An exploratory study to assess stakeholder's perception for new online teaching-learning environment during covid-19

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Abstract: Certain events bring unprecedented changes for the way things take place in our life. Spread of COVID-19 has brought a paradigm shift in a similar manner to the way we learn things and has dramatically altered the teaching learning process. Like any other tool, online learning was considered to be a supporting hand for augmenting the teaching learning experience by making the learning process more interactive and participative. COVID-19 has made online teaching as the sole mode for teaching learning for students and teachers. Without any doubt, when we run out of options only then we can ascertain the true facets of something. It can also be applied to evaluate the effectiveness of online teaching over traditional teaching. The present study is an endeavor to assess the stakeholder's perception for this new teaching learning environment which has emerged during this unprecedented situation. Respondents were selected using stratified judgment sampling method. 120 respondents from Delhi NCR were interviewed using structured questionnaire. Statistical tools like factor analysis, cross tabulation, t-test and discriminant analysis were used for data analysis. Factor analysis led to formation of dimensions namely awareness related to online teaching learning process, perception for decisions taken by higher education bodies, impact of pandemic on economic conditions and subsequent attendance and effectiveness of online classes. Further two-group discriminant analysis was applied to find out association among predictors and effectiveness of online learning. It was observed that awareness related to online teaching learning process, perception for decisions taken by administration, impact of pandemic on economic conditions, attendance, socio-economic background were prominent factors which significantly affect the respondent's perception for effectiveness of online classes.

Keywords: COVID-19, Online Teaching, Teaching Learning Experience, Factor Analysis

1. Introduction

The deadly Covid-19 has been declared as a pandemic after the assessment of its severity and spread across the world, by World Health Organization (WHO) in March 2020. The use of masks and social distancing are among the precautions advised given by WHO to curb its spread around the world. The Covid-19 pandemic has enforced the closures of education educational institutions and businesses that's why all the institutions have adopted the online platform. Like any other tool, online learning was considered to be a supporting hand for augmenting the teaching-learning experience by making the learning process more interactive and participative (Bao, W. 2020; König. 2020; Mahmood 2020). COVID-19 has made online teaching as the sole mode for teaching-learning for students and teachers. Without any doubt, when we run out of options only then we can ascertain the true facets of something. It can also be applied to evaluate the effectiveness of online teaching over traditional teaching (Gewin V. 2020; Mishra 2020).

2. Literature Review

Online education adds value to the learning; this addition refers to advancement of research work, theories and principles, focus on quality course design certainly facilitates the teaching learning process (Hodges et al., 2020; Bozkurt & Sharma, 2020) as it has been established through research that instructions and content designed carefully and in organized manner leads to effective online learning (Branch &Dousay, 2015) . During pandemic the random shift to the online education without paying attention to the development and design processes has lead to denial of online education as efficient online education and it has been more or less being portrayed as crisis teaching (Bozkurt & Sharma, 2020; Hodges et al., 2020; Vlachopoulos, 2020).

Bordoloi, R., Das, P. and Das, K. (2021) through their research the authors tried to comprehend the perceptions of stakeholders in teaching learning process with the use of online or blended mode. The paper also throws light on the prospects and challenges involve in the online learning during the pandemic in the country like India.

3. The Proposed Method

Study has been conducted in Delhi-NCR and Haryana. Administrative divisions defined by the state administration in Delhi-NCR and Haryana acted as subgroups or strata and respondents were chosen using judgment sampling leading to overall sampling type of stratified judgment sampling. During this pandemic

situation online mode was used to collect information from respondents using Google forms. In total 175 responses was received from respondents and after scrutinizing the data only 120 responses were found fit for the study. Respondents were selected using stratified judgment sampling method. Respondents from Delhi NCR were interviewed using structured questionnaire. Statistical tools like factor analysis, cross tabulation, t-test and discriminant analysis were used for data analysis. Factor analysis led to formation of dimensions namely awareness related to online teaching learning process, perception for decisions taken by higher education bodies, impact of pandemic on economic conditions and subsequent attendance and effectiveness of online classes. Two groups of respondents were formed as per their perception related to effectiveness of online learning. Further two-group discriminant analysis was applied to find out association among predictors and effectiveness of online learning.

3.1 Objective of the study

1. To study whether significant difference exists between perceptions of users for online education effectiveness during corona pandemic, in terms of predictor variables undertaken.
2. To examine which of the predictor variable contribute to the most of the intergroup differences?

3.2 Hypothesis of the Study

HA1: Users' demographics significantly discriminate the groups of respondents perceiving low and high effectiveness of online education.

HA2: Awareness for online teaching learning process significantly discriminate the groups of respondents perceiving low and high effectiveness of online education.

HA3: Experience with online teaching learning process significantly discriminate the groups of respondents perceiving low and high effectiveness of online education.

HA4: Perception for decisions taken by administration significantly discriminate the groups of respondents perceiving low and high effectiveness of online education.

HA5: Impact of pandemic on economic conditions significantly discriminate the groups of respondents perceiving low and high effectiveness of online education.

3.3 Questionnaire formulation

A pool of 30 statements measuring stakeholder's perception related to effectiveness of online teaching learning was prepared. Experts' suggestions and feedback was given due consideration while preparing questionnaire for the study. The statements were further analyzed using techniques such factor analysis and reliability analysis, brain stormed with experience survey and 16 statements were finalized for the current study. Out of these 16 statements four measures awareness related to online teaching learning process, three measures perception for decisions taken by higher education bodies, three measures impact of Covid-19 on economic condition and educational attendance and remaining six statements measure effectiveness of online classes used as dependent variable in the current study.

3.4 Statistical technique

Demographic profile of the respondents was analyzed using central tendency tools like mean and percentage. Table 1 shows the demographic information of the respondents related to gender, age, education, residential area type, monthly income, experience of teaching and Pre-Covid-19 experience of online teaching/learning. Frequently used method to check reliability the cronbach's alpha (Schmitt, 1996) was used in the current study to check internal consistency of the scale and its value comes out to be .753 indicating that scale used in the current study is reliable.

Table 1. Data collection

Demographics		**Frequency**	**Proportion of the sample (%)**
Gender	Male	70	58.33 %
	Female	50	41.67 %
	Total	120	100.0 %
Residence Type	Urban	80	66.67 %
	Rural	40	33.33 %
	Total	120	100.0 %
ge	Up to 40	50	42%

	41-50	40	33%
	Above 50	30	25%
	Total	120	100.0 %
Education	Graduation	0	0%
	P.G.	85	71%
	Doctorate	35	29%
	D.Lit	0	0%
	Total	120	100.0 %
Income per Annum	Up to 5 Lakh	45	38%
	5-10 lakh	50	42%
	Above 10 Lakh	25	21%
	Total	120	100.0 %
Teaching Experience	Less than 5 Years	20	17%
	6 to 10 Years	37	31%
	11-15 Years	18	15%
	15-20 Years	20	17%
	More than 20 Years	25	21%
	Total	120	100.0 %
Pre-Covid-19 Experience of Online Teaching/Learning	Yes	45	37.50%
	No	75	62.5%
	Total	120	100.0 %

Source: Primary Data

3.5 Factor Analysis

Factor analysis was applied to reduce the number of statements and to generate dimensions measuring perception towards online education. Factor analysis was applied using principal components analysis as extraction method and with varimax rotation. KMO value for sampling adequacy was at .684 and results for Bartlett's test of sphericity was also found significant fulfilling the criteria to apply factor analysis on the given data set.

Table 2. Four dimensions measuring perception towards online education

Variable Number	Factor and Variables	Factor loading
Behavioral and social Influence of T.V. Ads (Cronbach alpha=.676)		
6	I remain highly excited related to usage of online learning tools and techniques.	.783
2	Online teaching saves my lot of time and I can take care of my family effectively during this time.	.712
27	Communication with students during online classes is highly interactive and queries of students can be properly addressed over online teaching platforms.	.698
5	It is quiet efficient and effective to share study material and take assignment online as compared to offline mode of teaching.	.654
11	Students do not face any major issues while attending online classes and submitting assignments online.	.611
14	Internet connectivity is one of the major challenge faced during online classes and sometimes it leads to disturbance in online class.	.582
Awareness related to online teaching learning process (Cronbach alpha=.614)		
9	I know about various online learning platforms like MS team, Zoom etc.	.690
19	My institution provided detailed training related to technical know-how of online platforms being used for teaching.	.605
10	I can easily operate online platforms and optimally using them for teaching.	.570
16	I have experience of taking online lectures prior to Covid-19.	.524
Perception for decisions taken by higher education bodies (Cronbach alpha=.628)		
26	Government should open educational institutions as soon as possible as things seem to be under control.	.785
25	Recommendations of the UGC in 'Report of the UGC Committee on Examinations and Academic Calendar'? are appropriate as per the prevailing conditions.	.680
28	UGC's recommendation about the conduction of examination, evaluation pattern, research, and field based/ practical work is properly aligned?	.590
Impact of COVD-19 on economic condition and educational attendance (Cronbach alpha=.589)		
22	Covid-19 has affected the economic condition of the students' families adversely.	.745
24	Adverse impact of Covid-19 on economic conditions effecting students' education and subsequently attendance of students has decreased significantly from Pre-Covid-19 level.	.710
23	It is likely that some of the students may discontinue/postpone their education endeavors until situation gets back to normal	.615

Source: Primary data

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization

Factor analysis was applied on data keeping eigen value at 1.0 as basis for extraction. Application of principal component analysis extracted four factors related to perception for online education explaining 62.52 percent of the variance. Four factors extracted after application of factor analysis were awareness related to online teaching learning process, perception for decisions taken by higher education bodies, impact of pandemic on economic conditions and subsequent attendance at classes, effectiveness of online classes: problems faced during attending online classes & benefits of online classes.

3.6 Predictor Variables

Objective of the current study was to examine whether demographics and attitudinal variables produces significant variation among respondents' opinions for effectiveness of online teaching learning process. In the current study three demographic variables age, income and Pre-Covid-19 experience of online teaching/learning and three psychographic variables namely awareness related to online teaching learning process, perception for decisions taken by higher education bodies and impact of pandemic on economic conditions and subsequent attendance at classes taken as predictors to discriminate the two groups of users regarding perception for effectiveness of online classes.

3.7 Data analysis and Results

The objective of the data analysis was to examine whether demographic variables age, income and Pre-Covid-19 experience of online teaching/learning and psychographic variables namely awareness related to online teaching learning process, perception for decisions taken by higher education bodies and impact of pandemic on economic conditions and subsequent attendance at classes can discriminate users' perception for effectiveness of online classes.

Table 3. Group Statistics (Means and Standard Deviation)

Effectiveness of online teaching Learning	**Predictor Variables**	**Mean**	**Std. Deviation**	**Number of Respondents**
Low(1)	Age	3.2546	.9564	68
	Annual Household Income	2.5461	.7954	68
	Pre-Covid-19 experience of online teaching/learning	2.5124	.7120	68
	Awareness related to online teaching learning process	3.1258	.7425	68
	Perception for decisions taken by higher education bodies	3.2389	.7123	68
	Impact of pandemic on economic conditions and subsequent attendance at classes	2.8541	.6845	68
High(2)	Age	2.6254	1.0254	52

	Annual Household Income	2.6254	.6845	52
	Pre-Covid-19 experience of online teaching/learning	3.4562	.6354	52
	Awareness related to online teaching learning process	3.8425	.5896	52
	Perception for decisions taken by higher education bodies	3.2416	.6784	52
	Impact of pandemic on economic conditions and subsequent attendance at classes	3.5684	.5986	52

Table 3 contains mean values and standard deviation for two groups perceiving online teaching learning low and high effective. Above table exhibits that variables like age, Pre-Covid-19 experience of online teaching/learning, awareness related to online teaching learning and impact of pandemic on economic conditions and subsequent attendance at classes appears to be separating the two groups of users more widely as compared to the other predictors namely annual household income and perception for decisions taken by higher education bodies.

Table 4. Wilks' Lambda and tests of equality of group means

Predictor Variables	**Wilks' Lambda**	**F**	**Sig.**
Age	.982	18.214	.008*
Annual Household Income	1.1023	.2310	.497
Pre-Covid-19 experience of online teaching/learning	.982	45.168	.000*
Awareness related to online teaching learning process	.949	25.512	.000*
Perception for decisions taken by higher education bodies	1.1012	.2290	.586
Impact of pandemic on economic conditions and subsequent attendance at classes	.970	26.124	.000*

Source Primary data

*Significant at 0.05 level of significance

F-test was applied to assess whether significant different exist between group of users. F ratio indicated that variables namely age, pre-covid-19 experience of online teaching/learning, awareness related to online teaching learning process, impact of pandemic on economic conditions and subsequent attendance at classes significantly differentiate between groups of users perceiving online education low and high effective, thus accepting hypothesis namely HA1, HA2, HA3, HA5. Whereas annual household income and perception for decisions taken by higher education bodies failed to differentiate between groups of users, not accepting hypothesis HA4.

Table 5. Significance of Discriminant Functions

Test of Function	Wilks' Lambda	Chi-square	df	Sig.
1	.8756	68.568	5	.001*

Source Primary Data

*Significant at 0.05 level of significance

Chi-square test statistics was applied to examine the null hypothesis of equal group means for discriminant function and the value for Chi-square test statistics was found to be statistically significant. So the discriminant function applied in the current study significantly differentiates between groups of users having variation in perception for effectiveness of online teaching.

Table 6. Canonical Discriminant Function Coefficients

Predictor variables	Standardized	Unstandardized
	Function1	Function1
Age	.3568	.4167
Annual Household Income	.0546	.0257
Pre-Covid-19 experience of online teaching/learning	.9125	1.2543
Awareness related to online teaching learning process	.7218	.8254
Perception for decisions taken by higher education bodies	.0124	.0286
Impact of pandemic on economic conditions and subsequent attendance at classes	.7029	.8695
Constant	-	-4.3258

Source: Primary Data

Table 6 depicts standardized and unstandardized discriminant function coefficients and it can be observed that Pre-Covid-19 experience of online teaching/learning has the highest discriminant function coefficients followed by Awareness related to online teaching learning process, Impact of pandemic on economic conditions and subsequent attendance at classes and age of the users.

Table7. Structure Matrix

	Function 1
Attitudinal Influence of T.V. Ads	.765
Negative Influence of T.V. Ads	.577
Behavioral and Social Influence of T.V. Ads	.446
Annual household income	-.053
Education	.050

Pooled within-groups correlations between predictors and standardized canonical discriminant functions. Variables ordered by absolute size of correlation within function.

Source Primary data

Structure matrix containing discriminant loadings between discriminant function and predictors indicated relative importance of predictors for online teaching learning effectiveness. Pre-Covid-19 experience of online teaching/learning has the maximum loading making it the strongest factor discriminating between groups of users followed by impact of pandemic on economic conditions and subsequent attendance at classes, awareness related to online teaching learning process and age. Income and perception for decisions taken by higher education bodies failed to discriminate between groups of respondents as both of these variables have very low discriminant loadings. This claim is also supported by table 4 containing information related to tests of equality for group means and table 6 having discriminant function coefficients.

4. Conclusion and discussion

It was observed that awareness related to online teaching learning process, perception for decisions taken administration, impact of pandemic on economic conditions, attendance, socio-economic background were prominent factors which significantly affect the respondents perception for effectiveness of online classes. Results of the current study indicated the crucial aspect related to effectiveness of online learning. Online teaching was considered to be moderately effective by students as well as faculty members. Educational institutions having students from strong socio-economic background firmly believed that online teaching is effective whereas, it was not considered that much effective by students from weaker socio-economic background. This deviation in behaviour may be attributed to availability of resources among people from diverse socio-economic backgrounds. Faculty members considered online teaching to be moderately effective due to certain complexities involved while delivering concepts where some sort of demonstration is required and inability to connect properly with students like physical classrooms.

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