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Perception of Digital Learning Amidst the COVID-19 Pandemic: Creating Distance Learning Opportunities in Delhi NCR.

Dr. Ram Bajaj[1*]

[1*]RNB Global University-Bikaner

***Corresponding Author:** Dr. Ram Bajaj
*RNB Global University-Bikaner

Abstract:
The digital learning landscape experienced rapid growth during the COVID-19 pandemic in Delhi NCR, fostering a safe and secure educational environment. This present study aims to assess digital learning perception and opportunities for distance learning, examining the influence of demographic factors on digital learning perception amid the pandemic. Data from 400 respondents were collected via survey questionnaires in June-July 2022, employing a five-point Likert scale. Among the valid respondents, 108 were university teachers and 292 were university students, with 168 from public universities and 232 from private ones. Gender distribution included 272 male and 128 female respondents, with 236 residing in urban areas and 164 in rural ones. Communication methods varied, with 68 respondents using mobile networks, 184 using mobiles with broadband-WiFi connections, and 148 using computers with broadband-WiFi connections.
Findings indicate similar positive digital learning perceptions among teachers and students, as well as between genders. However, respondents from public universities and urban areas exhibited higher digital learning perceptions compared to their counterparts from private universities and rural areas, respectively. Additionally, respondents using broadband-WiFi connections, whether through mobiles or computers, showed higher digital learning perception than those relying solely on mobile networks. Nonetheless, no significant difference was observed in digital learning perception between respondents using mobiles with broadband-WiFi and those using computers with broadband-WiFi. Consequently, there is a need for improved mobile network facilities to enhance digital distance education. Ultimately, the study suggests that as digital learning perception increases, so too does the potential for digital distance learning systems in education. Leveraging the positive digital learning perception cultivated during the COVID-19 pandemic, a robust digital distance learning system can be developed in Delhi NCR.

Keywords: Digital learning, Covid-19, Opportunity, Perception.

INTRODUCTION

Because to the Covid 19 dilemma, about 150 million students all around the world have been forced to alter the way in which they learn. These students are all very close to finishing their degrees and beginning the process of seeking for work. The education of each and every one of these kids has been abruptly terminated, which has a negative impact on their mental, financial, social, psychological, and physical health. In addition to this, the country's whole educational system has become dysfunctional, which poses the greatest risk to the country's future. Making the transition to an educational model that is conducted online is both the simplest and most widely used solution to this issue [1]. There have been an adequate number of positive contributions made in this field by the leaders of our nation and the Ministry of Education. In the midst of this crisis, the online education system has become a viable alternative for students to obtain an education. This has provided students with optimism. In spite of the fact that a lot of people have questioned its quality and compared it to the actual structure, it has provided us with the opportunity to think about the topic in a more in-depth manner. But the students of today, no matter where they are in the world,are seeking for a flexible approach to study that they can engage in whenever they want and from wherever they are. The availability of online learning possibilities is in great demand, particularly among a cohort of students who struggle with particular challenges; as a result, education providers are actively working to meet this need. Every nation and school is different when it comes to the quality and popularity of online education.
It's crucial to have different learning and teaching styles, as well as personal support and the right infrastructure, if you want your online teaching experience to go well. The success of online teaching has been demonstrated by a number of educational institutions, including colleges and universities [2]. Online teaching and learning offers a solution to a problem that will continue to exist, despite the fact that there are certain issues with the system. Following the outbreak of the coronavirus, educational institutions of all levels and in all regions of the world were required to halt the customary face-to-face distribution techniques that were used on campus. There are educational institutions, such as colleges and universities that do not provide online research programs.

Problems arise for a great number of internet researchers who conduct their work online. Especially in less developed nations, where access to information technology is not as widespread and the internet is not always simple to reach from a variety of locations. Online classes might provide challenges for both students and instructors, making it difficult for either group to continue with the program. The fact that more and more individuals embrace and utilize the internet on a daily basis is excellent news for the expansion of online educational opportunities [3]. In light of this, it is essential to be aware of the challenges that students experience and to conduct an analysis of them before formulating a strategy for effective and efficient online teaching and learning.

LITERATURE REVIEW

According to Meyer and Jones [4], the frequency with which natural catastrophes strike highlights the need of utilizing technology that assist individuals in adapting to change, particularly communication technologies such as e-learning tools [5]. The economic system, health care system, and educational system were most negatively impacted by the corona virus illness (COVID19), which was a catastrophe for people all over the world. In the following study of the relevant literature, we will discuss the manner in which things are changing, the tools for digital education systems, the challenges these systems confront, and some potential solutions to improve online education.

It was determined that the Staying Home and Strong Lockdown tactics would be the most effective in preventing the spread of COVID-19 [6] and on August 1, 2020, these measures were implemented nationwide [7]. Nearly all of the world's governments share a set of priorities, including the implementation of stringent lockdowns, restrictions on immigration, increased social and physical distance, and the elimination of face-to-face learning on campus [8]. In addition, globalization, privatization, and liberalization of education have all contributed to a significant deterioration of the situation, as a result of which academic pursuits are restricted and individuals are less able to travel freely across nations [9]. During this lockdown, teachers have been instructed to teach their lessons via online learning tools [10].

When traditional classrooms were phased out in favor of online learning environments, educators were forced to adapt their pedagogical practices in order to stay current with emerging trends and developments in the business world. In this tough time, the ability of institutions to implement online education on a broad scale has become a problem that has surpassed the quality of education as the primary focus of concern [11]. Because of the enormous demand, the faculty members reorganized their classes hastily and with just a minimal amount of formal education. On the other side, students have been impacted in a variety of ways, such as having difficulty mastering new technologies, losing out on internship opportunities, being placed in less desirable locations, and so on [12]. In addition, the educational system has to be updated because of the rise of artificial intelligence, machine learning, and automation. This indicates that improvements in information technology are necessary [13]. The term "online learning" refers to the process of acquiring knowledge in a variety of environments via the use of electronic devices such as mobile phones and laptops to establish a connection with a teacher over the internet from any location in the globe [14].

Numerous additional names have been given to the concept of online learning, including open learning, web-based learning, mlearning, and blended learning. It is a way of instructing and being instructed that makes use of computers and the internet to establish a connection between a teacher and a student located anywhere in the globe [15]. Before the epidemic, the majority of educational institutions relied on in-person instruction on campus. However, the COVID19 explosion transitioned our education system from the conventional to the digital, with online lectures, online examinations, teleconferencing, digital open books, and practically all interactions taking place in virtual spaces [16, 17]. Additionally, for the very first time, online platforms such as Zoom, Google Classroom, and other virtual learning platforms, as well as social media such as Messenger, Whatsapp, we-chat, Telegram, and so on, were utilized in an educational setting. This was a first of its kind event [18].

According to Means et al. [19], traditional methods of learning may not be as successful as learning through online platforms. Once more, students from a great distance may readily connect with one another while expending very little effort and financial resources. Online education, on the other hand, might be challenging for those with lower earnings because not everyone in society has the same social and economic circumstances [18]. The majority of students have Android phones, but many struggle with remote access due to poor internet, despair, anxiety, and a lack of a supportive learning environment [20]. Learners who have difficulty hearing also have a difficult time with e-learning [21]. Students coming from third-world nations also have a difficult time adapting to rapidly changing educational systems. They are forced to contend with a lack of academic capabilities, a lack of technical infrastructure, and inadequate finances. In the event of a pandemic, it is critical to make effective and economical use of available resources in order to continue normal educational operations.

According to Dhawan [22], institutions must to concentrate on enhancing their digital literacy, internet speed, access to the internet, security features, and labs, as well as reducing the expenses of maintenance and purchase of technology that may be utilized more effectively. Some educational models, such as the model for educational emergencies treatment (MEET) for managing and restoring educational operations [23], and holistic teacher education systems [24], are being pushed for better support in current and future teaching during natural disasters like the COVID-19 pandemic. For example, the model for educational emergencies treatment (MEET) was developed to manage and restore educational operations.

As a result, Delhi ncr is coping with the COVID-19 epidemic while also adjusting its educational system. It requires study on the new education system, which is backed by the above evaluation of the literature, so that it can administer

and distribute education in an equal fashion both now and in the future. This will allow it to ensure that all students receive an equal education.

OBJECTIVE OF THE STUDY

The objective the of the study (i) to measure the digital learning perception and digital distance learning opportunity during covid19 pandemic situation (ii) the effect of demographic factor (Profession, University, Gender, Residence and Device-Network used) on digital learning perception during covid-19 pandemic situation and (iii) to measure the opportunity of digital distance learning from the digital learning perception during covid19 pandemic situation. A positive digital learning perception and digital distance learning opportunity was developed during covid-19 pandemic situation.

It is observed that profession (both teacher and student) and gender (both male and female) have same positive digital learning perception. But public university respondents have higher than public university and urban residence respondents have higher than rural residence positive digital learning perception. There is no significant difference of digital learning perception value for mobile with broadband-Wifi and computer with broadband-Wifi. But these two device network used have higher digital learning perception value than mobile with mobile network respondents. So, mobile network facility should be improved to utilized mobile device in the digital distance learning system for education.

HYPOTHESIS

Hypothesis 1 (H_0): There is not a significantly positive digital learning perception and digital distance learning opportunity during covid-19 pandemic situation.

Hypothesis 1 (H_1): There is a significantly positive digital learning perception and digital distance learning opportunity during covid-19 pandemic situation.

Hypothesis 2 (H_0): There is no effect of demographic variables (Profession, University, Gender, Residence and DeviceNetwork used) on digital learning perception during covid-19 pandemic situation.

Hypothesis 2 (H_1): There is an effect of demographic variables (Profession, University, Gender, Residence and DeviceNetwork used) on digital learning perception during covid-19 pandemic situation.

Hypothesis 3 (H_0): Digital learning perception during covid-19 pandemic situation does not create opportunity of digital distance learning opportunity.

Hypothesis 3 (H_1): Digital learning perception during covid-19 pandemic situation creates opportunity of digital distance learning opportunity.

METHODS

To study the digital learning perception during covid-19 pandemic situation a survey questionnaire is prepared from the literature and experience of authors. The developed survey questionnaire was pre-tested with 16 respondents and then necessary corrections and modifications were made according to the suggestion. The corrected and finalized questionnaire was distributed among the 480 public and private university teachers and students selected by purposefully sampling in randomized block design via E-mail, Whats App and hand-to-hand in Chattogram.

As some respondents answered all the questions are the same rank and did not answer many questions, 400 response data are selected for final analysis and then coded (five point Likert scale ranging from 1 = Strongly disagree with the opinion to 5 = Strongly agree with the opinion) in IBM SPSS Statistics 26 and IBM SPSS AMOS 22 software. Among the valid respondents, 108 (27%) are university teachers (with masters or PhD educational qualification) and 292 (73%) are university students (under graduate and graduate level). Among them 168 (42%) in public university and 232 (58%) in private university with 272 (68%) are male and 128 (32%) are female, of which 236 (59%) respondents from urban area and 164 (41%) rural area in the data set. Also, 68 (17%) respondents communicate class with mobile with mobile network, 184 (46%) communicate class mobile with broadband-Wifi connections and 148 (37%) communicate class with computer with broadband-Wifi connections. The descriptive analysis values of each response variable in the survey response data are calculated. Factor analysis with Cronbach's Alpha value of each factor and Kaiser-Meyer-Olkin measure for sampling adequacy are conducted with all the response variables to classify them into digital learning perception and digital education opportunity factors.

Then one-sample t-Test is conducted to determine the significant positive attitude of digital learning perception and digital distance learning opportunity factors. Then Structure Equation Model (SEM) is developed to identify factors that influence the digital learning perception. Also, Kolmogorov–Smirnov test, Shapiro–Wilk test, Mann-Whitney Test and Kruskal-Wallis Test are conducted to determine the normality and significant difference in the digital learning perception with demographic variables. Finally, Structure Equation Model with Spearman rho correlationis used to determine the opportunity of digital distance learning from digital learning perception during covid-19 pandemic situation.

RESULT AND DISCUSSION

responses digital learning perception and
digital distance learning opportunity during

Descriptive Statistics of Respondents covid-19 pandemic situation are shown in The descriptive statistics (N, Min, Max, Sum, Table 1.
Mean, Standard Deviation) of the survey

Table 1: Descriptive analysis result of digital learning perception digital distance learning opportunity variables

S. No.	Questionnaire	Variable name	N	Min	Max	Sum	Mean	Std. Dev
1.	Digital learning perception	Average Perception	400	2.29	4.71	1521	3.803	0.764
a.	No difficulties challenged in digital class environment	Per1	400	2	5	1522	3.80	1.039
b.	No difficulties communicating with teacher and students to questions or concerns during digital classes	Per2	400	2	5	1528	3.82	0.916
c.	No difficulties to notice with teacher and students to digital classes	Per3	400	2	5	1508	3.77	0.877
d.	Contents of the lecture are clearly understood in the digital classes	Per4	400	2	5	1532	3.83	0.868
e.	Take digital materials and class notes like in traditional classes	Per5	400	2	5	1508	3.77	0.927
f.	Learn in digital class as like traditional classes	Per6	400	2	5	1538	3.84	0.873
g.	Do not face any trouble in digital classes	Per7	400	2	5	1512	3.78	0.940
2.	Digital distance learning opportunity	Average Opportunity	400	2.29	4.71	1505	3.762	0.649
a.	Digital assignments helped to understand the course contents	Opp1	400	2	5	1518	3.80	0.880
b.	More flexibility in digital classes than in traditional classes	Opp2	400	2	5	1488	3.72	0.874
c.	Opportunity of participating in digital classes in pandemic	Opp3	400	2	5	1510	3.78	0.745
d.	Teaching can be conducted using different channels	Opp4	400	2	5	1526	3.82	0.868
e.	Expand knowledge on digital technology	Opp5	400	2	5	1510	3.77	0.864
f.	Participate in all digital classes	Opp6	400	2	5	1484	3.71	0.811
g.	Recommend friends to participate in digital classes	Opp7	400	2	5	1498	3.74	0.890

From the above descriptive table, the mean and standard deviation for digital learning perception is 3.77 to 3.84 and 0.868 to 1.039 and for digital distance learning opportunity mean and standard deviation variation are 3.71 to 3.82 and 0.745 to 0.880 respectively.

The mean with standard deviation of average digital learning perception and average digital education opportunity are 3.803 ± 0.764 and 3.762 ± 0.649 respectively.

In the above result, the mean and standard deviation values overlap each other. So factor analysis may be conducted to test the questionnaire and to classify them into different factor, which is demonstrated in Table 2.

Factor Analysis

In the factor analysis, the Kaiser-MeyerOlkin Measure of Sampling Adequacy value is 0.860 (significance level 0.000). So, we can apply the factor analysis method to divide the response questionnaire into two different factors. In the factor analysis table, the survey response values are classified into two factors such as digital learning perception (factor leading 0.772 to 0.939) and digital distance learning opportunity (factor leading 0.629 to 0.940) respectively.

The factor leading result shows all factor loadings are greater than 0.400, which indicates all measurements for each factor have good reliability.

The Cronbach's Alpha value of each factor as the digital learning perception is 0.924 and digital distance learning opportunity is 0.881 respectively (all the Cronbach's Alpha values are >0.7). It indicates that the survey response with factors is most reliable, valid and consistent.

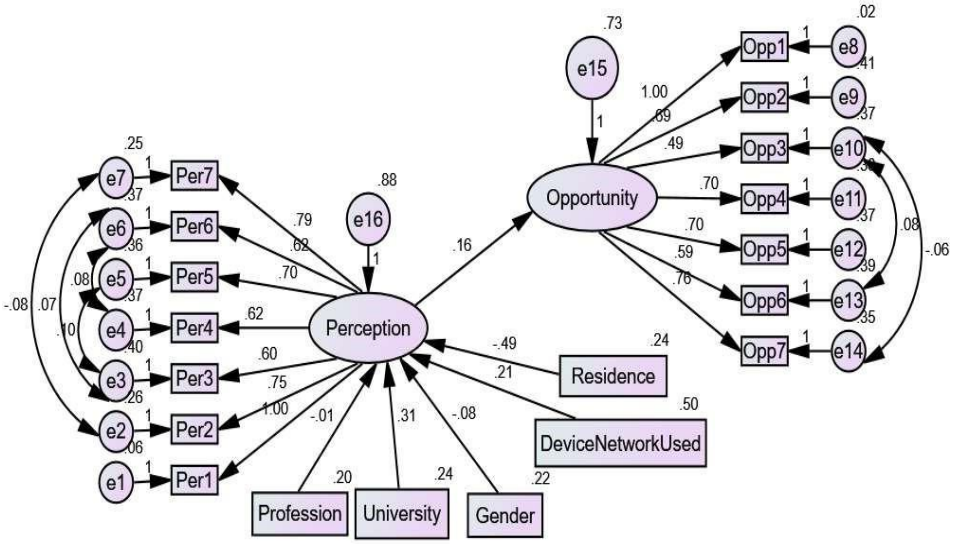
Based on the above factor analysis result, a structural equation model of digital distance learning opportunity from digital learning perception with demographic variables is developed (Fig. 1).

Now in the above factor analysis, the digital learning perception is identified as (i) No difficulties challenged in digital class environment, (ii) No difficulties communicating with teacher and students to questions or concerns during digital classes, (iii) No difficulties to notice with teacher and students to digital classes, (iv) Contents of the lecture are clearly

Table 2: Factor analysis with Cronbach's Alpha and test statistic values of response variables

Rotated Component Matrix[a]					**One-Sample**	**Kolmogorov-**	**Shapiro- Wilk**
Factor	**Variable**	**Component**		**Cronbach's**	**t-Test (Test**	**Smirnov**	**Average (Sig.)**
Name	Name	1	2	Alpha	Value 3) (Sig.)	Average (Sig.)	
Digital	Per1	.939		0.924	21.019	0.204	0.844
learning	Per7	.849			(0.000)	(0.000)	(0.000)
perception	Per2	.823					
	Per5	.814					
	Per6	.787					
	Per3	.786					
	Per4	.772					
Digital	Opp1		.940	0.881	23.501	0.129	0.928
distance	Opp7		.789		(0.000)	(0.000)	(0.000)
learning	Opp4		.766				
opportunit y	Opp5		.750				
	Opp2		.738				
	Opp6		.701				
	Opp3		.629				
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.							
a. Rotation converged in 3 iterations.							

understood in the digital classes, (v) Take digital materials and class notes like in traditional classes, (vi) Learn in digital class as like traditional classes and (vii) Do not face any trouble in digital classes. Also, the digital distance learning opportunity is identified as (i) Digital assignments helped to understand the course contents, (ii) More flexibility in digital classes than in traditional classes, (iii) Opportunity of participating in digital classes in pandemic, (iv) Teaching can be conducted using different channels, (v) Expand knowledge on digital technology, (vi) Participate in all digital classes and (vi) Recommend friends to participate in digital classes.



From the above structure equation model, the factor loadings for digital learning perception is 0.60 – 1.00 and for digital distance learning opportunity is 0.49 – 1.00 respectively. Here all the factor loadings are very high and significant ($p < 0.05$). The error variance for digital learning perception measured variables are 0.06 to 0.40, which all are very high and significant ($p < 0.05$) But, the error variance for digital distance learning opportunity measured variables are 0.02 to 0.41.

The error variance for digital learning perception (0.88) and digital distance learning opportunity (0.73) are also high and significant ($p < 0.05$). The covariance values are – 0.06 to 1.00, which are also significant ($p < 0.05$). In the model, $\chi 2$ /df is 2.986 (which is < 3), goodness of fit index (GFI) is 0.903 (which is > 0.9), comparative fit index (CFI) value is 0.926 (which is > 0.9), incremental fit index (IFI) is 0.926 (which is > 0.9), Tucker Lewis index (TLI) is 0.913 (which is > 0.9), Root Mean Square Error of Approximation is 0.071 (which is < 0.08). Here, the model index values meet all the standards of the survey and hence the model is well-fitted.

Hypothesis Testing

The calculated mean with standard deviation of average digital learning perception and average digital distance learning opportunity are 3.803 ± 0.764 and 3.762 ± 0.649 respectively (Table 1), which is higher than the middle perception value 3. The onesample t-Test statistic values of (Test value = 3) for average digital learning perception and average digital education opportunity are 21.019 (Sig. 0.000) and 23.501 (Sig. 0.000). So, the null hypothesis 1 is rejected (as the significance values are < 0.05) and there is a significantly positive digital learning perception and digital distance learning opportunity during covid-19 pandemic situation.

The Kolmogorov–Smirnov test and Shapiro– Wilk test statistic of digital learning perception are 0.204 (0.000) and 0.844 (0.000) respectively. Also the Kolmogorov–Smirnov test and Shapiro–Wilk test statistic of digital distance learning opportunity are 0.129 (0.000) and 0.928 (0.000) respectively. So, non-parametric Kolmogorov–Smirnov test and Shapiro–Wilk test (Table 3) with least significance difference (LSD) test (Table 4) is conducted to determine the significant difference of digital learning perception for different demographic variables (Profession, University, Gender, Residence and DeviceNetwork used).

Finally non-parametric test Spearman rho determine the significant correlation between correlation is used to digital learning perception and digital distance learning opportunity.

Table 3: Performance of digital learning perception with demographic variables

Variable Name	Measured variable	Number of observatio n	Mean value	Standard deviation	One sample tTest (Test value =3) (Sig.)	Test	Test statistic (Sig.)
Professio n	Teacher	108	3.775	0.787	10.231 (0.000)	Mann-	0.179
	Student	292	3.813	0.756	18.374 (0.000)	Whitney	(0.858)
Universit y	Public	168	3.561	0.813	8.952 (0.000)	Mann-	4.874
	Private	232	3.978	0.764	22.020 (0.000)	Whitney	(0.000)
Gender	Male	272	3.830	0.783	17.478 (0.000)	Mann-	1.509
	Female	128	3.745	0.721	11.693 (0.000)	Whitney	(0.131)
Residenc e	Urban	236	3.976	0.650	23.071 (0.000)	Mann-	4.768
	Rural	164	3.554	0.845	8.394 (0.000)	Whitne y	(0.000)

Device Network	Mobile with mobile network	68	3.235	0.870	2.231 (0.029)	Kruskal -Wallis	31.235 (0.000)
used	Mobile with Broadband-Wifi	184	3.961	0.653	19.954 (0.000)		
	Computer with Broadband-Wifi	148	3.867	0.723	14.577 (0.000)		

The mean with standard deviation value of average digital learning perception of 108teachers is 3.775 ± 0.787 and 292students is 3.813± 0.756. The one sample t-Test statistics (Test value = 3) of teacher and student are 10.231 (0.000) and 18.374 (0.000) respectively. So, both teacher and student have positive digital learning perception (as $p < 0.05$).The Mann-Whitney Test (z) statistic value of average digital learning perception is 0.179 ($p = 0.858$). So, Profession (Teacher and Student) has no significant difference on digital learning perception (as $p > 0.05$).

Also, the path coefficient of Profession (Teacher and Student) to digital learning perception in the structure equation model is 0.01 ($p = 0.890$). As the p-value is greater than 0.05, there is not enough evidence to reject the null hypothesis 2 for profession (Teacher and Student). So, both teacher and student profession have same positive digital learning perception.

The mean with standard deviation value of average digital learning perception of 168 public university respondents is 3.561 ± 0.813 and 232 private university respondents is 3.978 ± 0.764. The one sample t-Test statistics (Test value = 3) of public university respondents and private university respondents are 8.952 (0.000) and 22.020 (0.000) respectively. So, both public university respondents and private university respondents have positive digital learning perception (as $p < 0.05$).The Mann-Whitney Test (z) statistic value of average digital learning perception is 4.874 ($p = 0.000$). So, private university respondents have significant higher digital learning perception than public university respondents (as $p < 0.05$).

Also, the path coefficient of university (Public and Private) to digital learning perception in the structure equation model is 0.31 ($p = 0.002$). So, the null hypothesis 2 is rejected (as the significance values are < 0.05) and public university respondents have significantly higher positive digital learning perception than public university respondents.

The mean with standard deviation value of average digital learning perception of 272 male is 3.830 ± 0.783 and 128 female is 3.745 ± 0.721. The one sample t-Test statistics (Test value = 3) of male and female are 17.478 (0.000) and 11.693 (0.000) respectively. So, both male and female respondents have positive digital learning perception (as $p < 0.05$).The MannWhitney Test (z) statistic value of average digital learning perception is 1.509 ($p = 0.131$). So, gender (male and female) has no significant effect difference on digital learning perception (as $p > 0.05$). Also, the path coefficient of gender (male and female) to digital learning perception in the structure equation model is 0.08 ($p = 0.453$). As the p-value is greater than 0.05, there is not enough evidence to reject the null hypothesis 2 for gender (male and female). So, both gender (male and female) have same positive digital learning perception.

The mean with standard deviation value of average digital learning perception of 236urbanresidence respondents is 3.976± 0.650 and 164rural residence respondents is 3.554± 0.845. The one sample t-Test statistics (Test value = 3) of urban residence respondents and rural residence respondents are 23.071 (0.000) and 8.394 (0.000) respectively. So, both urban residence respondents and rural residence respondents have positive digital learning perception (as $p < 0.05$).

The Mann-Whitney Test (z) statistic value of average digital learning perception is 4.768 ($p = 0.000$). So, urban residence respondents have significant higher digital learning perception than rural residence respondents (as $p < 0.05$). Also, the path coefficient of residence (urban and rural) to digital learning perception in the structure equation model is 0.49 ($p = 0.000$). So, the null hypothesis 2 is rejected (as the significance values are < 0.05) and urban residence respondents have significantly higher positive digital learning perception than rural residence respondents.

The mean with standard deviation value of average digital learning perception of 68 mobile with mobile network respondents is 3.235 ± 0.870, 184 mobile with broadband-Wifi respondents is 3.961 ± 0.653 and 148 computer with broadband-Wifi respondents is 3.867 ± 0.723. The one sample t-Test statistics (Test value = 3) of mobile with mobile network respondents, mobile with broadband-Wifi and computer with broadband-Wifi respondents are 2.231 (0.029), 19.954 (0.000) and 14.577 (0.000) respectively. So, all mobile with mobile network respondents, mobile with broadband-Wifi and computer with broadband-Wifi respondents have positive digital learning perception (as $p < 0.05$).

Table 4: LSD of digital learning perception at different device network used

LSD Dependent Variable: Average Perception				
(I) Device Network Used	**(J) Device Network Used**	**Mean Difference (I-J)**	**Std. Error**	**Sig.**
Mobile with Mobile Network	Mobile with Broadband-Wifi	-.72589*	.10216	.000
	Computer with Broadband-Wifi	-.63150*	.10546	.000
Mobile with Broadband-Wifi	Mobile with Mobile Network	.72589*	.10216	.000
	Computer with	.09438	.07949	.236

	Broadband-Wifi			
Computer with Broadband-Wifi	Mobile with Mobile Network	.63150*	.10546	.000
	Mobile with Broadband-Wifi	-.09438	.07949	.236

From the above LSD table, the difference for mobile with mobile network and mobile between the digital learning perception value with broadband-Wifi is 0.726 (p = 0.000) and

CONCLUSION

The Kruskal-Wallis Test (Chi-Square) statistic value of average digital learning perception is 31.235 (p = 0.000). So, device network used respondents (mobile with mobile network respondents, mobile with broadband-Wifi and computer with broadband-Wifi respondents) have significant difference of digital learning perception (as p < 0.05). Also, the path coefficient of device network used respondents (mobile with mobile network respondents, mobile with broadband-Wifi and computer with broadband-Wifi respondents) to digital learning perception in the structure equation model is 0.21 (p = 0.002). So, the null hypothesis 2 is rejected (as the significance values are < 0.05).To determine the significant difference between digital learning perception at different device network used respondents Least Significant Difference (LSD) is calculated.

for mobile with mobile network and computer with broadband-Wifi is 0.631 (p = 0.000). As the p values are less than 0.05, there is a significant difference in the digital learning perception value of mobile with mobile network from both mobile with broadbandWifi and computer with broadband-Wifi respondents. But the difference between the digital learning perception value of the mobile with broadband-Wifi and computer with broadband-Wifi is 0.094 (p = 0.236). As the p values are greater than 0.05, there is no significant difference in the digital learning perception value of mobile with broadbandWifi and computer with broadband-Wifi respondents.

The path coefficient of digital learning perception value to digital distance learning opportunity in the structure equation model is 0.16 (p < 0.000). As the p-value is less than 0.05, Hypothesis (Null) 3 is rejected. So, digital learning perception has a significant effect on digital digital learning opportunity effect. Also the Spearman rho correlation between average digital learning perception and average opportunity of digital education is 0.156 (p < 0.002). So, digital learning perception value has a strong positive correlation with opportunity of digital education. It may be concluded that with the increase of digital learning perception, digital distance learning opportunity may be increases significantly.

The result shows that during covid-19 pandemic situation, a significantly positive digital learning perception and digital distance learning opportunity in Delhi ncr. It is observed that both teacher and student profession have same positive digital learning perception. But public university respondents have significantly higher positive digital learning perception than public university respondents. Also, both male and female gender has same positive digital learning perception.

But urban residence respondents have significantly higher positive digital learning perception than rural residence respondents. The study shows that there is a significant difference in the digital learning perception value of mobile with mobile network from both mobile with broadband-Wifi and computer with broadband-Wifi respondents.

But there is no significant difference in the digital learning perception value of mobile with broadband-Wifi and computer with broadband-Wifi respondents. So, mobile network facility should be improved to utilized mobile in the digital distance education learning system. Finally, it observed that with the increase of digital learning perception, opportunity of digital education may be increases significantly.

RECOMMENDATION

- As the positive digital learning perception and digital distance learning opportunity was developed during covid-19 pandemic situation, the digital distance learning system may be developed for education in Delhi ncr.
- Both teacher and student profession respondents have positive digital learning perception, which may be utilized in developing in the digital distance learning system for education in Delhi ncr.
- Both public university respondents and public university respondents have positive digital learning perception, which may be utilized in developing in the digital distance learning system for education in Delhi ncr with higher effort to public universities (as public university respondents have significantly higher positive digital learning perception than public university respondents).
- Also both male and female gender respondents have positive digital learning perception, which may be utilized in developing in the digital distance learning system for education in Delhi ncr.
- Also both urban residence respondents and rural residence respondents have positive digital learning perception, which may be utilized in developing in the digital distance learning system for education in Delhi ncr with higher effort to rural residence respondents (as urban residence respondents have significantly higher positive digital learning perception than rural residence respondents).

- Moreover, both mobile with broadband-Wifi and computer with broadband-Wifi device network may be utilized in developing in the digital distance learning system for education in Delhi ncr. But mobile network facility should be improved to utilized mobile device in the digital distance learning system for education.
- Finally the study shows that with the increase of digital learning perception, the digital distance learning system for educationmay increases significantly.

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