Impact of Suitability of Online Teaching on Student's Learning Satisfaction

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Abstract

***Purpose: -** The major objective of this research is to examine the impact of suitability of online teaching on students' learning satisfaction.*

***Research methodology:** The current study comprises of a total sample of 300 respondents. To test the relationship between suitability of online teaching and learning satisfaction of students, first hand data was collected from the students with the help of a structure questionnaire. Completely filled questionnaires were included in the analysis for this study. Initially, confirmatory factor analysis was employed to test the psychometric properties of measurement scales of both the constructs under study. Further, structural equation modeling technique was applied to test and validate the relationship among these constructs.*

***Findings:** In this study a strong and positive effect of suitability of online teaching was found on the learning satisfaction of the students. Suitability of online teaching works as a significant antecedent of the learning satisfaction of the students.*

***Practical implications:** This study helps in expanding one's understanding and knowledge of the students' learning satisfaction. Further, it explains how suitability of online teaching relates with learning satisfaction of students and thus may prove critical in improving it. It may guide the academicians and policy makers in improving the online teaching practices which is very pertinent.*

***Originality:** This study was conducted during nationwide closure of educational institutions in India to understand the suitability of online teaching and further to establish its effect on learning satisfaction of students. This study provides original views on the relation of these constructs and looks for providing substantial inputs to the policy makers to design better online education systems.*

***Paper type: -** Research paper*

***Keywords:** Online Teaching, E-Learning, Student Learning Satisfaction, Digital Education*

Introduction

Global education has been heavily disrupted by unforeseen developments that have swept countries and introduced major shifts in the way we provide learning. The shutdown of schools worldwide brought traditional, bricks-and-mortar learning to an abrupt end. Education systems and students were not prepared for a sudden shift, and the challenges to keep learning were considerable. Among other things, many governments and institutions, India included, shut down schools and colleges abruptly forcing educators and students to come to terms with a new mode of teaching and learning – online education. The abrupt transition from face-to-face learning to online instruction has been a challenge for educational systems across the world. This sudden development necessitated the shift from traditional classroom teaching to online education, which in turn created an unmatched rise of digital platforms for education. While the likes of India has made significant strides in technology, the education

sector wasn't entirely prepared for full transition to online learning. This was especially noticeable when in transition to virtual learning environments where due to unavailability of resources, insufficient digital literacy and low internet accessibility in many regions, teachers and students had also experienced the problems adjusting (Tanveer et al., 2020).In the midst of these obstacles, distance learning has not only opened up a lot in educational scene. The pandemic has prompted the educational institutions to consider how they deliver education forcing its rethinking and creation of innovative, revolutionary and challenging education approaches focusing on digital means (Linney, 2020). The rapid shift to virtual learning has also pinpointed a few silver linings that could improve educational practices in the future, such as more flexible and open access to education. In addition, the crisis has brought to light the significance of digital skills and technological readiness in education. As mentioned by Tanveer et al. (2020), the abrupt switching to alternative delivery modes, specifically in less technology advanced regions, revealed the unpreparedness. "It's also the opportunity to sit back and think about how we teach our kids, and just maybe we should have a blending with both bricks-and-mortar education as well as virtual to make us more resilient." The difficulties of distant learning at this time have highlighted the requirement for educational institutions to create digital infrastructure, educate teachers in how to best use online tools, and make sure students have what they need to overcome a virtual environment. It has also sparked a wider discussion about the future of education and how it can adapt to keep pace with an ever more digital world.In summary, while the switch to online learning has brought about some major challenges, it has also helped drive forward positive steps and innovation in education. As the world adapts to these challenges, it is expected that lessons from this time will reflect international education's future and promote a more adaptable, accessible digital ecosystem capable of catering to students around the globe.

Review of Literature

Continuous development in technology has led to the arrival of new and advanced forms of teaching such as online teaching which does not require the physical presence of tutor and the student and thus makes learning easy and feasible irrespective of the locations. Although in order to make learning effective and productive, it is necessary to consider the preferences and perception of learners while designing the online course content **(Muthuprasadet al., 2020).** In recent times, researchers tested the impact of online teaching on students' satisfaction. They produced mixed results on this relationship. **Aswasulasikin (2020)** had a study on how students perceive the utilization of technology devices in online learning during COVID-19pandemic. The concept of online classes did not go well with students and they weren't prepared to take online classes which resulted in creating mental stress for the students **(Raj and Fatima, 2020).** Research shows that poor network connectivity, unsupportive environment and lack of proper technological experience came out to be the biggest challenges for the students. **Muiz and Sumarni (2020)** pointed out that online learning in the time of COVID-19 may have an impact on the stress and anxiety level among the students. Most university students have faced trouble logging into the network, lack of proper resources and failed access in contacting with their mentors **(Obaid, 2020). Hugget (2014)** suggested that lack of frequent interactions and delay in getting queries solved was found to be a challenging situation in online learning. Review of literature suggests that no matter how important and intellectual artificial intelligence is, but it can never be trusted completely. Further, the speed and connectivity issues have created a fear of losing grades in the minds of the students **(Tanveer et al. 2020).**In contrast to this, some students apparently favored web-based learning as it suits their learning style well. **(Muthuprasadet al., 2020)** reported that well-structured content with recorded videos uploaded in university websites was preferred by the students as it provided them flexibility and convenience in learning. E-learning is actually wonderful news, but being at an early phase, it can cause particular menaces to students eventually resulting in dissatisfaction **(Krishnapatria, 2020).**The success of online education depends on how well the integration of e-learning takes place into the existing

course curriculum which focuses on need assessment of the students. To date, the value of online learning is being recognized by more organization's day by day as it is a cost-effective way of delivering knowledge to a large number of people. Internet-based learning is associated with enormous positive effects as well and studies revealed that students are more satisfied with e-learning as compared to the traditional way of learning. However, most of the students and teachers did not want e-learning to replace the traditional instructor-led training and lectures instead both the teaching methods should go hand in hand. **(Bhanarkar et al., 2020).** This study is an effort to study the direction and strength of relationship between *suitability of online teaching* and student's *learning satisfaction* in context of India. Based on literature review, following hypothesis is formulated by the researchers:

H_a=*There is a significant and positive relationship between suitability of online teaching and students' learning satisfaction.*

Methodology

Process of online survey was started in the month of April 2020 and finished by end of May 2020. Out of the total 430 questionnaires distributed across the demographic characteristics of respondents (students), 352 questionnaires (81.86%) were returned. After omitting questionnaires with missing data, or with multiple answers, or being considered unreliable, 300 questionnaires were found suitable for final analysis. This constituted a response rate of 69.76% (out of 430 distributed questionnaires) which was quite higher than the supportable average response rate of 52.7% for individual level responses, as suggested purported by **Baruch and Holtom (2008)**. Also, the recommended sample size is at least 10 respondents against each variable **(Yong and Pearce, 2013).** The current study comprises of a total sample of 300 respondents against 24 observed variables, indicating superior adequacy of the sample. The detailed distribution of sample is exhibited in Table 1. Initially, normality assessment of data examined through three indices namely, Skewness, Kurtosis, and Histogram. **Hair et al. (2013)** endorsed the threshold value from -1 to +1 for the Skewness and -2 to +2 for the Kurtosis to ensure the normality of data.

Table 1 Demographics of sample

Variables	Category	Frequency	Percentage
Gender	Female	161	53.7
	Male	139	46.3
Age	15-20	178	59.3
	21-25	122	40.7
Stream	Arts	103	34.3
	Commerce & Management	147	49
	Science & Engineering	50	16.7
Academic level	Undergraduate	200	66.7
	Graduate	50	16.7
	Post graduation& Above	50	16.7
Type of Institution	College	181	60.3
	University	119	39.7
Residence	Rural	142	47.3
	Urban	158	52.7
I have a stable Internet connection	Yes	217	72.3
	No	29	9.7
	May be	54	18
Name of device used to access Online Teaching	Personal Computer	56	18.7
	Mobile phone	244	81.3
Name of the Platforms used by your institute for online teaching during lockdown	YouTube Channels	70	23.3
	Whatsapp Groups	116	38.7
	Zoom	50	16.7
	Moodle	12	4.0
	Google Classrooms	52	17.3

Source: Primary data

Table 1 demonstrates the demographic profile of the respondents. Out of 300 respondents, 53.7 per cent (162) were female and 46.3 per cent were male. 59.3 per cent students were from age group of 15-20 and 40.7 per cent were from the age group of 21-25. 40.7 per cent were belonging to arts stream, 49 per cent were belonging to commerce and management stream and 34.3 were belonging to the science and engineering stream. 66.7 per cent students were from undergraduate academic level and 16.7 per cent were from each graduate and post graduate academic level. 47.3 per cent respondents were belonging from rural areas and 52.7 per cent were from the urban areas. Majority (72.3 per cent) of the students reported that they have a stable internet connection for online classes. Maximum (81.3 per cent) were used mobile phones to access online teaching. WhatsApp groups (38.7 per cent) and YouTube channels (23.3 per cent) were found most preferred platform used for online teaching during lockdown

Normality and multicollinearity of the data

The Skewness values are ranged from -.567 to .011 and the Kurtosis values ranged from -1.521 to -.550and hence reported to be satisfactory. Using histogram, the data is found to be normally distributed because they performed a higher distribution in the middle than the edge sides. In terms of multicollinearity, tolerance value should not be less than .2 and VIF (variance Inflation Factor) value should be less than 5. Tolerance value is .939 and VIF is 1.065 thus, multicollinearity issue was not found.

Data Analysis

Confirmatory Factor Analysis

Confirmatory Factor Analysis (CFA) was executed with maximum likelihood method on AMOS 18. The two-factor model is represented in Figure 1. Observed variables are denoted by rectangles and latent variables are represented by large circles. Correlation between constructs is representing by the two sided arrows. The values on arrows are coming from the latent variables to observed variables representing the standardized regression weights (factor loadings). The results of CFA (Table 5) indicated CMIN/DF= 2.571, lower than the permissible value 5.00, as recommended by Harrison and Rainer (1996). The RMSEA (0.072) indicated a good fit as it was lower than threshold value of 0.10 **(Garver & Mentzer, 1999).**Other fit measures especially CFI (0.964), TLI (0.957), and IFI (0.964) showed values better than 0.90, as purported by several researchers including **Byrne (2016), Hair *et al.* (2013),**and **Moolla & Bisschoff (2013).** By convention, GFI (0.906) and NFI (0.943) showed lower values than the threshold values i.e. equal to or greater than 0.90 to accept the model **(Hu &Bentler, 1998).**
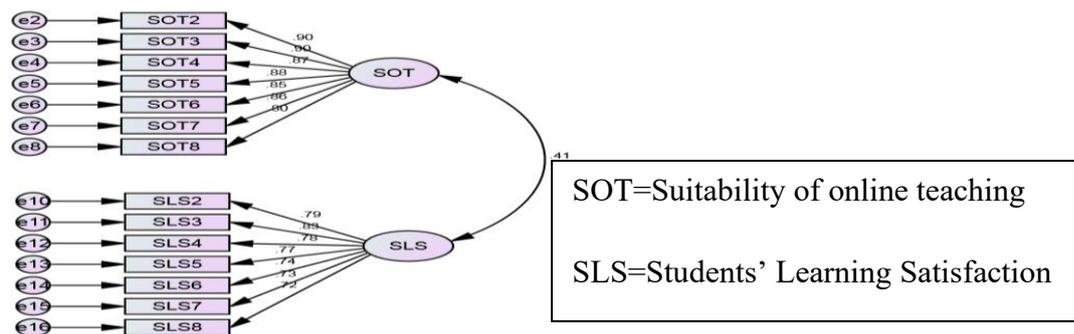

Figure 1: Confirmatory Factor Analysis Source: - Amos output

Table 5: Model fit indices

CMIN	DF	P	CMIN/DF	GFI	NFI	IFI	TLI	RMSEA	NFI	CFI
195.431	29	.000	2.571	0.906	0.943	0.964	0.957	0.072	0.943	0.964

The standardized regression weights of all the variables are found statistically significant (p ≤ 0.001) and superior than 0.50 ranging from 0.900 to 0.716 (Table 6), showing good-quality items, according to **Comrey & Lee (1992).**

Table 6: Standardized Regression Weights

Code	Variables	Path		Estimate
SOT2	Slow computer/Mobile processing and poor internet connections discourage to use online teaching.	<---	SOT	0.900
SOT3	I get a timely solution to my doubts in online teaching.	<---	SOT	0.901
SOT4	It is easy to read from print learning materials instead of the electronic medium or the internet.	<---	SOT	0.865
SOT5	I have sufficient access to equipment (Personal Computer, Mobile etc.) for Learning through Online Teaching	<---	SOT	0.880
SOT6	Learning through online Teaching is easier and better than using books/journals in the library.	<---	SOT	0.853
SOT7	Materials in online teaching are appropriate to my level.	<---	SOT	0.861
SOT8	Teacher's communication skills are good.	<---	SOT	0.796
SLS2	Online teaching ensures the effectiveness in terms of coping up with missed lectures.	<---	SLS	0.793
SLS3	It is easy to become skilful by learning through online teaching system.	<---	SLS	0.828
SLS4	Study through Online teaching is more productive than school/college hours for me.	<---	SLS	0.782
SLS5	I will also continue to learn through online teaching after lockdown.	<---	SLS	0.770
SLS6	Overall, Learning in online teaching is enjoyable for me	<---	SLS	0.745
SLS7	Quality of teaching and learning can be increased through Online teaching because it integrates various types of media	<---	SLS	0.732
SLS8	Learning from Online Teaching is a time-saving method as gossips of the class are eliminated.	<---	SLS	0.716

Two variables named are dropped out on the basis of high cross loadings for the better fitness of the model. Both factors under this study included seven variables. The measurement model fit indices recommended that the proposed two-factor model is found excellent good fit for the data. When applying CFA, it is equally indispensable to establish reliability, as well as convergent, and discriminant validities of the measurement model. The reliability in CFA was measured by the Composite Reliability (CR). The test results of CFA revealed that the CR values for two factors were much higher than the threshold value of 0.7 (refer Table 7), as suggested by **(Hair et al. 2013)** and so establishing that indicators are reliable.

Table 7: Model Validity Measures

Constructs	CR	AVE	Square Root of AVE	Correlation Coefficient
SOT	0.954	0.750	0.866	0.414
SLS	0.909	0.589	0.767	

Validity Concerns: No validity concerns here.

Convergent validity and discriminant validity of the measurement scales were measured by estimating average variance extracted (AVE), square root of AVE and correlation coefficient. CR should be more than 0.70 for each factor for the better convergent validity.The convergent validity examined how

individual items are related to their own factor and to establish this composite reliability should be higher than average variance extracted and further average variance extracted should be greater than the minimum acceptable value of 0.5 **(Hair et al. 2013).** Converging with these conditions, Table 7 shows that all that the constructs used in the study exhibited good level of convergent validity. Discriminant validity verifies the extent to which latent constructs are significantly different **(Houston, 2004).** It gets established when CR>AVE and square root of AVE is greater than the correlation coefficient. Results show (refer Table 7) that all indices are confirming the said conditions and therefore, measurement model tends to support discriminant validity. From all the validity measures it can be concluded that the scales are reliable and valid.

Structural Equation Modeling and Regression Analysis

SEM is contemplated to be as appropriate when ratio for the observed variables to the sample size is between 1:10 and 1:15 and a sample size between 200 and 400 **(Hair et al. 1998).** The number of valid samples gathered was 300, thus meeting the requirement for SEM sample analysis. This research is based on the two-stage model by **Kline (2005).** Firstly, measurement model analysis. Secondly, if the fit for the measurement model is acceptable, then SEM model evaluation is to be conducted. While the first is accomplished through CFA, the second could be assessed by employing structural equation modeling (SEM) technique via AMOS 18.
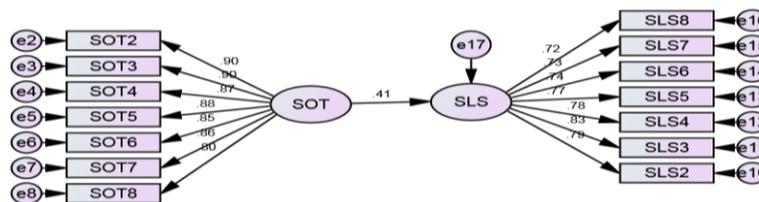

Figure 2: relationship between suitability of online teaching and learning satisfaction

Figure 2 shows the two-factor models i.e. suitability of online teaching and learning satisfaction derived from SEM analysis. Factor loadings for all items (>.500) are higher enough to confirm the psychometric properties of the model **(Comrey & Lee, 1992; Hair et al., 2013).** All of the fit indices meet the requirements for SEM analysis.

Table 8 model fit indices	
CMIN	195.431
DF	29
P	.000
CMIN/DF	2.571
GFI	0.906
CFI	0.964
IFI	0.964
TLI	0.957
NFI	0.943
RMSEA	0.072

Values in Table 8 confirmed that structural model has an excellent fit. The chi-square (CMIN) value is 191.684. The model fit indices i.e., GFI=0.906, CFI=0.964, IFI=.964, and TLI=.957are quite higher than their respective suggested values of 0.80**(Moolla & Bisschoff, 2013**) which further indicated better fitness of the model. The CMIN/DF was 2.571 far less than the value of 5 demonstrating a better fitness of the model. The RMSEA was 0.072 which lies in the suggested range of values from 0 to 1.00**(Browne & Cudek, 1993).** This proposed structural model met criteria of excellent model fit. Further, the effect of suitability of online teaching

and learning satisfaction of the students is found to be significant and positive by critical ratio test ($> \pm$ 6.806, $p < 0.05$).Online teaching has a positive significant effect on learning satisfaction of the students. The standardized regression weight of suitability of online teaching is 0.414. It means one per cent change in suitability of online teaching is resulted to 41 per cent change in learning satisfaction of the students. Thus, hypothesis (H_a) there is significant and positive relationship between suitability of online teaching and learning satisfaction of the students was supported. It can be concluded that if suitability of online teaching is better, student will be more satisfied in terms of learning.

Conclusion and implications

COVID-19 pandemic is definitely possessing tough challenges for the educational system. At the same time, it has brought several opportunities to acquaint and adapt ourselves with new advanced methods of teaching suitable for current and future generations of students. The trend has shifted to interactive online lectures using various E-learning tools and techniques making students an active learner and satisfied with the e-learning environment. Students are of the opinion that flexibility in online classes makes it attractive and a convenient option as it saves them from physical travelling. It is observed that students found online teaching more productive than school/college learning and therefore more effective and time saving. However broadband connectivity issues in rural areas, lack of personal interaction, lack of proper communication skills, improper learning material makes it a challenge for students to make use of online learning initiatives to its full extent. In order to make online learning a success in Indian educational system, efforts need to be made by institutions and students both. The IT support from the institution plays a major role in smooth transition to online learning. Along with this, support from external stakeholders is a must in making online learning a success. This study is the starting point to understand the impact of suitability of online teaching on students' learning satisfaction amid the corona pandemic. Specifically, this relationship is tested in a developing country which is also among the most affected countries by the corona pandemic. In this study, researchers included various variables leading to suitability of online teaching and learning satisfaction of students. The results of this study convey a strong positive effect of suitability of online teaching on the students' learning satisfaction thereby supporting the findings of similar studies conducted in different settings. This understanding of relationship will stimulate policy makers to react to pandemic scenario in a more appropriate manner. As far as the practical perspective of this study is concerned, more emphasis should be given to provide education through an effective and efficient manner which is suitable to the receivers.

Limitations of the study

The sample size was restricted to only 300 respondents which in itself is a limitation of the study. We should also note that an issue related to the scales used in this study may have affected the results because the study was based on limited constructs. The study was conducted on two main factors i.e. suitability of online teaching and students' learning satisfaction, however there could have been many other aspects to it as well such as the outlook of students towards different online tools and models, differences in perceptions of students based on demographic factors, perceived benefits and strengths of the online methods. The study took only Indian students into consideration so the findings may not be generalized in other environments. So, this study can be replicated to understand students, perspectives in other contexts. This paper did not address how the limitations in online learning could be solved out in order to improve the learning satisfaction of the students. Researchers interested to explore this area can use these limitations as future research directions.

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