statistics.

Step 1: In this step we are trying to find out the descriptive of data by using SPSS and the table shows that N=273, Mean for teachers are 3.10 and mean value for students are 3.03 and the overall mean value is 3.04.

The figure is in the next page

Descriptive analysis

Satisfied

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Teachers	51	3.10	1.063	.149	2.80	3.40	1	5
Students	222	3.03	1.072	.072	2.89	3.17	1	5
Total	273	3.04	1.069	.065	2.91	3.17	1	5

Step 2: In step second we will check test of homogeneity of variances if the sig value is greater than 0.05 than we have not violated the assumptions of homogeneity of variances and our table shows 0.487 so we can proceed further.

Test of Homogeneity of Variances

Satisfied

Levene Statistic	df1	df2	Sig.
.485	1	271	.487

Step 3: The next step is talk about the Anova table the significance level of Anova and if the significance value is less than or equal to 0.05 than there is a significant difference somewhere around our means on our dependent variable and if we look our table significance value it shows 0.669 so the result is clear that there is satisfaction for both is not significant difference.
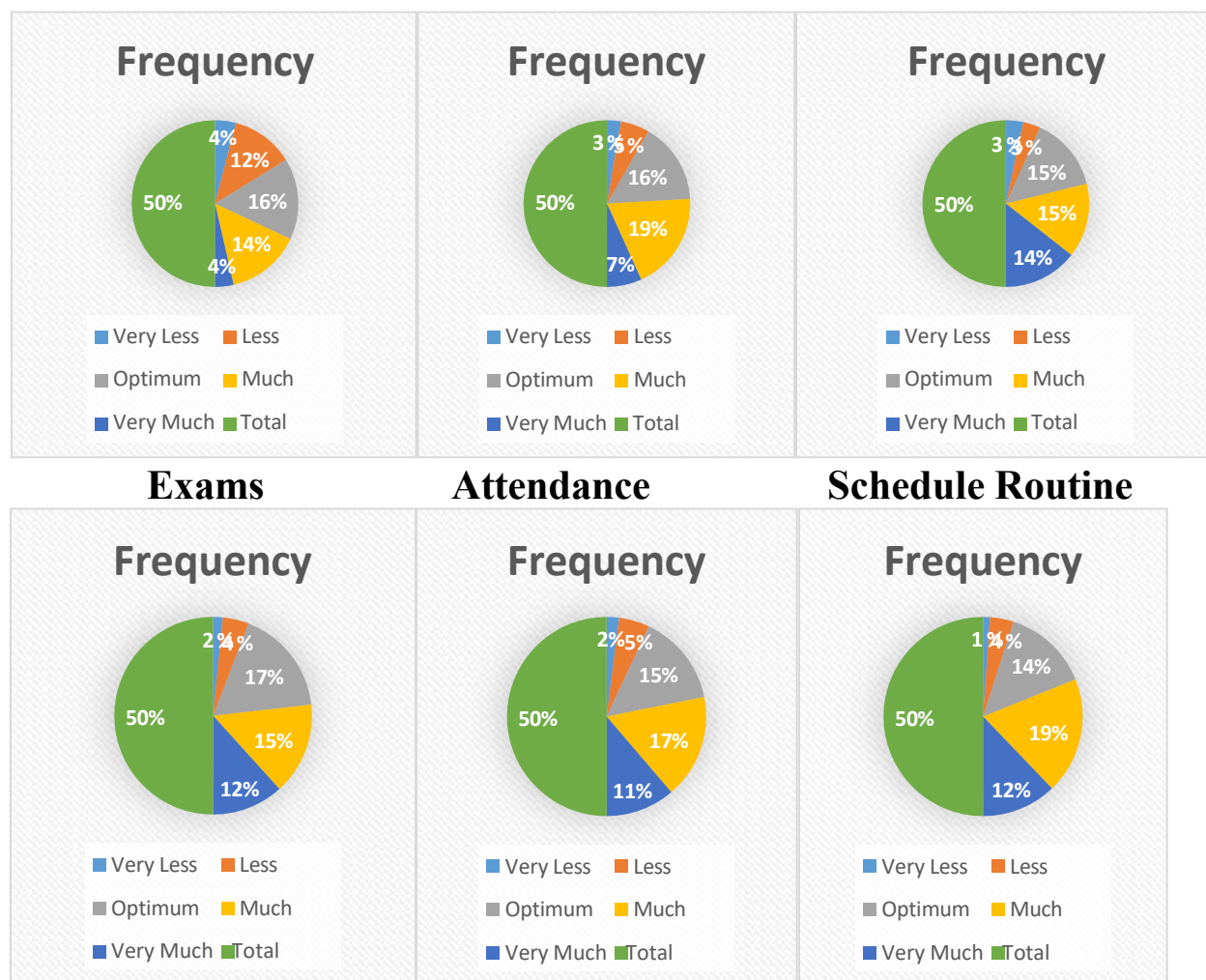
ANOVA

Satisfied

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.209	1	.209	.183	.669
Within Groups	310.348	271	1.145		
Total	310.557	272			

## Data analysis for (Objective-3) 'To identify the most common features of online teaching platforms used by Students'
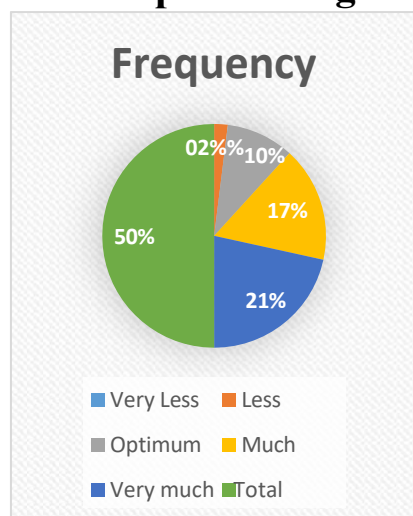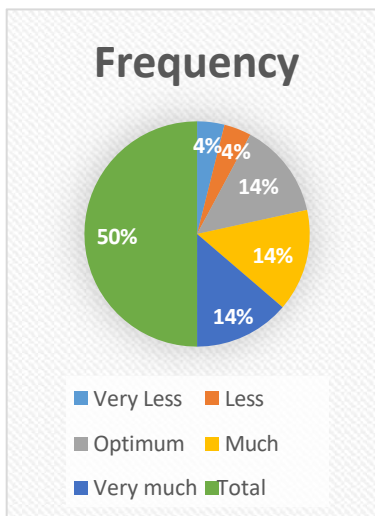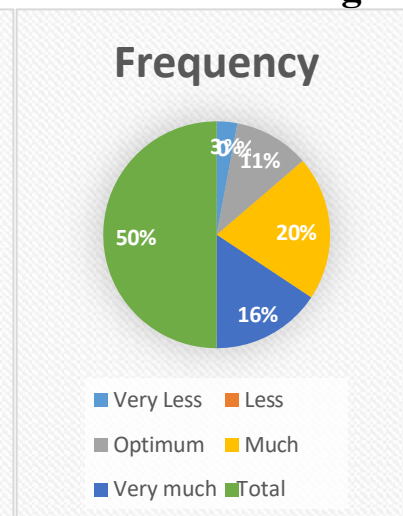
Downloading:Hand-raisingWeb-cam
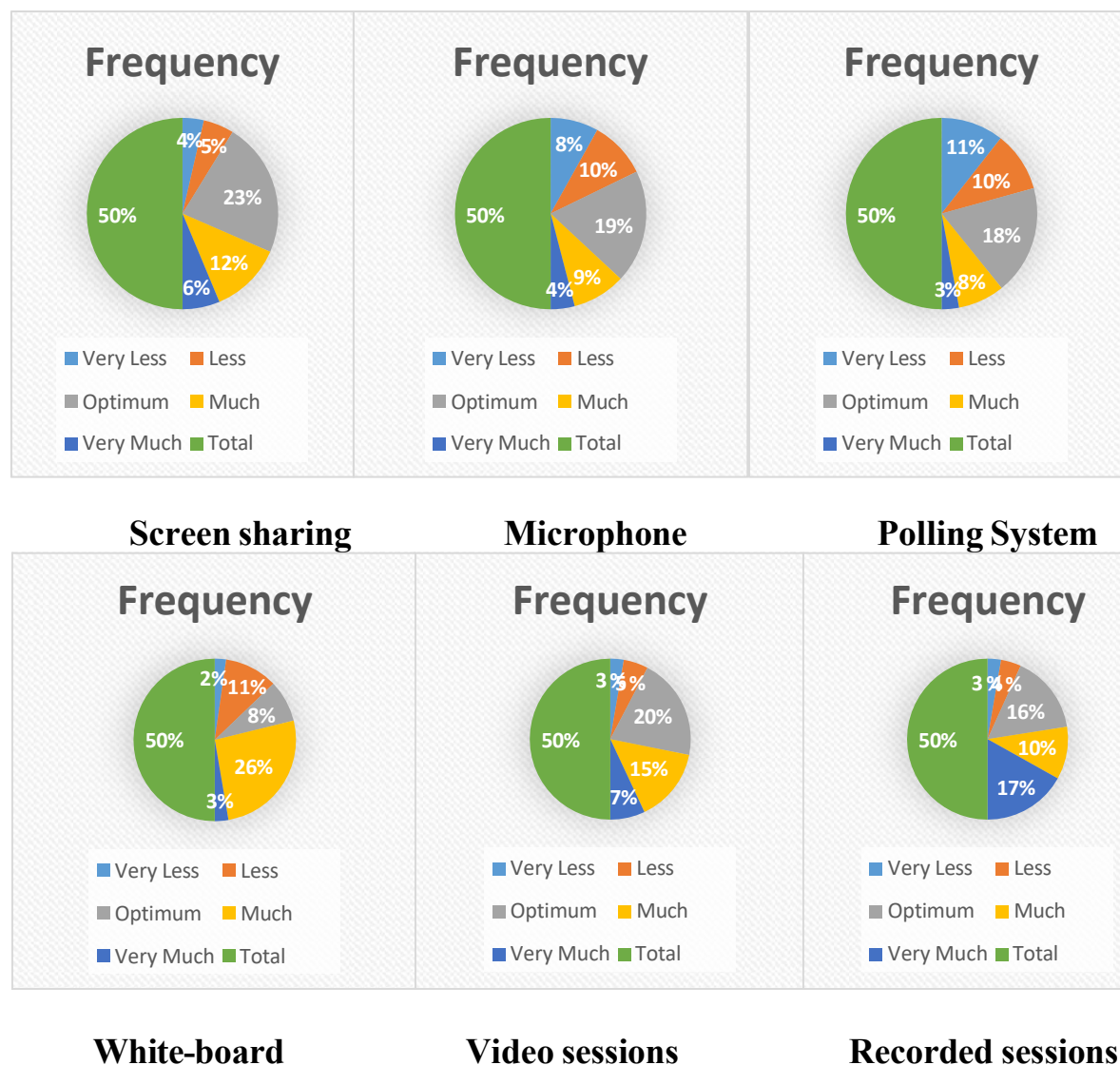
Screen sharing   **Microphone**   **Polling System**

White-board   **Video sessions**   **Recorded sessions**

Exams

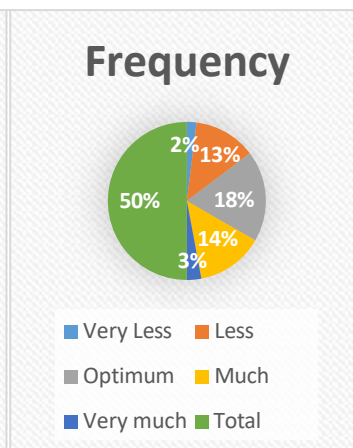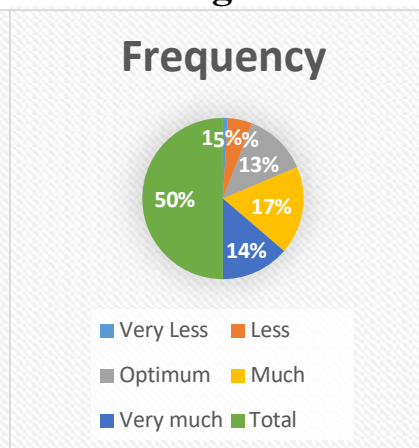**Attendance**

Schedule Routine

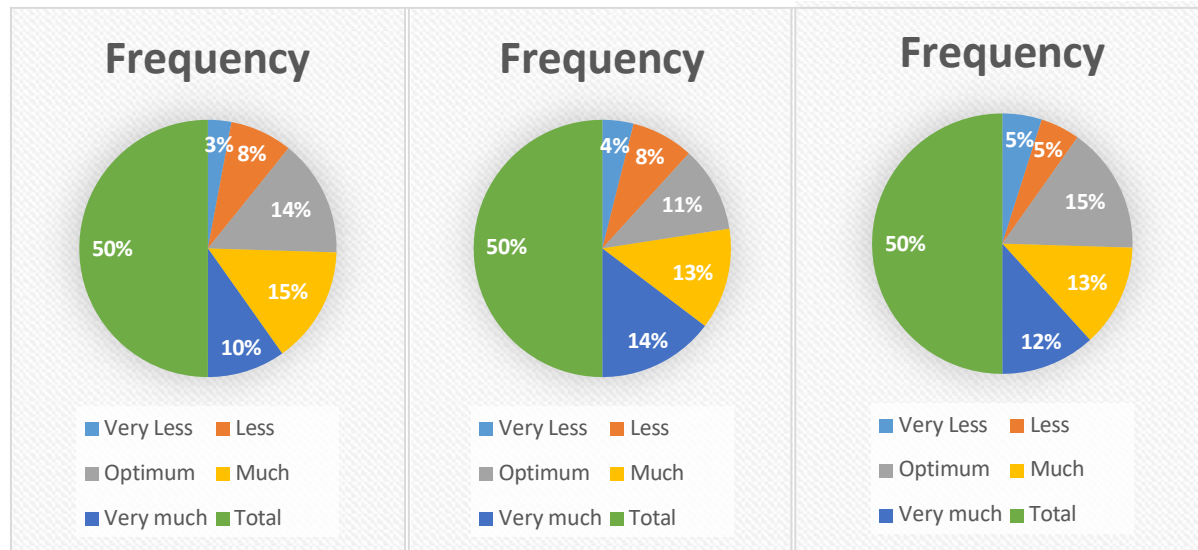## Data analysis for (Objective-3) 'To identify the most common features of online teaching platforms used by Teachers':-

Removing   **Microphone-1**   **Material Uploading**
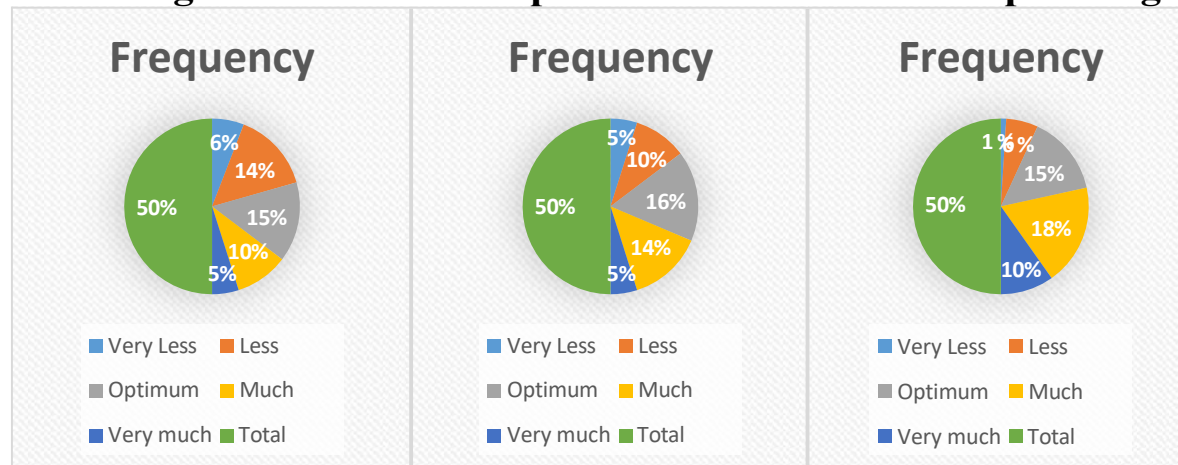
Microphone usage

Webcam

Screen sharing

Polling system
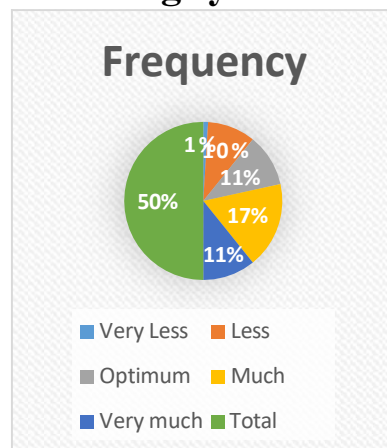
Video sessions

Re-cording sessions

Invigilate test

Schedule routine

Participation Level

This chapter talks about the conclusion part of the study. It includes the outcomes of the objectives. The research results indicate that the factors affecting online teaching from students and teachers perspective are viable teaching and learning environment. Participants, Teachers and students in this study has successfully taught courses online and stated a lot factors that drive them for online teaching. Most of the Teachers and Students reported that Interface design is one of the most affecting factors which is friendly in nature. Participants felt easy to use and navigates all the features without any problem. In the study it has been found that Teachers reported students are more responsive while asking and replying the questions and doubt. Students are happy with the delivery of content for theoretical subjects but somewhere they faced challenges for practical subjects.

Sometimes network connection would be an issue but both are satisfied with the audio and video quality in online teaching platform. Initially attendance marking was an issue for students but it has been resolved by most of the online teaching platforms with the help of algorithms. At last there are so many factors that drive online teaching and many more are yet to emerge in coming times so that online teaching would viable and creates more learning environment.

This study revealed that how much Teachers and Students are satisfied with the online classes and how they adapted the things and managed their time to attend online classes, assignments, tests, practical and examinations where they switched from Offline to Online mode of study and maintained their consistency in this difficult time phase of Pandemic.
We get to know that there is not that much significant difference in satisfaction level between Teachers and Students. The interface design, features and applications of the Online Study application were designed for the comfort of both Teachers and Students in terms of usage as well as satisfaction.

The monitoring, polling and presentation features satisfies the need of both Teachers and Students.
The Online Study application managed to save the time, cost and environment too as total paperless environment was created which saved lots of paper usage.

Overall, the online mode of teaching and/or studying is proved reliable for both Teachers and Students. Both of the Teachers and Students finally are satisfied with the new normal cum-Online learning/teaching mode.

At last third objective shows that the most common features used by Teachers and Students with the help of analysis we came to know that Microphone is the mostly used feature among all the other one by both Teachers and Students. Secondly, Chat is also used regularly to ask confusion or doubt or sometimes giving short answer in the class. Teachers widely used presentation and white board for the students and showing external material from You Tube and other sources. Teachers also used polling for student to know whether how many students are actively participating in the class. It has been found that students often used downloading function to download the material and saved it for later and also whenever students have any doubt they raise their hand to ask it. It has been found that most of the teachers are used we-cam in the class to interact more with the students and also record almost all the sessions for the students to listen for the future if they have any doubt in the particular class. Teachers are having some unique features like when some students are not responding or actively participating so that teachers can remove him/her from the particular class but found very less. In practical subjects there is a unique feature that teachers and students both can share their screen to each other but it has been found in the study that the use of this feature is optimum according to need.

Summing the results, the objectives of the study were reached and the study provides that online teaching can satisfying for both teachers and students in this Covid-19 pandemic.

References :

- Zhuzhu, W., &Weiyuan, Z. (2005). Online Teaching Platforms and Websites in China's Universities [J]. *China Distance Education*,*2*(10).

- Chen, T., Peng, L., Jing, B., Wu, C., Yang, J., & Cong, G. (2020). The Impact of the COVID-19 Pandemic on User Experience with Online Education Platforms in China. *Sustainability*, *12*(18),7329.

- Adnan, M., & Anwar, K. (2020). Online Learning amid the COVID-19 Pandemic: Students' Perspectives. *Online Submission*, *2*(1),45-51.

- Mohammad H Rajab, Abdalla M Gazal and Khaled Alkattan(2020)

- Chirikov, I., Semenova, T., Maloshonok, N., Bettinger, E., &Kizilcec, R. F. (2020). Online education platforms scale college STEM instruction with equivalent learning outcomes at lower cost. *Science Advances*, *6*(15),eaay5324.

- Dhawan, S. (2020). Online learning: A panacea in the time of COVID-19

crisis. *Journal of Educational Technology Systems*, *49*(1),5-22.

- Volery, T., & Lord, D. (2000). Critical success factors in online education. *International journal of educationalmanagement*.

- Gunasekaran, A., McNeil, R. D., &Shaul, D. (2002). E-learning: research and applications. *Industrial and commercial training*.

- Keller, C. (2007). *Virtual learning environments in higher education: A study of user acceptance* (Doctoral dissertation, Institutionenförekonomiskochindustriellutveckling).

- Saadé, R. G., He, X., & Kira, D. (2007). Exploring dimensions to online learning. *Computers in human behavior*, *23*(4),1721-1739.

- Lebrun, M., Docq, F., &Smidts, D. (2009). Claroline, an Internet Teaching and Learning Platform to Foster Teachers' Professional Development and Improve Teaching Quality: First Approaches. *Aace Journal*, *17*(4),347-362.

- Peter, S. E., Bacon, E., &Dastbaz, M. (2010). Adaptable, personalisede-learning incorporating learning styles. *Campus-Wide InformationSystems*.

- Stefan Bensch, Markus Rager(2012)

- Ch, S. K., &Popuri, S. (2013, December). Impact of online education: A study on online learning platforms and edX. In *2013 IEEE International Conference in MOOC, Innovation and Technology in Education (MITE)* (pp. 366-370).IEEE.

- Croxton, R. A. (2014). The role of interactivity in student satisfaction and persistence in online learning. *Journal of Online Learning and Teaching*, *10*(2), 314.