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# Impact of COVID-19 on Education Sector in **Uttarakhand: Exploratory Factor Analysis**

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**Abstract**---COVID-19 pandemic has adversely impacted the whole education system across the world. Approximately 2 billion students have been impacted due to the closures of school, colleges and universities in the context to corona virus pandemic at the mid of May 2020. In context to the problems due to COVID-19 pandemic, experienced by the people, having close association with the education sector, the research is conducted to determine the impact of COVID-19 on education sector in Uttarakhand. Collection of data was done with the help of self structured questionnaire and it was distributed to 186 respondents of colleges and universities of Uttarakhand. Questionnaire was prepared in a Google-form. Collection of data was done with the help of convenience sampling method. In order to extract the factors from my study ie. "Impact of COVID-19 pandemic on education sector in Uttarakhand", exploratory factor analysis is used. Data analysis is done with the help of SPSS and Microsoft Excel. The extracted factors in this study were Rise in unemployment, Online learning will act as a critical lifeline for education Salary, payment to the employees irrespective of their capability, Lack of technological knowledge to access the online learning method, Requirement of technically sound system, Increase in the level of competition in online learning method and Government bailout programmes to the education sector. The implication of the study is to determine the impact of extracted factors on the students' performance in Education Sector.

**Keywords**---COVID-19 pandemic, education system, exploratory factor analysis, lockdown.

#### Introduction

No sector is remained unaffected due to COVID-19 pandemic. Most of the sectors like automobiles, agriculture, aviation, retail, textile, food industry, service industry etc, have been adversely impacted due to COVID-19 pandemic in India. In the same way, education system is also getting impacted (Mishra et al., 2020). Studying and getting education in college premises is the best way to enhance the skills and develop the competencies. But COVID-19 pandemic has impacted a lot to the learning process. Due to COVID-19 pandemic, the government across the country has shut down the schools and colleges. Due to increased cases of COVID-19, there is very less chance that schools and colleges will reopen (Zhai & Du, 2020). This is really a crucial time for the education sector because many universities conduct entrance tests of the candidates for new admission. This is only the time when education sector makes planning for the admission of the students for new session (Atalan, 2020).

Education system of a country is the foundation of its prosperity. No country can prosper without education. For development oriented and progressive society, education is the basic requirement without which society can't achieve anything great. Due to COVID-19, the whole world is facing severe devastation, and like all other sectors of country, education system is also facing an adverse situation which is not only the biggest challenge but also very shattering (Pituch & Lee, 2006). All colleges and universities are shut and no one can imagine when it will function normally again. For securing the future of our next generation, it is important to find out the ways and means of smooth functioning of education system (Sommer, 2010). All academicians, social workers, bureaucrats, policy makers should come forward with their ideas to find out methods of restarting education machinery at the earliest with the same pace as it was functioning pre COVID-19 pandemic (Darlenski & Tsankov, 2020).

## **Review of literature**

According to Fishbane & Tomer (2020), during COVID-19 Pandemic, information technology is the only option for the people (students, teachers, admin staff and fourth class people), having close association with the education industry. They also stated that people are experiencing a great challenge to access e-learning and e-teaching methods due to poor network and lack of technological knowledge. In order to clarify, Angelo (1995), prepared a model which expresses the tactics of teaching or assessment goals for the students. Teaching goals consists of work and career preparation as well as personal development; liberal arts and

academic values; discipline-specific knowledge and skills; basic academic success skills; higher-order thinking skills. During these days e-learning is playing a very important role in education sector, connecting teachers and students at a single platform i.e online learning method. According to Hameed et al. (2008), e-learning is not the appropriate platform to teach the students. Because explanation through e-learning is not that much effective as it is provided by face to face interaction between teachers and students.

# Statement of the problems

The whole education system including teachers, students, management, administration and staff is facing the greatest challenge at the present situation due to COVID-19 pandemic. At the present situation, the schools, colleges and universities are shut. Due to the uncertainty about the reopening of the schools, colleges and universities, the whole education system has been transformed from classroom teaching to online teaching (Diachenko et al., 2021; Muzyka et al., 2021). COVID-19 pandemic has impacted the functioning of the whole education system like admission counselling, new hiring, assessment methodologies, teaching methods etc., leading unemployment, pay cut, surplus of staff, less admission, termination of fourth class employees etc. Technology is playing a great role to support the people, working from home and students, studying from home amid COVID-19 Pandemic (Killgore et al., 2020; Fletcher & Griffiths, 2020). But in India, some students, dwelling in rural areas may not be able to access the online studying methods due to lack of technological knowledge, poor speed of network, lack of electronic gazettes like smart mobile phones, laptop etc. Teachers, teaching in small private schools and government schools in rural areas, may also face the same problems to access the online teaching methods. As a result, there will be chances to fully shut down the schools and colleges situated in rural areas due to no access to e-learning and e-teaching methods. So observing these all problems as a great challenge, the study is conducted for determining the impact of COVID-19 pandemic on education sector.

# **Research Objectives**

The basic objective of my study is to determine the impact of COVID-19 pandemic on Education sector.

# **Sub Objectives**

- Determination of various factors of impact of COVID-19 pandemic on education sector.
- To determine the significant relationship between the responses of males and females with the various determined factors of impact of COVID-19 pandemic on education sector.
- H0: There is no significant difference between the responses of males and females in terms of various determined factors of impact of COVID-19 pandemic on education sector.
- H1: There is significant difference between the responses of males and females in terms of various determined factors of impact of COVID-19 pandemic on education sector.

## Research Methodology

Data was collected from the employees, working in schools, colleges and the universities and from people having close association with the education sector of Uttarakhand. Due to COVID-19 pandemic, all the people (students, teachers, admin staff, fourth class employees etc.), having close association with education sector, are facing a tough challenge while working from home. The study of my paper is exploratory in nature. Random sampling technique was used to collect the data (Nyandra et al., 2018). Research study was conducted with the help of primary data. Data collection was done with the help of self-structured questionnaire. Questionnaire was made in Google form. Questionnaire was sent through Whats app and email to the respondents to collect the data. 21 questions were prepared in a questionnaire on the basis of demographic factors and items based on impact of COVID-19 on education sector. Two types of questions are in the questionnaire. First type of questions in the questionnaire are based on demographic factors and second type of questions are related to the variables based on impact of COVID-19 on education sector. Likert's 5 point scale was used to collect the data, ranging from Strongly Disagree (1), Disagree (2), Neutral (3), Agree (4) and Strongly Agree (5) to collect the responses. Data analysis was done with the help of Exploratory Factor Analysis. Magazines, journals, internet, websites etc. were used to collect the secondary data. SPSS Statistical package 21 and Microsoft-Excel were used to analyse the collected data (Jung, 2013; Treiblmaier & Filzmoser, 2010).

## **Results and Discussion**

# Reliability

Reliability of the collected data was checked with the help of Cronbach's alpha test. 0.822 is the reliability of the data collected from the respondents. Cronbach's alpha test indicates the accurate value of the collected data for conducting the analysis of the research statistically.

Table 1 Reliability statistics

Cronbach's Alpha	N of Items	
.822	21	

# **Descriptive Statistics**

Summarization of respondents' demographic factors was done with the help of Descriptive analysis. Descriptive statistics test was used to analyze the demographic factors of the sample surveyed. Characteristics of the sample surveyed are shown in Table 2. Study was conducted with the help of 186 respondents. Out of 186 respondents, 56% were the male and 44% were the female respondents. Percentage of respondents, belonging to the age from 20-30 is 42%, 28% belongs to the age group of 31-40, 30% belongs to the age group of respondents who are above 41. Married percentage of the respondents are 66% and 34% are the unmarried respondents. Percentage of the respondents'

education in BBA, MBA, Ph.D. and others are 28.8, 44.2, 17 and 10 respectively. Respondents' percentage, living in urban, semi urban and rural areas are 27, 42.7 and 30.3 respectively.

Table 2 Demographic profile

Demographic Factors	Categories	%
Gender	Female	44
	Male	56
Age	20-30	42
	31-40	28
	Above 41	30
Education	BBA	28.8
	MBA	44.2
	Ph.D.	17
	Other	10
Marital Status	Married	66
	Unmarried	34
Area of Residence	Urban Area	27
	Semi Urban Area	42.7
	Rural Area	30.3
	Ruiuiiica	00.0

# **Exploratory factor analysis**

For determining common variables, exploratory factor analysis was conducted to check interdependent correlation among a number of variables. Extraction of the factors was done with the help of Principle Component Analysis. Adequacy of the sample was checked with the help of Kaiser Meyer Olkin measure. 0 .769 is the KMO's value, which is higher than the acceptable value 0.5 (Field 2009). At p value 0.000 Barlett's test of sphericity, chi-square value shows that use of exploratory factor analysis is appropriate, as the values are given in the Table3.

Table 3
KMO and bartlett's test

Kaiser-Meyer-Olkin Measure of Sampling		.769
Adequacy.		
Bartlett's Test of Sphericity	Approx. Chi-Square	
	df	210
	Sig.	.000

Exploratory factor analysis was used to determine the each variable's Eigen value in the factors. Seven factors were identified and eigen value of each factor is higher than '1' kaiser's criterion, explaining 62.492% of the variance. The determined variables, collected on the factors, stating that the 1st factor states rise in unemployment, 2nd factor expresses "Online learning will act as a critical

lifeline for education", the 3rd factor tells "salary payment irrespective of the capability", the 4th factor states lack of technological knowledge to access the online learning method, the 5th factor shows "Requirement of technically sound system", the 6th factor tells "increase in level of competition in online learning method" and the 7th factor tells "government bailout programmes to the education sector". Names were assigned to the clustered variables, extracted via exploratory factor analysis.

On the basis of the collected variables, extracted with the help of Exploratory Factor Analysis were given their name. The basic purpose of the research is to extract factors on the Impact of COVID-19 on education sector in Uttarakhand through Exploratory Factor Analysis.

Table 4
Factors on the Impact of COVID-19 on education sector in Uttarakhand through exploratory factor analysis

Factors' Name	Eigen Value	% of variance	Variables extracted	Factor loading
Rise in unemployment.	5.272	10.509	Due to the introduction of e- learning, the fee structure of the courses offered by the universities will tend to	.819
			reduce. Unemployment in case of fourth class employees will increase in education sector.	.718
Online learning will act as a critical lifeline for education.	1.685	10.489	The demand for online courses will increase in the future.	.773
			Demand for e-books will increase in future.	.771
Salary payment irrespective of the capability	1.565	10.255	Due to less admission and reduced fee structure, remuneration of the teachers and staff will tend to reduce.	.837
Lack of technological knowledge to access the online learning method.	1.241	9.557	Lack of access to technology can prevent students to study through online.	.735
Requirement of technically sound	1.206	8.039	Online learning will become a critical lifeline for education.	.698
system			Technically sound teachers ll be required to teach the students through online.	.638
Increase in the level of competition in online learning method.	1.138	6.886	Indian universities will face competition from foreign universities, offering similar online courses and degrees.	.817
Government bailout programmes to the education sector.	1.016	6.756	Government should also provide bail out programmes to the education industry.	.810

# Description of the extracted factors

Seven factors are extracted from my study. The extracted factors are the result of the impact of COVID-19 pandemic on education sector in Uttarakhand:

- Rise in unemployment: The whole sectors in the country are under crisis due to COVID-19 pandemic. In the same way, education sector is also impacted, leading rise in unemployment especially in the level of fourth class employees. Due to the introduction of e-learning, the fee structure of the courses offered by the universities will tend to reduce in future, if the shutdown of the education sector remains longer. So the requirement or the demand of the fourth class employees will decrease. Even in case of requirement of faculties and admin staff will also decrease. Due to COVID-19 pandemic, prolonged shutdown in education sector has transformed classroom teaching into online learning method. It has given the birth to the new problem in the form of unemployment in the education sector. Unemployment may generate another problem ie. Increase in crime. Therefore, this factor has appeared in the form of the most significant factor of the study with a % of value of total variance is 10.509 & Eigen value is 5.272.
- Online learning will act as a critical lifeline for education: Due to COVID-19 pandemic, schools, colleges and universities are closed. If the problem persists longer, there is no chance that schools, colleges and universities will reopen in the future. The whole education system has moved online across the country (Mantra et al., 2017). Due to its persistence, the demand for online courses will increase in the future. Demand for e-books will also increase in future. Because due to the online learning method, libraries of schools, colleges and universities will be closed. Students will prefer accessing e-books. Therefore online learning will turn as a critical lifeline for education. Therefore, this factor has appeared in the form of significant factor of our study with a % of value of total variance is 10.489 & Eigen value is 1.685.
- Salary payment to the employees irrespective of their capability: Due to less admission and reduced fee structure, remuneration of the teachers and staff will tend to reduce. Due to the reduced fee structure of the courses offered by the universities, less remuneration will be paid to the all level of the employees. Payment of less remuneration to the employees irrespective of their capabilities will demotivate them. Online education should be designed in such a way that more and more students can take interest to get them enrolled. Online learning method should be designed by keeping in mind the interest of the students which can provide the benefits to them. Well designed online learning method may generate the revenue. Employees' won't be paid good remuneration in the education system, until it generates the revenue. Therefore, this factor has appeared in the form of significant factor of our study with a % of value of total variance is 10.255 & Eigen value is 1.565.
- Lack of technological knowledge to access the online learning method: Lack of knowledge to access the technology may prevent students to study through online. In order to prevent COVID-19 pandemic, education system has transformed the classroom teaching into online learning method (Udu et al.,

- 2016). But study through online learning method has become a great challenge for those people (students, teachers and admin staff) who lack technological knowledge. Even in case of teaching staff, if they have little or no knowledge of information technology, may face a big problem to deliver the lectures through online teaching methods. In order to conduct the online learning classes smoothly, both knowledge giver and knowledge taker should have sound technological knowledge. Therefore, this factor has appeared in the form of the significant factor of our study with a % of value of total variance is 9.557 & Eigen value is 1.241.
- Requirement of technically sound system: In response to COVID-19 pandemic, many schools, colleges and universities have turned online. Online learning will become a critical lifeline for education, if COVID-19 pandemic remains longer in future. Technically sound teachers will be required to teach the students through online. Students should also have knowledge of information technology. The infrastructure of an education system should be in such a way that can support to online learning method. Teachers should be provided with the laptop and sound speed of network to conduct the online classes. Therefore, this factor has appeared in the form of the most significant factor of our study with a % of value of total variance is 8.039 & Eigen value is 1.206.
- Increase in the level of competition in online learning method: In case of online learning method distance, infrastructure and place will not be a constraint for the students dwelling in different localities. Indian universities will face a tough competition from foreign universities, in terms of offering similar online courses and degrees. Most of the students dream about taking degrees from good universities across the world. Students are also having a charm of getting enrolled in foreign universities. Some foreign universities offer degree courses in the form of online learning method. So Indian universities offering online courses may face tough competition from foreign universities. Therefore Indian education system should design its curriculum in such a way which can fulfill the demand and interest of the students, leading enhancement of the personal skills of the students. Therefore, this factor has appeared in the form of the most significant factor of our study with a % of value of total variance is 6.886 & Eigen value is 1.138.
- Government bailout programmes to the education sector: Revenue of the education system will decrease due to decline in admission and reduced fee structure. This problem will give a birth to new problem in the form of increase in unemployment and payment of reduced salary to the employees. If COVID-19 pandemic persists in future then Government should provide bail out programmes to the education industry. In order to enhance the employment level during COVID-19 pandemic, Government should provide some aid to the education system. Therefore, this factor has appeared in the form of the most significant factor of our study with a % of value of total variance is 6.756& Eigen value is 1.016.

### Conclusion

By using exploratory factor analysis, I have come out with seven factors (Rise in unemployment, Online learning will act as a critical lifeline for education, Salary

payment to the employees irrespective of their capability, Lack of technological knowledge to access the online learning method, Requirement of technically sound system, Increase in the level of competition in online learning method and Government bailout programmes to the education sector) in my research. COVID-19 pandemic is not only impacting students but it has become a major problem for the employees also. Due to the decline in admission and reduced fee structure, unemployment rate is increasing. Employees are not getting the full salary as they were getting pre COVID-19 pandemic. Students, dwelling in villages where network connectivity is a big problem, are facing major challenges while studying from home. Parents' income level is also not supporting the online learning method.

# Future scope of the study

The impact of COVID-19 pandemic on education sector in the universities of other states may also be determined. The relationship between other demographic factors and various extracted factors of impact of COVID-19 pandemic on education sector can be studied.

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