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Study on acceptance level of online education during pandemic period among under graduate and post graduate students

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Abstract. This study focuses on analysing the acceptance level with the online education among under graduate and post graduate students during period of pandemic especially during Covid-19. In this regard, student perception with the online education was analysed using the secondary data as collected from various sources. As the COVID-19 pandemic threatens the academic calendars, educational institutions around the world have been closed and about 70% of the students are engaged in the online education. Students faced various problems related to depression, poor internet activity and inconvenient home learning environment. The online education by the various e-techniques and methods has proven to a solution for colleges and universities, but still the success of online education depends on student's perception and satisfaction level. The sudden transition from a face-to-face to virtual space causes a disruption to the students. Based on the findings of these study, the research implications for educational institutions and researchers are discussed.

Keywords. COVID-19, educational institutions, online education, acceptance level

1. Introduction

The novel virus COVID-19 first occurred in Wuhan, China during the end of 2019. Due to rapid global spread of COVID-19, the WHO declared it as “Pandemic” on 11th March-2020 (WHO, 2020). Most of the governments in the world have set a common goal of curbing the spread of this contagious disease by imposing lockdown, social distancing, avoidance of face to face learning and immigration restrictions. Around 600 million students worldwide are affected by the closure of educational institutions (Goyal, 2020). There is a paradigm shift in delivering quality education through various online platforms. The online and distance education have become a panacea for this unpredicted pandemic, despite the challenges faced by the educators and students. The transition from traditional face-to-face to online education can be very different experience for the students and educators to adapt and there is no other option. The institutions are adopting “Education in Emergency” through diverse online platform and forcing them to undertake the unprepared systems. Generally, the online education was not a new concept for educators, the COVID-19 pandemic created an unprecedented worldwide need to discover the online education opportunities. The UNESCO reported that over 1.5 billion students over the globe have been suffering from the closure of COVID-19 and changes in

education systems (UNESCO, 2020). The face-to-face education was converted into online in a short transition period, because of the closure of institutions around the world. As a result, educational institutions that primarily focused on the traditional face-to-face educations faced various challenges in this transition. Majority of the institutions either postponed and cancelled all the campus activities to avoid gathering and thus decrease the transmission of virus. However, these measures leads to high economic, social and medical implications on both undergraduate and post graduate students (Alradhawi *et al.* 2020). The suspension of face-to-face education in numerous institutions will enable the switch to online education for undergraduate and post graduate students. This way of education offers an alternative way to decrease the contact between the students. However, many students do not have access to the online education due to lack of funds and tools due to economic and digital divide. The quality of learning is also primary concern that closely related to how well the content is designed and implemented. The effectiveness of learning also depends on how well the content is curated in an online environment. Hence, it is essential to assess the acceptance level of the online education among the various classes of students.

2. Background of study

Based on the existing theories, may attempts have been made to predict the acceptance of the new technology. Of the various theories, the Technology Acceptance Model (TAM) is one of the most widely theoretical frameworks. The TAM presupposes the perceived ease of use and perceived usefulness that help in constructing a positive attitude and then enhance behavioural intention for a particular technology (Davis, 1989). The Theory of Planned Behaviour (TPB) is another conceptual model widely used in many studies to determine the driving forces on the individual behaviour (Ajzen, 1991). Both the TPB and TAM were adopted from the Rational Behaviour Theory (TRA) which presupposes that an behavioural intention of an individual are completely under volitional control. These models are widely used to study the acceptance of the online education among the students. Although online education is only solution for the students during the pandemic of COVID-19, the acceptance level of the students and faculty is important to an effective learning process. The students can develop their knowledge in a social context while interacting with others students, participate in activities and receive feedbacks. The student interaction with other students or with instructor plays an important role in the acceptance. Therefore, using multiple types of interactivities in a learning context increases the acceptance with the learning experience. In addition to academic program, engaging the students in some formal extra-curricular activities will increases the level of acceptance. Meyer (2014) discovered that acceptance and satisfaction has positively linked with the engagement and academic performance of the students. Keller *et al.* (2002) analysed the factors that affects the acceptance of the online education by the students and found that time spent on use, rate of use and confidence in computer use positively affects acceptance of online education. Han *et al.* (2021) analysed the satisfaction level of students with online education and found that major factors impact student satisfactions are with online classes and technology acceptance. Rienties & Toetenel (2016) reported that there was no significant relationship between the face-to-face and online education. However, very few studies have shown that the students were received high level acceptance with face-to-face education (Fishman *et al.* 2013). Chakraborty *et al.* (2021) in their study found that 65.9% of the student felt that they are learn better in physical classroom and 39.9% of students felt better learning through online education. The factors that affect the student acceptance with online education can be classified into three classes as faculty, interactivity and technology (Bolliger, 2004). The satisfaction of the students

and faculty are related, because the satisfaction of the students is influenced by the interaction and technology. This requires more effort on the part of faculty to attract the students online, in addition to the need of appropriate techno-pedagogical skills. Ke & Kwak (2013) in their study found that student satisfactions are influenced by authentic learning, learner relevance, learner autonomy active learning, and technological competence. Elumalai *et al.* (2021) conducted a cross-sectional inferential statistic from the students from higher educational institutions with self-structured questionnaires and found the significant differences in student perceptions between gender, level of course and quality of online learning during the Covid-19 pandemic. The gender satisfaction is a contradictory issue. Harvey *et al.* (2017) found that there was no difference between the genders in the online education. Martin & Bolliger (2018) reported that female students were more satisfied than male students with online education. Whereas Venkatesh *et al.* (2020) reported that male students possess significantly high computer self-efficacy and satisfaction than the females.

Numerous studies (Tratnik *et al.* 2019; Venkatesh *et al.* 2020) have measured student satisfaction with online learning before COVID-19. Only few studies (Han *et al.* 2021; Elumalai *et al.* 2021; Abbasi *et al.* 2020) have measured perception and acceptance level with online education after COVID-19. Aguilera-Hermida (2020) investigated the student college perception on the use, acceptance and adoption of online learning during the pandemic of COVID-19. Abbasi *et al.* (2020) investigated the student's perceptions on online education during lockdown and found that students did not prefer the online education as compared to face-to-face education. Kapasia *et al.* (2020) examined the impact of lockdown on the learning status of the undergraduate and post-graduate students during COVID-19 pandemic and found significant measure of students facing many challenges in online education. To best of our knowledge, no study had examined the acceptance level with online education among the under graduate and post graduate students. Therefore, it was proposed to analyse the level of acceptance as obtained through online education among the under graduate and post graduate student during the COVID-19 pandemic.

3. Methodology

This study uses the secondary data analysis using existing data collected for the purposes of previous studies to pursue various research interests than the original study. This could be an alternative perspective to the new research or original questions. The secondary analysis includes the utilization of single or multiple qualitative datasets and a mixture of qualitative and quantitative datasets. This approach can be used by researchers to reuse their data or through independent analysis using previously created qualitative data. However, secondary data analysis is the use of data collected by another person from another purpose. In this case, the researchers pose a question by analysing the dataset was not involved in the collection. The data was collected for other purposes, not to answer the researcher's specific questions, but for other purposes. Therefore, the same dataset can be a primary dataset for other researchers and secondary data for another researcher. The secondary data used in this study are collected from the various published research articles. The data collected from the various secondary sources related to this study area were analysed using statistical tools like MS Excel and SPSS.

4. Results and discussion

The secondary data were collected to underline the level of acceptance as obtained through online education among the under graduate and post graduate student of sample size

($N=313$) during the COVID-19 pandemic. The demographic information of the students of under graduates and the post graduates was collected in order to learn about their history, such as gender, education, course pursuing, year of studying, number of years in the online class of students and the number of lessons they might fall for a week. The demographic background of the respondents is explained in the table below.

Table 1. Demographic Profile of the Respondents

<i>Demographic details of the respondents</i>		<u>N=313</u> Percentage
<i>Gender</i>	Male	49.8
	Female	50.2
<i>Degree/ Year</i>	Graduate	68.7
	First year	16
	Second year	22.4
	Third year	30.7
	Fourth year	31
	Post-Graduate	31.3
	First year	57.5
	Second year	42.5
<i>Major</i>	Humanities and social sciences	33.2
	Natural sciences and engineering	43.8
	Education	6.7
	Health and medicine	9.6
	Other	6.7
<i>Class method</i>	Only online classes	52.1
	Both online and offline classes	47.9
<i>Period</i>	< 1 Semester	2.9
	1 Semester	13.1
	1–2 Semesters	70.9
	> 2 Semesters	13.1
<i>Frequency of lessons per week</i>	1–2 times	10.5
	3–4 times	48.2
	5 or more times	41.2

Source: Han, J. H., & Sa, H. J. (2021)

From the above table majority of the respondents were obtained from the female students (50.8%) followed by the respondents were collected amongst from the male students (49.8%). This study mainly focuses on the respondents who were studying under graduate (68.7%) in which majorities were from fourth year (31%) and third year (30.7%) students and post graduate degree (31.3%) in which the distribution of the respondents was in first year (57.5%) and second year (42.5%). From the observation of this study, the majority of the students were studying through the online classes (52.1%) whereas some of the students were studying through both the online and the offline classes during this pandemic (47.9%). The frequency of lessons of 3-4 times per week undergone by the students which shows the highest percentage of (48.2%), followed by the students were obtained from the respondents studied 5

or more times of lessons in a week (41.2%) and the least percentage of the respondents were collected from the students who taken 1-2 times of lessons per week (10.5%).

4.1. Student's Acceptance Level on Online Education

The acceptance level of the students on online education can be measured by various parameters. Here this study intends to analyse the acceptance with few constructs collected from the previous researches such as comfortability, Usefulness, Student-teacher interactions, Accessibility and cognitive engagement.

Table 1. Student's acceptance level on communality – Factor Analysis

I. COMFORTABILITY		
<i>Statement</i>	<i>% Of variance explained</i>	<i>Communality</i>
I feel comfortable using online learning tools	39.52	0.662
I feel learning is same in class and at home on the Internet	24.963	0.721
I find it hard to stick to a study schedule of the online course	8.196	0.725
<i>Source: Kulal, A., & Nayak, A. (2020)</i>		

From the above table the questionnaire was asked to measure the comfortability of a students on online education using factor analysis and the output got the communality values of greater than 0.5 which shows the factor “comfortability” is a major contributing element on the acceptance of online education among students. *Note: If the communality value is less than 0.5, the factor is eliminated from the construct.*

Table 2. Student's acceptance level on Usefulness–Path Analysis

II. Usefulness						
<i>Statement</i>	<i>Std. Regression Coefficients</i>	<i>Variance Explained</i>	<i>Critical Ratio</i>	<i>p-Value</i>	<i>CR</i>	<i>AVE</i>
Studying through e-learning mode provides the flexibility to the study at the time convenient to the learner.	0.739	0.546	9.479	<0.001	0.839	0.573
E-learning can enable people to study irrespective of where they are located in the world.	0.749	0.561	9.86	<0.001		
There are technologies available to enable one to take tests and submit assignments electronically.	0.752	0.565	9.893	<0.001		

There are electronic tools available to enable interactive communication between instructor and student without meeting face-to-face.	0.782	0.612	10.309	<0.001		
<i>Source: Khan et al., (2021)</i>						

According to the validity and reliability analysis in the preceding table 2, the Composite Reliability (CR) of each latent construct exceeds the allowed level of 0.70. It demonstrates that the scale items have a high level of internal consistency. The Average Variance Extracted (AVE) of each latent variable, on the other hand, exceeds the 0.5 specified threshold. It confirms the above-mentioned CFA measurement model's great convergent validity.

Table 3. Student's acceptance level on Student-Teacher Interactions–One Way ANOVA

III. Student-Teacher Interaction			
<i>Item</i>	<i>M</i>	<i>SD</i>	<i>F</i>
Instructor allocates time for questions and answers during the online class	4.21	0.94	7.31 **
Instructor posts regular announcements or email reminders	4.13	0.95	
Instructor uses various features during class to interact with students	4.11	0.94	
Instructor creates a group chat to answer questions about the course	4.11	0.95	
Instructor provides various types of feedback	4.03	0.9	
Instructor gives students the chance to give feedback	3.96	1.04	
Instructor posts a “due date checklist” at the end of each online class	3.9	1.01	
Instructor refers to students by name in discussion forums and during class	3.86	1.01	
Instructor answers queries through their personal contact information	3.86	1.04	
Instructor shows their face during the class	3.73	1.23	
Total	3.99	1.02	
** p < 0.001, Scale ranging from 1 (very ineffective) to 5 (very effective).			
Source: Abou-Khalil et al., (2021)			

The reported efficacy of the student–teacher interaction factor is shown in Table 3. A one-way ANOVA was used to compare the perceived effectiveness of student–teacher interaction factors. The results show that there is a significant difference in the perceptions of the different variables with $p < 0.001$.

Table 4. Student's acceptance level on Accessibility– Confirmatory Factor and Reliability Analysis

IV. Accessibility/Ease of use					
<i>Statements</i>	<i>Standardized estimate</i>	<i>Error variation</i>	<i>Construct Reliability</i>	<i>Average Variance Extracted</i>	<i>Cronbach's α</i>
I will be able to clearly understand how to use this online class	0.675	0.584	0.887	0.665	0.876
I will be able to skilfully use this online class	0.824	0.289			
Learning how to use online classes will be easy	0.88	0.194			
Online classes will be easy to use	0.844	0.251			
<i>Source: Han, J. H., & Sa, H. J. (2021)</i>					

From the above table, the study of "accessibility or ease of use of online education has a positive influence on acceptance level" yielded a path coefficient of 0.019 and a t-value of 0.553, indicating that it was not statistically significant. As a result, the construct accessibility could be rejected.

Table 5. Student's acceptance level on Cognitive Engagement–One Sample T-Test

V. Cognitive Engagement					
<i>Item</i>	<i>n</i>	<i>Mean</i>	<i>Std. Deviation</i>	<i>t</i>	
Grades	236	2.91	0.99	1.44	**
Knowledge/learning (school)	237	2.51	1.04	7.34	**
Concentration	239	1.97	1.16	13.63	**
Level of engagement	239	2.06	1.15	12.61	**
Class attendance	238	2.71	1.07	4.2	**
Interest and enthusiasm	2389	2.15	1.13	11.58	**
*Significant at the $p < .05$ level, ** Significant at the $p < .001$ level					
<i>Source: Aguilera-Hermida, A. P. (2020)</i>					

As shown in Table 5, Then compared each mean answer with a test value of 3 using one-sample t-tests. Students reported no change in grades, but a decrease in each of the remaining five factors: knowledge/learning (connected to school), concentration, degree of

involvement, class attendance, and interest and passion. Notably, when these assessments were combined to generate a mean changes score, the results revealed that, generally, students reported a decrement, $t= 10.23$, $p < .001$.

Conclusion

The analysis shows that following the transition, commitment, self-efficacy, and cognitive engagement decreased the acceptance level, while the usage of technology enhanced the acceptance level of online education to the students. The crisis is not ended, and if we want students to continue and have a positive higher education experience, then must adjust to their attitudes and requirements. This study also demonstrated that the online learning will play a major role in the future, it will not be able to replace conventional face-to-face classroom education. It is difficult to make the whole switch to online education. However, we cannot deny the advantages of online learning. This study is focused only the acceptance level of online education among under graduate and post graduate students. Hence, the future study will have focused towards on analysing the acceptance level of online education among the school students.

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