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Research Article

An Investigation of the Variables Influencing Online Education: A Study Conducted in Varanasi, India

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Abstract

Following the COVID-19 epidemic, which forced the closure of educational institutions, the government has backed online learning systems in an attempt to preserve academic continuity. The bulk of elite private and public institutions have moved to online platforms like Zoom, Google Classrooms, Microsoft Teams, etc. with ease, while many still consider it to be an enormous undertaking. A number of benefits and drawbacks have come with adjusting to an online learning environment. It's time for us Indians as a people to realize the opportunities that online education offers—for India, within India. Determining the advantages and disadvantages from the user's perspective was, thus, one of the main goals of this investigation. Based on a report on the topic, one may conclude that online education in India is anticipated to grow extremely quickly. Until 2024 and beyond, this trend will continue. All stakeholders in Indian education, especially in the Post-Covid Era, have chosen online learning as an ingrained, imposed system rather than a conscious strategy. This has been underlined by the benefits for all parties involved in the education industry. This study uses a poll to try to find and highlight the components that are particularly helpful to teachers and students. But this survey also reveals some interesting trends. The results of the study can be applied in different settings by carefully selecting the samples and altering the underlying conditions in an effective and sufficient manner. Online learning offers a plethora of opportunities for educators and learners alike. It could, however, further exacerbate India's socioeconomic divide. In all of our policies and activities pertaining to online education, inclusion should be our goal. India will be guided towards progress via perseverance, sincere endeavors, and a well-defined vision. One of the study's conclusions is that, while online learning has numerous advantages for students, traditional classroom instruction will not soon be replaced by it. As a next step the future studies could be conducted to further test this.

Keywords

Online Education, Online vs Offline Education, Classroom Teaching, E-Learning, E-Education, Indian Online Education System

1. Introduction

In order to ensure sharing of prosperity, eradicate poverty, and accelerate growth, education—especially higher education—is essential. There are about 200 million students enrolled in various courses at different higher education institutions worldwide; as the number of young people increases, a steady and continual expansion in demand for higher educa-tion is anticipated. It wouldn't be out of place to note, never-theless, that a large number of pupils still lack the necessary abilities for application in the workplace. In recent years, online education has gained more traction in India due to the advancement and expansion of technology. Most knowledge seekers and working professionals have enrolled in various

online courses to broaden their knowledge base. Based on current patterns, there will likely be a notable increase in the number of individuals expressing interest in the online education system in the upcoming years. It is pleasing to note that there are currently 290 million smartphone users in India, and by 2021, there should be 470 million users in the country due to an additional 180 million users. It's also noteworthy to note that 31% of Indians already utilize the internet, making 409 million people active users as of right now. By 2021, there might be 735 million more users. Gond, Ramprakash, and Gupta, Rashi in 2017 found that When combined, smartphones and Internet penetration represent a vast array of factors and can be regarded as the primary drivers of the exponential expansion in online education. [20].

It can be concluded from a report titled Online Education in India: 2021 that there would be significant expansion in the online education sector in India. It is projected that the increase in online education users—from 1.57 million in 2016 to 9.5 million in 2021—is the cause of this kind of growth in the field. More than $3 billion is thought to be the market value of e-learning in the nation (Online Education in India: 2021, A Study by KPMG India and Google).

Thanuja Chandani Sandanayake in 2019, found that the Indian Education System has undergone a number of modifications and revisions recently as a result of the rapid expansion of technical advancements [68]. One of these may be a blended learning system, and implementing it would be one of these innovative adjustments. The ease with which learners and information seekers can pick up new abilities and information expands the potential applications of online learning. India ranks second in the world for online enrollment, according to a survey on global online education programs. With 1,55,000 students, the United States of America tops the list; nevertheless, 15% of students are Indian. The global student population included in this report is 1.2 million.

2. Why Is Online Education Preferred to Offline Education

One of the reasons for preference to online system is that there may be a blended learning system, and implementing it would be one of these innovative adjustments, as concluded by Nguyen, Tuan in 2015 [34]. The ease with which learners and information seekers can pick up new abilities and information expands the potential applications of online learning. India ranks second in the world for online enrolment, according to a survey on global online education programs. With 1,55,000 students, the United States of America tops the list; nevertheless, 15% of students are Indian. The global student population included in this report is 1.2 million.

Some of the benefits of online education may be summarized below as observed by Angela Paljor in her studies in 2020 [3].

1. The cost of e-learning is 53% less than that of traditional classroom instruction.

2. Time, money, and energy are all saved.
3. It allows one to obtain a wealth of useful knowledge while lounging at home.
4. People with disabilities (Divyaang) may find it more appropriate since it requires less activity, allowing them to easily advance their careers through online education.
5. Live question and answer services, such chat rooms and discussion forums, are provided by e-learning, without interfering with regular classes, students can improve their credentials and employment chances with online diploma courses.

3. Factors Driving the Expansion of Virtual Learning in India

3.1. Adaptability and Convenience

One can study in a casual setting with ease when pursuing an education online. One can learn at their own pace while taking care of their other obligations, like homework [5]. Additionally, one can monitor their progress over time and improve their exam-taking strategies.

3.2. Price and Duration

In online learning environment, learners and information searchers have a multitude of options. It increases learning efficiency, which in turn motivates students to dedicate their time to other extracurricular activities that might not be feasible due to the complexity of the traditional classroom learning method that ahs been confirmed by Sharma, Shailendra in his study in 2020 [41].

3.3. Efficient Accessibility

Singh Dharm Beer, in 2016 while discussing about new product development has mentioned that learning has no age restrictions [45]. Anybody can enroll in any course of their choice, regardless of age. This is the greatest equalizer because technology and technology drive everything; in the perspective of technology, everyone is equal. The electronic device and a reliable, fast Internet connection are both necessary. Further stressing his point on students' behavior Singh, Dharm Beer in 2019 stated that to thrive in a career, one does not have to live far from family and friends or commute from anyplace in order to obtain an education [50]. It is possible for homemakers to enroll in it after their regular timetable. Likewise, those from disadvantaged backgrounds and those with less wealth can also pursue education that has been observed by Gupta, Isha, 2020. [21]. Through the empirical research it has been found that mobile devices as online educational tools could be used more prominently and somehow better than desktop computers or laptops as confirmed by Yao-Ting Sung, Kuo-En Chang and Tzu-ChienLiu in 2016 [71].

3.4. Opportunity to Explore Diverse Cultures

Online learning gives teachers the chance to communicate with students from a wide range of cultural backgrounds. As a result, one can cultivate and advance cross-cultural values and knowledge, and eventually the feelings and moral systems of individuals from other cultures could be understood, that has been established by Manuela Milani in 2020 [32]. sIn a similar vein, those seeking knowledge can also access the information disseminated by educators across the globe that is not available through traditional educational methods.

3.5. Suggested Courses

In their research paper on MOOC courses Waleed Al-Rahmia, et al. in 2018 mentioned that there are a number of MOOC courses accessible through the online platform [70]. Anyone can select any course of study they want to take using e-learning. There are numerous online certifications accessible for students to enroll in in India. Online courses in India include MBA, MSc, MCA, BA (Hons), Executive MBA, Retail and Digital Marketing, Outdoor Advertising and more as mentioned by Singh, Dharm Beer in 2019 in his study [48]. Online courses are available in India from numerous prestigious institutions, including the IITs and IIMs. Additionally, a large number of employers have hired recent graduates of online courses. Currently, 38% of the market for online education is made up of certification programs in education. Singh, Dharm Beer in 2019 found that HR managers have started recognising online courses for propotional purposes [52].

3.6. Online Education Is Greener

Online learning is among the greatest and most efficient options for students, and it's also ecologically beneficial when taking into account scientific considerations. Coincidentally, a survey revealed that compared to online classes, traditional classrooms use a lot more energy and emit CO_2. A study conducted by KPMG on 'Online Education in India: 2021' has shown that compared to traditional classroom instruction, online courses may use 90% less energy and emit 85% less CO_2 per student [35].

4. Literature Review

4.1. Online Learning VS Face to Face Learning

Hatice Çıralı Sarıca, Yasemin Koçak Usluel in 2016 have studied the impact of digital storytelling on the writing and memory capability of students [23]. It has been demonstrated that digital technology, particularly online instruction, can be helpful when used appropriately. Aghaee, Naghmeh and Keller, Christina in 2016 found that the students believed that creating the ICT Support System culture for peer interaction

would provide synchronous and online asynchronous communication and enhance collaborative learning [2]. The Foundations of American Education study evaluated the satisfaction level of students enrolled in face-to-face (F2F) teaching or online teaching using qualitative and quantitative analysis. Anna Sun and Xiufang Chen in 2016 found that when the qualitative data have used, the result of both models was similar. One of the major benefitsis attracting more students to online courses that it was found that online courses are more reasonable in terms of cost than traditional classroom (F2F) courses [4]. Singh, Dharm Beer in 2019 conducted study on the potential of teachers to design online delivery content and intent for various interactive educational models at the minimum cost especially for engaging the emplyees [56]. These online educational platforms proved themselves an effective way of transmission of information to students successfully and achieved learning outcomes equivalent to F2F courses. It has also been found by Bonnie Elbaum, Cynthia McIntyre and Alese Smith in 2002 that the best practices in online education was time-saving, reducing travel costs, giving more opportunities to access and interact with professionals and experts globally, andproviding flexibility to retrieve the courses at their convenience [6].

4.2. Requirement of Student for Online Education

It has been developed and examined by Goggins Sean and Xing Wanli in 2016 that there exist two typical models illustrating students' behaviorin online classes. The two models mentioned above show how different dimensions of the behaviours influence student learning performance differently [19]. It has also highlighted the often-overlooked influence of reading behaviour and the time dimension of participation. In this era of technology, learners want an expert program to access from anywhere at their own convenient time. Di Xu and Shanna Smith Jaggars in 2013 found that these prerequisites have made online learning a more appealing and realistic choice for working professionals [14].

Budhai, et al. in 2017 found that students want to receive a quality education without compromising their working timings and travel expenditure. Moreover, the flexibility, accessibility, and other benefits like different program options and time efficiency fascinate people more towards online education [9]. Jasmine Paul J and Jefferson in 2019 concluded that instead of being at a specific location at a specific time, online students are free to communicate with the tutor and interact with classmates, educational material, and assignments from any internet access point [26]. Estelami, Hooman in 2016, found that the students prefer online courses due to their flexible study hours; for example, students who are working cannot attend class ataspecific time in the classroom, and they can complete their education through online courses by watching lecture videos and study materials after their job [16].

4.3. Positive Impact and Efficiency Gains for Online Students

Studies conducted by Figlio, D. N., Rush, M., & Yin, L. in 2010 show that learning outcomes from traditional classroom instruction and online learning can be comparable [17]. Their study found that the learning outcomes of online and traditional classroom sessions were equivalent to the Information Technology sector training session. In other studies, conducted by Finch, D., & Jacobs, K, in 2012, it was examined that the satisfaction level of online education students is higher than that of classroom students. With the spread of online education, students have got more course choices [18]. Eric P. Bettinger, Lindsay Fox, Susanna Loeb, and Eric S. Taylor in 2017 found that in traditional classroom study, the students have to choose the program available in their course curriculum, but in online education, they may have access to various universities offering numerous courses [15]. It has been established by Khare, Anshuman, Hurst, Deborah (Eds.) in 2018 that online courses and platforms provide numerous benefits to students, and one of the most common and unique benefits is the flexibility of time [29]. It was further found by Imran, Sheikh Mohammad in 2012 that online mode is more convenient to the students as they can choose the time feasible for them and can access the study material and video whenever they want. In classroom teaching, students should be present at a specific time for attendance. Nevertheless, internet platforms allow for the surmounting of these temporal and geographical boundaries [24].

Bruce Forciea, in 2018 found that the students of any area can access the online class and study material most conveniently, and the learning outcomes can be accomplished. Because of the online platform's more flexibility and convenience compared to traditional perks, students in MBA marketing courses prefer it [8]. Brown, Gavin T L, in 2017 established that students who do not participate in classroom activities due to fear of being judged and of shy nature perform more in an online class because of not being judged. Automatically it will increase class learning outcomes [7].

4.4. Unfavourable Impact or Resistance of Efficiency

Rena M. Palloff, Keith Pratt in 2011 concluded that during online education delivery, efficiency is measured in terms of students' gain and the exact information they get from the content, as online courses have many learning information to hand over to students [38]. Shailendra Palvia, et. al. in 2018 found that the tutors upload various videos; students mustuse this online content like video modules, reading content, and assignments in a sequence of their own [39]. The student's job on this online platform is to plan their time to study these resources in order to complete assignments and other tests and get better grades. A small amount of responsibility is transferred to the students, so some students take online courses as a burden. In his study on 'Students' Motivations and Barriers to Online Education' Vladimir Abramenka, in 2015, found that the main barriers in online education and learning system are the collaboration between the instructor and students and the degree of interaction [69]. It was also found by Waleed Al-Rahmia et al. in 2018 that there was a high level of students' willingness to learn and present their academic work for other students to see and assess. Researchfurther indicated that the discussed interaction and collaboration would remain potential barriers to online learning [70]. The research conducted by Cooperman, Larry in 2017 shows that students are more likely to leave the online class when they do not like their tutors, course content or method of teaching. They quit if they do not see results right away because they must work individually and be self-directed and self-motivated [11].

4.5. Current Situation and Future Directions

Singh, Dharm Beer in 2022, mentioned that with an average of 1.6 million subscribers, online education in India is currently valued at US $247 million [65]. The national digital library of eBooks with a broad range of issues is one of the many projects that the union government has started in response to this. Sharma, Sahil and Sharma, Purnendu in 2015 stated that through the online faculty development programs offered by NPTEL, renowned faculty members from NITTTR, IITs, IIMs, and central universities have given lectures on a variety of interesting themes [40]. Singh, Dharm Beer in 2013 and 2017 deduced that instruction-centric, blended learning in the classroom and a well-designed online course are prerequisites [43, 57]. However, while teaching online, educators make use of technology that might facilitate group discussions, the uploading of instructional materials, and other interactive features.

As per the article authored by Singh, Dharm Beer in 2007 it has been mentioned that according to students in traditional colleges, the majority of their lecturers have sent them study materials or videos with little to no interaction since they are astonished by the abrupt change in their academic lives [42]. Harsha R, and Dr Thara Bai, in 2020 have found that worldwide educational institutions have been severely impacted by the current COVID-19 pandemic and the lockdown that followed [22]. Kumari, Umesh, in 2019 found that the institutes were abruptly forced to close or switch to offering online training. Prior to now, the majority of institutions had not taken online education seriously and it was mostly limited to mail courses or distance learning [31]. As is well known, the conventional education model typically required students or learners to physically attend classes. Kearsley Greg, in 1999 found that all education was provided through lectures, which were delivered to large classes of students by a single teacher [28].

Singh, Dharm Beer, in a study in 2019 found that when students or learners debate, discuss, and ultimately contribute to such a discussion while learning from each other, we may refer to it as one-to-many) or case discussions (many-to-many)

[58]. As per a study conducted by Kritika Sharma in 2020 it was found that in technical and management topics where the relevant faculty members can explain the concepts, this class-centric paradigm is commonly employed. India's use of online education is still in its infancy [30]. Meyer, Katrina A. and Kezar, Adrianna J. in 2020 deduced that in spite of this, India boasts a large pool of driven young people who are poised to revolutionize online learning in the country. If past patterns are to be followed, we might anticipate a rise in the number of students enrolled in online courses. Consistent and ongoing learning will drive the evolution of the online learning environment. [33]. In order to fulfil the increasing demand for STEM workers worldwide, solutions to the scarcity of qualified teachers are required. Igor Chirikov, in 2020 has shown that, at comparatively lower costs, online and blended learning have generated learning outcomes for students that are comparable to those of traditional in-person instruction [25]. Gond, Ramprakash, and Gupta, Rashi in 2017 found that the demand for effective team cooperation will drive the growth of online education. Future research studies will mostly focus on online course groups [20].

5. About the Present Study

It became necessary to undertake a study among undergraduate and postgraduate students of Management and Technological Institutes in and around Varanasi in light of the aforementioned facts, surveys, and secondary data sources. We sent the links to the Google Forms to the respondents' email addresses in order to examine the current issue. A structured questionnaire with both open-ended and closed-ended questions may be found at the website. Students who had been regularly attending online classes responded to it, indicating that they had enough of exposure to and expertise with the online learning environment. Considering that the students responded in an open setting from their homes or other locations, it would be reasonable to infer that their comments are impartial. There were 347 respondents in all who took part in this poll. This sample was taken from Varanasi's student body of 5,000 BBA, BCA, MBA, and MCA graduates. As per Cochran, William G, 1953, A sample size of 278 is sufficient for a small population [12].

5.1. Research Objectives

The selection of the following objectives for the current study was based on the results of the secondary data analysis and literature review. These goals would serve as the foundation for developing the hypotheses for additional testing.

1. To determine whether online learning is suitable and superior to traditional classroom instruction for both working executives and students.
2. To ascertain the rationale for choosing an online learning platform.
3. To find out the basic requirements for the online educa-

tion system and to examine the drawbacks, if any.

5.2. Hypotheses

Singh Dharm Beer suggests a theoretical framework for the online education pattern, specific vital questions need to be examined further using primary data. The null hypotheses to be tested are as follows [44, 51]:

Hypothesis #1 Online Learning is better than Face to Face Learning.

The studies conducted by Singh, Dharm Beer et al. in 2019 have established that online learning is better than Face to Face learning in certain situations. The studies [46, 47, 55] have cited specific reasons that make online learning better and more effective than face-to-face learning. According to Singh Dharm Beer [67] one of the greatest and most efficient options available to students is online learning.

Hypothesis #2 Teachers Develop Better online Contents in Comparison to Face-to-Face Learning.

In different studies conducted by Singh Dharm Beer [53, 54], it was found that the cost factor is one of the important strategic function an any management decision. Allowing teachers to develop and upload course content for the students. They have found that international expertise and global practices help teachers upload better content for the students online.

Hypothesis #3 Students prefer the online education system because it is flexible, time-saving and can be accessed from anywhere.

It has been stated that the students might access the online programs from anywhere convenient. It has been stated that flexibility, accessibility and other benefits like different program options and time efficiency motivate learners especially employees to go for more for online education [49]. Jung, Joanne J. in 2015 found that geographical and time barriers can be overcome through online platforms [27]. Rajeev Agrawal in 2020 has found in his study that online education systems provide a flexible and comfortable environment. [5]

Hypothesis #4 Online education is the ideal system to learnfor working professionals.

It has been argued that online educational programs are the best for working professionals, as they suit their working schedules. Researcher Manuela Milani states that online systems may develop and enhance cross-cultural values and knowledge [32]. She explains that knowledge seekers can attain the knowledge shared by various instructors worldwide that could not have been possible in traditional learning. Singh, Dharm Beer has found that there are several online courses for working professionals as well as students that may enhance their skills and learning. [59, 61]

Hypothesis #5 online classes are more feasible for students both economically and operationally.

The study conducted by Sharma, Shailendra, 2020 states that online education systems enhance the efficiency of learning and encourage the learners to devote their time to undertake

some other curricular activities, which may not be possible because of the intricacies of the traditional classroom learning system [41]. In the research conducted by Singh Dharm Beer [60, 64], it has been found that online courses are more economically feasible for students. He has found that in online education, students may have access to various universities offering numerous courses [66]. Online courses and platforms provide numerous benefits to students, and one of the most common and unique benefits is the flexibility of time [60].

Hypothesis #6 The students prefer online classes as it does not have a compulsion on attendance.

In a study conducted by Singh Dharm Beer it has been mentioned that instead of beingataspecific location ataspecific time [62], online students are free to communicate with the tutor, and interact with classmates, educational material, and assignments from any internet access point. Bonnie Elbaum, Cynthia McIntyre and Alese Smith 2002 state that working students prefer online courses because they cannot attend classes at specific times [6]. It has also been found by Singh, Dharm Beer that the students who do not participate in classroom activities due to fear of being judged and shy perform more in an online class because of not being judged [64].

Hypothesis #7 The teachers upload the study material more frequently for the students.

On the basis of a study conducted by Singh, Dharm Beer that aimed at blended learning system it was established that it allows learners and knowledge seekers to easily acquire more skills and knowledge, enhancing online education's further scope [68]. It has been found by Igor Chirikov in 2020 that online and blended teaching has produced similar student learning outcomes to traditional face-to-face instructions at comparatively lower costs [25]. Cherney, Maura R in 2017 found that online education shall continue to grow because of the need for effective team collaboration. [10].

6. Data Collection and Analysis

The data have been collected through a structured questionnaire, and the responses to the questions have been tabulated below. The Z test statistic has been used to test the difference between the population and sample mean. In the present study, there are 08 null hypotheses to be tested. We have hypothesized that the observed differences are not statistically significant.

Table 1. Factors and responses.

Sl No.	Key Questions	Responses			
		Yes	%age	No	%age
1	Is the online education system better than face-to-face learning in the classroom?	237	68	110	32
2	Do teachers develop better online content in comparison to face-to-face learning?	207	60	140	40
3	Do students prefer online education due to flexibility, time-saving and accessibility from anywhere?	317	91	30	09
4	Is the online education system the ideal system for learning for working professionals?	242	70	105	30
5	Are online classes more feasible for students both economically and operationally?	272	78	75	22
6	Do students prefer online classes as it does not have a compulsion on attendance?	185	53	162	47
7	Do the teachers upload the study material more frequently for the studentsonline?	187	54	160	46

Testing of Null Hypothesis#1: The online education system is better than face-to-face learning in the classroom.

This hypothesis is to be tested against the alternative hypothesis that the online education system is not better than regular or traditional classroom teaching. We are using 50% as the cutoff value. Suppose N represents the proportion of the respondents who contend that the online education system is better. Therefore we want to test the following:

H_{01}: N≥0.5, Against Alternative hypothesis H_{11}: N< 0.5

No. of respondents mentioning that the online education system is better = 237

No. of respondents claiming that the online education system is not better = 110

Total No. of respondents = 347

Fraction of the respondents saying that the online education system is better = 0.68

Fraction of respondents saying that the online education system is not better = 0.32

$$Z_{cal} = (0.68 - 0.50) \times \sqrt{347 / (0.5 \times 0.5)} = 0.18 \times 37.24 = 6.7032$$

Z_{tab}ata 5% level of significance is 1.96

Inference 1: Z_{tab} is less than the calculated value that is Z_{cal}; therefore, the null hypothesis, in this case, may be accepted. Therefore we can infer that the students prefer the online education system.

Testing of Null Hypothesis#2: The teachers develop better course content in the online system.

This hypothesis will be tested against the alternative hypothesis that teachers do not develop better course content in the online system. We are using 50% as the cutoff value. Suppose N represents the proportion of the respondents who contend that the teachers develop better course content in the online system. Therefore we want to test the following:

H_{02}: N≥0.5, Against Alternative hypothesis H_{12}: N< 0.5

No. of respondents mentioning that teachers develop better content in online systems = 207

No. of respondents saying that teachers do not develop better content in online systems = 140

Total No. of respondents = 347

Fraction of the respondents saying that the specific organized retailer is well known = 0.60

Fraction of respondents saying they do not visit the retailers only because it is well known = 0.40

$$Z_{cal} = (0.60 - 0.40) \times \sqrt{347 / (0.5 \times 0.5)} = 0.10 \times 37.24 = 3.724$$

Z_{tab} at a 5% level of significance is 1.96

Inference 2: Z_{tab} is less than the calculated value that is Z_{cal}; therefore, the null hypothesis, in this case, may be accepted. Therefore we can infer that the teachers develop better course content in online mode.

Testing of Null Hypothesis#3: Students prefer online education due to flexibility, time-saving and accessibility from anywhere.

This hypothesis is to be tested against the alternative hypothesis that flexibility, time-saving and accessibility from anywhere are not the only factors to prefer the online system by the students. We are using 50% as the cutoff value. Suppose N represents the proportion of the respondents who contend that students prefer online education due to flexibility, time-saving and accessibility from anywhere. Therefore we want to test the following:

H_{03}: N≥0.5, Against Alternative hypothesis H_{13}: N< 0.5

No. of respondents mentioning that they prefer online system because of the factors such as flexibility, time-saving and accessibility from anywhere = 242

No. of respondents saying that that they do not prefer online system only because of the factors such as flexibility, time-saving and accessibility from anywhere = 30

Total No. of respondents = 347

The fraction of respondents in support of the null hypothesis = 0.91

Fraction of respondents in support of the alternative hypothesis = 0.09

$$Z_{cal} = (0.91 - 0.50) \times \sqrt{347 / (0.5 \times 0.5)} = 0.41 \times 37.24 = 15.268$$

Z_{tab} at a 5% level of significance is 1.96

Inference 3: Z_{tab} is less than the calculated value that is Z_{cal}; therefore, the null hypothesis, in this case, may be accepted. Therefore we can infer that students prefer online education due to flexibility, time-saving and accessibility from anywhere.

Testing of Null Hypothesis#4: Online education system is ideal for working executives.

This hypothesis will be tested against the alternative hypothesis that the online education system is not ideal for working executives. We are using 50% as the cutoff value. Suppose N represents the proportion of the respondents who contend that the online education system is ideal for working executives. Therefore we want to test the following:

H_{04}: N≥0.5, Against Alternative hypothesis H_{14}: N< 0.5

No. of respondents accept that the online education system is ideal for working executives = 242

No. of respondents say that the online education system is not ideal for working executives = 105

Total No. of respondents = 347

The fraction of respondents in support of the null hypothesis = 0.70

Fraction of respondents in support of the alternative hypothesis = 0.30

$$Z_{cal} = (0.70 - 0.50) \times \sqrt{347 / (0.5 \times 0.5)} = 0.2 \times 37.24 = 7.448$$

Z_{tab} at a 5% level of significance is 1.96

Inference 4: Z_{tab} is less than the calculated value that is Z_{cal}; therefore, the null hypothesis, in this case, may be accepted. Therefore we can infer that the online education system is better for working executives.

Testing of Null Hypothesis#5: Online classes are more feasible for students both economically and operationally.

This hypothesis is to be tested against the alternative hypothesis that online classes are not economically and operationally feasible. We are using 50% as the cutoff value. Suppose N represents the proportion of respondents who contend that online classes are more economically and operationally feasible for students. Therefore we want to test the following:

H_{05}: N≥0.5, Against Alternative hypothesis H_{15}: N< 0.5

No. of respondents accept that the online education system is feasible both economically and operationally = 272

No. of respondents say that the online education system is not feasible economically and operationally = 75

Total No. of respondents = 347

The fraction of respondents in support of the null hypothesis = 0.78

Fraction of respondents in support of the alternative hypothesis = 0.22

$$Z_{cal} = (0.78 - 0.50) \times \sqrt{347 / (0.5 \times 0.5)} = 0.28 \times 37.24 = 10.427$$

Z_{tab} at a 5% level of significance is 1.96

Inference 5: Z_{tab} is less than the calculated value that is Z_{cal}; therefore, the null hypothesis, in this case, may be accepted. Therefore we can infer that the online education system is economically and operationally feasible.

Testing of Null Hypothesis#6: Students prefer online classes as it does not have a compulsion to attendance.

This hypothesis is to be tested against the alternative hypothesis that students prefer online classes not because there is no compulsion to attend. We are using 50% as the cutoff value. Suppose N represents the proportion of the respondents who contend that students prefer online classes as it does not have a compulsion on attendance. Therefore we want to test the following:

H_{06}: N≥0.5, Against Alternative hypothesis H_{16}: N< 0.5

No. of students prefer online classes as it does not have a compulsion on attendance = 185

No. of students prefer online classes as it does not have a compulsion on attendance = 162

Total No. of respondents = 347

The fraction of respondents in support of the null hypothesis = 0.53

Fraction of respondents in support of the alternative hypothesis = 0.47

$$Z_{cal} = (0.53 - 0.50) \times \sqrt{347 / (0.5 \times 0.5)} = 0.03 \times 37.24 = 1.12$$

Z_{tab} at a 5% level of significance is 1.96

Inference 6: Z_{tab} is more than the calculated value that is Z_{cal}; therefore, the null hypothesis, in this case, may be rejected. Therefore we can infer that the students prefer online classes not only because it does not have a compulsion on attendance.

Testing of Null Hypothesis#7: The teachers upload the study material more frequently for the students in online mode.

This hypothesis is to be tested against the alternative hypothesis that the teachers do not upload the study material more frequently for the students in online mode. We are using 50% as the cutoff value. Suppose N represents the proportion of the respondents who contend that students prefer online classes as it does not have a compulsion on attendance. Therefore we want to test the following:

H_{06}: N≥0.5, Against Alternative hypothesis H_{16}: N< 0.5

No. of students saythe teachers upload the study material more frequently for the students in online mode = 187

No. of students say the teachers do not upload the study material more frequently for the students in online mode = 160

Total No. of respondents = 347

The fraction of respondents in support of the null hypothesis = 0.54

Fraction of respondents in support of the alternative hypothesis = 0.46

$$Z_{cal} = (0.54 - 0.50) \times \sqrt{347 / (0.5 \times 0.5)} = 0.04 \times 37.24 = 1.49$$

Z_{tab} at a 5% level of significance is 1.96

Inference 7: Z_{tab} is more than the calculated value that is Z_{cal}. Therefore, the null hypothesis, in this case, may be rejected. Therefore we can infer that the teachers upload the study material more frequently for the students online.

7. Major Findings and Conclusion

7.1. Findings After Data Analysis

We have applied Z test statistic to drawrespective inferences. The Z test has given a wide picture. Z test has been conducted at 5% level of significance. The respective findings are summarized below.

Table 2. The findings.

Sl No	Null Hypthesis	Accepted or Rejected
1	The online education system better than face-to-face learning in the classroom	Accepted
2	The teachers develop better online content in comparison to face-to-face learning.	Accepted
3	The students prefer online education due to flexibility, time-saving and accessibility from anywhere.	Accepted
4	The online education system is the ideal system for learning for working professionals?	Accepted
5	The online classes are more feasible for students both economically and operationally?	Accepted
6	The students prefer online classes as it does not have a compulsion on attendance?	Rejected
7	The teachers upload the study material more frequently for the studentsonline?	Rejected

Thus we infer that the students prefer the online classes not only because it does not have the provision for attendance compulsion but due to other reasons as well. Similarly the teachers upload their material in the online mode for the benefit of the students.

The other null hypothese have been accepted and as such we may infer that:

1. The students believe that online education system is better than face to face learning.
2. The teachers develop better online quality of materials in comparison to face to face learning in the classrooms.
3. The students prefer the online education system because of flexibility, time and cost saving. They can also access it from anywhere, that gives them flexibility interms of space.
4. The students feel that Online education system is ideal system of learning for working professionals.
5. The online education system is feasible both economically and operationally.

7.2. Other Findings, Suggestions and Conclusion

The respondents have accepted that online education is better than classroom teaching. However, they have responded in the context of COVID-19. If we look at the suggestions offered by the students, we will infer that the students contend that online systems cannot replace the face to face learning. They have also stated that the teachers have developed better course content than traditional classroom teaching. The basis for this response could be the usage and application of tools in the online system. The usage of online material is not possible in traditional classroom teaching. As per the study, the students have started liking the online system because of its flexibility and accessibility. It also saves substantial costs them. The students have also mentioned that the online education system is ideal for working executives, as they cannot attend regular classes. The online education system, according to students, is preferred on the parameters of economic and operational feasibility. As per the study, the students summarily rejected the contention that they prefer online classes as there is no compulsion to attend. They have also mentioned that the teachers do not frequently upload the material on the institute's website or YouTube channels. While extending the findings of Singh, Dharm Beer in 2020 in case of organized retailing that the cost is one of the major factors to woo the users towards using the online courses. [63].

The study revealed that there must be a customized app for the respective colleges with proper credentials so unauthorized people cannot intrude into the online classes. Though this study was conducted among the students of professional courses, it shows a direction for the traditional courses. The findings can be extended to those courses and colleges as well. This study attempted to analyze and examine the key issues of the online education system. The online education system,

introduced in India decades back, was introduced as a novel concept that too as a compulsion. In the era of COVID-19, there was no option but to adopt the online education system. Almost all professional colleges/institutes have started using online education systems in one way or other. Therefore, it was pertinent to examine the causes that the students are confronting. More studies could be conducted to highlight the problems faced by the students of traditional colleges [1]. This study may serve as a reference point for such studies that would be conducted in future. Certain random errors could have crept into the findings, but efforts have been there to minimize such errors at their source.

We must prioritize every critical situation that may affect us and plan accordingly. The COVID-19 as pandemic has made us think that our students must possess certain skills and attitudes that may help them in future; well, this includes proper orientation towards online studies as found by Dhawan, Shiwangi in 2020 [13]. It can be stated that the courses offered in online mode have shown an alternative for students to enhance their skills and opportunities, which further helps them to be competitive in this era, as found by Rajhans, Vidyut, et al., in 2020 [36]. Therefore it can be concluded that the students have taken online education and teaching with full sincerity. Raju, Harsha, 2020 is quite satisfied that the teachers are making all efforts to ensure that the curriculum is completed and well-understood by the students. However, the students have also strongly felt that Online Education cannot replace classroom teaching [37].

Author Contributions

Dharm Beer Singh is the sole author. The author read and approved the final manuscript.

Conflicts of Interest

There are no financial, commercial, or other affiliations that could be considered as potential conflicts of interest by the academic community. The author further declares that no conflicts of interest are there.

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