



An in-depth analysis of the Entertainment Preferences before and after Covid-19 among Engineering Students of West Bengal

Susanta Saha¹, Sohini Mondal²

¹Assistant Professor, Department of Basic Science and Humanities-Mathematics, Techno Engineering College, West Bengal, India

²PG – Electronics and Communication Engineering, IEST-Sibpur, West Bengal, India

Email: susantasah@gmail.com

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Abstract

The Covid- 19 pandemic had a significant impact on populations throughout the world. As countries implemented lockdowns or restrictions on movement of people, and most services and activities were shifted to online mode, it had a cascading effect on social lives too. As the usual entertainment and recreational choices were no longer viable, people shifted their attention towards other modes of entertainment, viz., digital entertainment, social media etc. As young adults, college students have a rich and varied social life. The present study investigates the impact of the pandemic on the entertainment and recreational trends among the engineering students of West Bengal. The study utilizes descriptive and inferential statistical tools using SPSS version 20 to investigate how social activities among the students were affected by the pandemic. The study reveals that, while cultural/sports activities and social outings were the two most preferred offline entertainment choices pre and post-pandemic, a significant percentage of students shifted to other forms of offline entertainment post-pandemic [(Saha)]. On the other hand, in case of online entertainment choices, number of students preferring online streaming services increased post-pandemic (48.3 % from 40%). It has also been found that students spent more time on online entertainment mediums post- pandemic than before (4 hours from 3.2 hours per day on average). A decrease in average monthly expenditure can be observed for offline entertainment activities while a significant increase is noted for online entertainment consumption (Saha). Interestingly, while gender has been found to have an impact on the entertainment preferences in all cases, area of residence (rural/urban) has an impact only on online entertainment preferences post pandemic.

1. Introduction

Entertainment and recreational activities are just as important in a student's life as their studies. Young adults, especially college students, enjoy a rich and varied social life. While some might enjoy spending their weekends by watching movies in theatres,

others might enjoy playing video games on their computers. In today's digital era, students are now getting the best of both worlds. In addition to the traditional entertainment and recreational activities, they can now enjoy a plethora of digital entertainment choices with just a tap on their phones (S Neha et al. Liu Poonam, Shinde, and Chatterjee Bur-

maka et al.) . With online streaming services, social media, online gaming and other internet based entertainment and media services growing in popularity, more and more students are spending a lot of their time and money on these. With the onset of the Covid-19 pandemic, students were shifted from their college campuses to virtual classrooms as the world went into lockdown. As the education system shifted from the traditional classroom teaching to virtual classes to stop the spread of the virus, students also started depending on the digital mode for their entertainment and recreation (Neha et al. Liu Bouyeddou et al. Poonam, Shinde, and Chatterjee) . Hangouts with friends moved from the college cafeteria to online video calls. Music concerts and festivals shifted from auditoriums to live streaming in various social media platforms. Be it 'work from home', online classrooms or virtual hangouts and concerts, the pandemic has accelerated our adaptation to the online world. More than two years after the pandemic started, countries have gradually eased up Covid restrictions and campuses have once more opened up (Liu) . With the world slowly moving on from the pandemic, it can be observed that a lot of the changes induced by the pandemic are here to stay. In this context, the present study aims to investigate the entertainment and recreation preferences of college students before and after the pandemic and to understand the changes induced by the pandemic, if any, on the social lives of the students (Poonam, Shinde, and Chatterjee Burmaka et al. Liu Neha et al.).

2. Experimental Methods or Methodology

2.1. Appropriate Descriptive Statistics tools used:

The primary data collection method used here was a questionnaire. Here simple random sampling method was used for research (S) .

120 Samples were collected from engineering students of West Bengal

The frequency tables used to represent variables were

- Gender
- Residence(whether Urban or Rural background)
- Offline Entertainment choices before pandemic
- Offline Entertainment choices after pandemic
- Online Entertainment choices before pandemic
- Online Entertainment choices after pandemic
- Time spend per day on Offline Entertainment

before pandemic

- Time spend per day on Online Entertainment before pandemic
- Time spend per day on Offline Entertainment after pandemic
- Time spend per day on Online Entertainment after pandemic
- Expenditure per month on Offline Entertainment before pandemic
- Expenditure per month on Online Entertainment before pandemic
- Expenditure per month on Offline Entertainment after pandemic
- Expenditure per month on Online Entertainment after pandemic

2.2. Appropriate inferential statistics used:

Cross tables were created on

- Gender versus Offline entertainment preferences before pandemic
 - Gender versus Offline entertainment preferences after pandemic
 - Residence versus Offline entertainment preferences before pandemic
 - Residence versus Offline entertainment preferences after pandemic
 - Gender versus online entertainment preferences before pandemic
 - Gender versus Online entertainment preferences after pandemic
 - Residence versus Online entertainment preferences before pandemic
 - Residence versus Online entertainment preferences after pandemic
- Chi-square Test was used to study the independence of variables for samples of age between 18 to 25 years.
- Gender versus Offline entertainment preferences before pandemic
 - Gender versus Offline entertainment preferences after pandemic
 - Residence versus Offline entertainment preferences before pandemic
 - Residence versus Offline entertainment preferences after pandemic
 - Gender versus Online entertainment preferences before pandemic
 - Gender versus Online entertainment preferences after pandemic

- Residence versus Online entertainment preferences before pandemic
- Residence versus Online entertainment preferences after pandemic

Further **paired t-test** were used

- To test whether the average time spent before and after pandemic in offline mode are equal or not.
- To test whether the average time spent before and after pandemic in online mode are equal or not.
- To test whether the amount spend before and after pandemic in offline mode are equal or not.
- To test whether the amount spend before and after pandemic in online mode are equal or not.

The analysis was carried out using SPSS software Version 20 of IBM.

3. Results and Discussion

TABLE 1. Frequency Table of Gender

	Frequency	Percent
Female	28	23.3
Male	92	76.7
Total	120	100.0

3.1. Findings from Offline Entertainment Preferences

It can be observed from Table.3 that social outings were the most preferred form of offline entertainment among 49.2 % of students before the pandemic (Burmaka et al.) . The second-most preferred option was cultural and sports activities (39.2 %). Only 5.8 % of students preferred TV/radio while another 5.8 % chose none of the options.

Post-pandemic, a noticeable shift is observed (Table.4). Social outings remain the most popular offline entertainment choice (39.2 %) followed by cultural and sports activities (30.8 %). Comparing with the pre-pandemic preferences data, that's a sharp decrease of 10 % and 8.4 % for social outings and cultural/sports activities respectively. 20.8 % students now prefer TV/radio (increase of 15 % from pre-pandemic) while 9.2 % chose none (Liu).

3.2. Gender versus Offline Entertainment Preferences

The cross table between gender and offline entertainment preferences before pandemic is computed (Table.5). It can be calculated that while 67.86 % females preferred social outings, only 10.7 %

chose cultural/sports activities as offline entertainment before the pandemic. In case of male respondents, 47.82 % preferred cultural and sports activities while 43.48 % preferred social outings. TV/radio was chosen by only 10.7 % and 4.34 % of female and male respondents respectively. The remaining 10.7 % females and 4.34 % males chose none of the three options provided.

To investigate the dependency between gender and offline entertainment preferences before/after pandemic, the chi-square test of independence is applied to these variables (Neha et al.) . The asymptomatic significance (2-sided) or p-value was found to be 0.004 which is less than 0.05 (5% level of significance). Hence, the null hypothesis that the variables are independent can be rejected and the alternate hypothesis is accepted which states that the association between the two categories gender and offline entertainment preferences before pandemic are statistically significant.

For the post-pandemic case too, the two variables gender and the offline entertainment preferences has been cross tabulated (Table. 6). For females, social outings remain the most preferred choice, although it decreased from 67.86 % to 60.71 % post pandemic. 17.85 % females chose cultural and sports activities, an increase of ~7.15 % when compared with pre-pandemic data. TV/radio was also chosen by 17.85 % females. For males, an interesting trend is observed. 34.78 % chose cultural/sports activities and 32.60 % chose social outings, a combined decrease of ~23.91 % for these two options when compared with pre-pandemic data. TV/radio was chosen by 21.74 % males while 10.87 % chose none of the options. It can be observed that a significant percentage of male students (an increase of 17.4 %) are now preferring TV/radio as offline entertainment over cultural/ sports activities and social outings after the pandemic.

Applying the chi-square test of independence between the two categories (gender and offline entertainment preferences after pandemic), the p value was found to be 0.05 (equal to the 5% level of significance). Thus, it can be concluded that the two variables are not independent.

TABLE 2. Frequency Table of Residence

	Frequency	Percent
Rural	40	33.3
Urban	80	66.7
Total	120	100.0

TABLE 3. Frequency Table of Offline Entertainment Choices before Pandemic

Offline Entertainment Choices before Pandemic	Frequency	Percent
Cultural and sports activities (singing, dancing, cricket etc.)	47	39.2
Social outings (eg. cinema, malls, restaurants)	59	49.2
TV/radio	7	5.8
None of the above	7	5.8
Total	120	100.0

TABLE 4. Frequency Table of Offline Entertainment Choices after Pandemic

Offline Entertainment Choices after Pandemic	Frequency	Percent
Cultural and sports activities (singing, dancing, cricket etc.)	37	30.8
Social outings (eg. cinema, malls, restaurants)	47	39.2
TV/radio	25	20.8
None of the above	11	9.2
Total	120	100.0

3.3. Residence versus Offline Entertainment Preferences

To determine whether area of residence and offline entertainment preferences are dependent variables or not, the two variables have been cross-tabulated for both cases (before/ after pandemic). From Table. 7, it can be concluded that 45 % of students residing in rural areas preferred cultural/sports activities while 40 % preferred social outings before the pandemic. Only 5 % chose TV/radio while 10 % of rural engineering students chose none of the options. For urban area students, 53.75 % chose social outings, 36.25 % chose cultural and sports activities, 6.25 % chose TV/radio and 3.75 % chose none. More number of urban students preferring social outings can

probably be attributed to the fact that urban areas offer more options compared to rural areas (more restaurants, shopping centers, movie theaters, parks etc. along with better connectivity).

Applying the Pearson Chi- Square Test, the p value was found to be 0.333, which is greater than the 5 % level of significance. This supports the null hypothesis, stating that the variables are independent.

After pandemic, the number of students in rural areas preferring cultural and sports activities decreased to 42.5 % while students preferring social outings significantly decreased to 25 % (ref Table. 8). 22.5 % students now prefer TV/radio, an increase of 17.5 % when compared to pre-pandemic preferences data. 10 % rural respondents chose none of the options. For students from urban background, 46.25 % chose social outings while 25 % chose cultural/sports activities. A significant 20 % chose TV/radio, following the same trend as rural background students. 8.75 % urban students chose none of the three options provided. A significantly higher number of urban students still favour social outings when compared to rural students, therefore there has been no significant change in this trend after the pandemic. However, cultural and sports activities saw a significant decrease in popularity among urban students (11.25%). Moreover, irrespective of area of residence, the number of students preferring TV/radio has increased (20.83 % overall) when compared to pre-pandemic era (5.83 % overall).

The chi-square test reveals an asymptomatic significance (2-sided) or p value of 0.119 which is higher than 0.05. Thus, no association between the two variables (area of residence and offline entertainment preference after pandemic) was observed.

3.4. Findings from Online Entertainment Preferences

Pre-Covid, online streaming services was the most preferred option of online entertainment among students (40 %) followed by video/online gaming (28.3

TABLE 5. Cross table of Gender versus Offline Entertainment Preference Before Pandemic

Gender	Offline Entertainment Preference Before Pandemic				Total
	Cultural and sports activities (singing, dancing, cricket etc.)	TV/radio	Social outings (eg. cinema, malls, restaurants)	None of these	
Female	3	3	19	3	28
Male	44	4	40	4	92
Total	47	7	59	7	120

TABLE 6. Cross table of Gender versus Offline Entertainment Preference After Pandemic

Gender	Offline Entertainment Preference After Pandemic				Total
	Cultural and sports activities (singing, dancing, cricket etc.)	TV/radio	Social outings (eg. cinema, malls, restaurants)	None of these	
Female	5	5	17	1	28
Male	32	20	30	10	92
Total	37	25	47	11	120

TABLE 7. Cross table of Residence versus Offline Entertainment Preference Before Pandemic

Residence	Offline Entertainment Preference Before Pandemic				Total
	Cultural and sports activities (singing, dancing, Cricket, Etc.)	TV / Radio	Social outings (eg. Cinema, malls, restaurants)	None of these	
Rural	18	2	16	4	40
Urban	29	5	43	3	80
Total	47	7	59	7	120

TABLE 8. Cross table of Residence versus Offline Entertainment Preference After Pandemic

Residence	Offline Entertainment Preference After Pandemic				Total
	Cultural and sports activities (singing, dancing, cricket etc.)	TV/radio	Social outings (eg. cinema, malls, restaurants)	None of these	
Rural	17	9	10	4	40
Urban	20	16	37	7	80
Total	37	25	47	11	120

%). Social media was the third preference (25.8 %) while 5.8 % chose none of the three options (Table.9).

Post- Covid, online streaming services seemed to have gained even more popularity, with 48.3 % students preferring it over other available online entertainment options (Table.10). Social media was the second most preferred option (25 %) while video/online gaming was chosen by 21.7 % students (a decrease of 6.6 % when compared with pre-Covid preferences data) (Burmaka et al.) . 5 % chose none

of the above options (Bouyeddou et al.) .

3.5. Gender versus Online Entertainment Preferences

As per Table.11, 50 % of female respondents preferred social media apps, 39.28 % preferred online streaming services while only 7.14 % preferred video/online games before pandemic. In case of male engineering students, 40.22 % preferred online streaming services, 34.78 % preferred video/online gaming, 18.47 % chose social media while 6.52 %

TABLE 9. Frequency Table of Online Entertainment Choices before Pandemic

Online Entertainment Choices before Pandemic	Frequency	Percent
Online streaming services (eg. Youtube, Netflix, Hotstar etc.)	48	40.0
Social media (Facebook, Instagram etc.)	31	25.8
Video games/online games	34	28.3
None of the above	7	5.8
Total	120	100.0

TABLE 10. Frequency Table of Online Entertainment Choices after Pandemic

Online Entertainment Choices after Pandemic	Frequency	Percent
Online streaming services (eg. Youtube, Netflix, Hotstar etc.)	58	48.3
Social media (Facebook, Instagram etc.)	30	25.0
Video games/online games	26	21.7
None of the above	6	5.0
Total	120	100.0

chose none.

Applying the chi-square test, a strong dependency between gender and online entertainment preferences before pandemic can be observed (p value of 0.002). This rejects the null hypothesis that the two variables are independent.

After the pandemic, 50 % of female engineering students now prefer online streaming services while 42.85 % chose social media (Table.12). Video/online gaming remained the third most preferred option, at 7.14 %. Among male students too, online streaming services grew more popular compared to pre-pandemic data, with 47.82 % students choosing this option (an increase of ~7.6 %). On the other hand, video/online gaming was chosen by 26.08 % males (a decrease of 8.69 %), while social media remained in the third place (19.56 %). 6.52 % male students chose none of the above. Overall, online streaming services saw an increase in popularity among engineering students (an increase of 8.33 %). The p- value is found to be 0.018, which is much less than the 5 % level of significance. Hence, the alternate hypothesis is accepted to conclude that there is strong dependency between the variables gender and online entertainment preferences after the pandemic.

3.6. Residence versus Online Entertainment Preferences

As per Table.13, before pandemic, 35 % engineering students from rural background preferred online streaming services, 30 % preferred video/online gaming, 25 % chose social media while 10 % chose none of the above. In case of students residing in urban areas, 42.5 % preferred online streaming services, 27.5 % preferred video/online gaming, 26.25 % chose social media while 3.75 % chose none of the above.

To investigate whether residence had any impact on online entertainment preferences before pandemic, chi-square test was performed. The p- value was found to be 0.525, greater than 0.05. Hence, it can be concluded that residence had no impact on online entertainment preferences before pandemic (Poonam, Shinde, and Chatterjee) .

The cross table for residence versus online entertainment preferences after pandemic also reveals some interesting observations (Table.14). It is found that while 37.5 % of the engineering students from rural areas of West Bengal prefer social media, 35 % prefer online streaming services. 17.5 % students from rural category prefer video/online games and the rest 10 % chose none of the above. While the percentage of rural category students preferring online streaming services has remained con-

TABLE 11. Cross table of Gender versus Online Entertainment Preference Before Pandemic

Gender	Online Entertainment Preferences Before Pandemic				Total
	Videogames/ online games	Online streaming services (eg. Youtube, Netflix, Hotstar etc.)	Social media (Facebook, Instagram etc.)	None of these	
Female	2	11	14	1	28
Male	32	37	17	6	92
Total	34	48	31	7	120

TABLE 12. Cross table of Gender versus Online Entertainment Preference After Pandemic

Gender	Online Entertainment Preference After Pandemic				Total
	None of the above	Online streaming services (eg. Youtube, Netflix, Hotstar etc.)	Social media (Facebook, Instagram etc.)	Video games/ online games	
Female	0	14	12	2	28
Male	6	44	18	24	92
Total	6	58	30	26	120

TABLE 13. Cross table of Residence versus Online Entertainment Preference Before Pandemic

Residence	Online Entertainment Preference Before Pandemic				Total
	Video games/ online games	Online streaming services (eg. Youtube, Netflix, Hotstar etc.)	Social media (Facebook, Instagram etc.)	None of these	
Rural	12	14	10	4	40
Urban	22	34	21	3	80
Total	34	48	31	7	120

stant before/after the pandemic, the percentage of students favouring video/online gaming has sharply decreased by 12.5 %. At the same time, social media option was preferred by 35 %, an increase of 12.5 %. Considering that online streaming services and video/online gaming often consume more data and require high speed internet, perhaps this might be a deterrent in rural areas where internet speeds might not be as high as in urban areas. Moreover, data has become more expensive after the pandemic, which might be another factor. Coming to the urban category, 55 % students prefer online streaming services, 18.75 % prefer social media while 23.75 % prefer video/online games (2.5 % chose none of the above). Thus, online streaming services is the most popular choice among urban category students, followed by video/online gaming (Neha et al.) .

The chi-squared test gives a p- value of 0.024, which is less than 0.05. This rejects the null hypoth-

esis that the two variables are independent and proves that area of residence plays a significant role in determining the online entertainment preferences among students post-pandemic.

3.7. Time Spent Per Day on Average for Offline Entertainment

The average time spent by students per day for offline entertainment before pandemic was found to be 3.37 hours with a standard deviation of 1.86. The skewness was found to be 1.207, which signifies that the distribution tends to be normal as the value lies between -3 and 3.

The average time spent by students per day for offline entertainment after pandemic (Liu) was found to be 3.39 hours with a standard deviation of 2.37. The average time didn't change significantly before/after the pandemic. The skewness was found to be 1.419, which signifies that the distribu-

TABLE 14. Cross table of Residence Versus Online Entertainment Preference After Pandemic

Residence	Online Entertainment Preference After Pandemic					Total
	Video online games	games/ (eg. Youtube, Hotstar etc.)	Online streaming services (eg. Youtube, Netflix, Hotstar etc.)	Social media (Facebook, Insta-gram etc.)	None of these	
Rural	7	14	15	4	40	
Urban	19	44	15	2	80	
Total	26	58	30	6	120	

tion tends to be normal as the value lies between -3 and 3.

TABLE 15. Time spend per day on Offline Entertainment before pandemic

Time	Frequency	Percent	Cumulative Percent
.00	1	.8	.8
1.00	11	9.2	10.0
1.50	1	.8	10.8
2.00	29	24.2	35.0
3.00	37	30.8	65.8
4.00	13	10.8	76.7
5.00	12	10.0	86.7
6.00	9	7.5	94.2
7.00	2	1.7	95.8
8.00	3	2.5	98.3
10.00	2	1.7	100.0
Total	120	100.0	

TABLE 16. Statistical Data on Time spend per day on Offline Entertainment before pandemic

Parameter	Data
Mean	3.3792
Mode	3.00
Std. Deviation	1.86520
Skewness	1.207
Kurtosis	1.790
Range	10.00
Minimum	.00
Maximum	10.00

3.8. Time Spent Per Day on Average for Online Entertainment

The average time spent by students per day for online entertainment before pandemic was found to be 3.22 hours with a standard deviation of 2.13. The skewness was found to be 1.397, which signifies that

TABLE 17. Time Spent Per Day on Offline Entertainment After Pandemic

Time	Frequency	Percent
.00	2	1.7
1.00	17	14.2
1.50	2	1.7
2.00	37	30.8
3.00	19	15.8
4.00	9	7.5
4.50	1	.8
5.00	15	12.5
6.00	7	5.8
7.00	3	2.5
8.00	2	1.7
9.00	1	.8
10.00	3	2.5
11.00	1	.8
12.00	1	.8
Total	120	100.0

TABLE 18. Statistical Data on Time spend per day on Offline Entertainment after pandemic

Parameter	Data
Mean	3.3958
Mode	2.00
Std. Deviation	2.37095
Skewness	1.419
Kurtosis	2.052
Range	12.00
Minimum	.00
Maximum	12.00

the distribution tends to be normal as the value lies between -3 and 3.

After pandemic, the mean value increased to 4.08 hours, with a standard deviation of 2.514. This signifies that students are now spending more time on online entertainment options than before the pandemic. (Burmaka et al.) The skewness was found to

be 1.129, which signifies that the distribution tends to be normal as the value lies between -3 and 3.

TABLE 19. Time Spent Per Day on Online Entertainment Before Pandemic

Time	Frequency
.00	3
.50	1
1.00	20
1.50	2
2.00	24
3.00	23
4.00	24
5.00	11
6.00	3
7.00	1
8.00	6
11.00	1
12.00	1
Total	120

TABLE 20. Statistical Data on Time spend per day on Online Entertainment before Pandemic

Parameter	Data
Mean	3.2292
Mode	2.00
Std. Deviation	2.13307
Skewness	1.397
Kurtosis	2.949
Range	12.00
Minimum	.00
Maximum	12.00

3.9. Amount Spent Per Month on Offline Entertainment before and after Pandemic

The average expenditure by students per month for offline entertainment before pandemic is Rs. 933 with standard deviation of Rs. 755.744 which has decreased to Rs. 887.5 with standard deviation of Rs. 630.001 after pandemic. Most of the students spend rupees 500 per month on offline entertainment irrespective of before and after pandemic. 65% students used to spend less than Rs. 500 per month before pandemic (Poonam, Shinde, and Chatterjee). But after pandemic 60% students spend Rs. 500 and less per month.

TABLE 21. Time Spent Per Day on Online Entertainment After Pandemic

Time	Frequency	Percent
.50	1	.8
1.00	15	12.5
2.00	18	15.0
2.50	3	2.5
3.00	19	15.8
4.00	23	19.2
5.00	9	7.5
6.00	18	15.0
7.00	3	2.5
8.00	3	2.5
9.00	2	1.7
10.00	3	2.5
11.00	1	.8
12.00	1	.8
13.00	1	.8
Total	120	100.0

TABLE 22. Statistical Data on Time spend per day on Online Entertainment after pandemic

Parameter	data
Mean	4.0833
Mode	4
Standard Deviation	2.51411
Skewness	1.129
Kurtosis	1.449
Range	12.50
Maximum	13
Minimum	0.50

TABLE 23. Expenditure Offline per month before Pandemic

Class Interval	Fre- quency	Percent- age
0-500	78	65
500-1000	19	15.8
1000-1500	3	2.5
1500-2000	10	8.3
2000-2500	1	8
2500-3000	9	7.5
Total	120	100

3.10. Amount spent per month for Online Entertainment

The average expenditure by students per month for online entertainment before pandemic is Rs. 670.83

TABLE 24. Statistical Data on Expenditure Offline per month before Pandemic

Parameter	data
Mean	933
Median	500
Mode	500
Standard Deviation	755.744
Skewness	1.775
Kurtosis	1.968

TABLE 25. Expenditure Offline per month after Pandemic

Class Interval	Fre- quency	Percent- age
0-500	72	60
500-1000	29	24.2
1000-1500	2	1.7
1500-2000	12	10
2000-2500	1	0.8
2500-3000	4	3.3
Total	120	100

TABLE 26. Statistical Data on Expenditure Offline per month after Pandemic

Parameter	data
Mean	887.5
Median	500
Mode	500
Standard Deviation	630.001
Skewness	1.871
Kurtosis	2.910
Range	2500
Maximum	500
Minimum	3000

with standard deviation of Rs. 391.59 whereas the average expenditure after pandemic on online entertainment has increased to Rs. 770.83 with a standard deviation of Rs. 501.66. Here most of the students spend Rs. 500 per month on online entertainment irrespective of before or after pandemic. 79.2% students used to spend less than rupees 500 per month but after pandemic 66.7% students spend rupees 500 and less per month.

TABLE 27. Expenditure Online per month before Pandemic

Class Interval	Fre- quency	Percent- age
0-500	95	79.2
500-1000	16	13
1000-1500	2	1.7
1500-2000	7	5.8
2000-2500	0	0
2500-3000	0	0
Total	120	100

TABLE 28. Statistical Data on Expenditure Online per month before Pandemic

Parameter	data
Mean	670.83
Median	500
Mode	500
Standard Deviation	391.59
Skewness	2.515
Kurtosis	5.591
Range	1500
Maximum	2000
Minimum	500

TABLE 29. Expenditure Online per month after Pandemic.

Class Interval	Fre- quency	Percent- age
0-500	80	66.7
500-1000	29	24.2
1000-1500	3	2.5
1500-2000	2	1.7
2000-2500	6	5.0
2500-3000	0	0
Total	120	100

3.11. Paired T-test Result on Average Time Spent on Offline Entertainment before and after pandemic

Paired T-test has been done to compare the means on time spent per day on offline entertainment before/after the pandemic and to determine if the two means are statistically equivalent or not. The p value was found to be 0.928, which is greater than 0.05. Thus, null hypothesis is accepted and it can be concluded that the average time spent per day on offline entertainment before/after pandemic are sta-

TABLE 30. Statistical Data on Expenditure Online per month after Pandemic

Parameter	data
Mean	770.83
Median	500
Mode	500
Standard Deviation	501.66
Skewness	2.346
Kurtosis	5.235
Range	2000
Maximum	2500
Minimum	500

tistically equal with a 95 % confidence level.

3.12. Paired T-test Result on Average Time Spent on Online Entertainment before and after pandemic

Applying paired T-test on the means of time spent per day on online entertainment before/after pandemic, the p value was found to be 0.0001, which is much less than 0.05. Thus, alternate hypothesis is accepted that the two means are statistically not equal with a 95 % confidence level.

3.13. Paired T-test Result on Average Expenditure per month on Offline Entertainment before and after pandemic .

Paired T-test has been done to compare the means on Expenditure per month on offline entertainment before/after the pandemic and to determine if the two means are statistically equivalent or not. The p value was found to be 0.346, which is greater than the 0.05 . Thus, null hypothesis is accepted and it can be concluded that the average expenditure per month on offline entertainment before/after pandemic are statistically equal with a 95 % confidence interval level.

3.14. Paired T-test Result on Average Expenditure per month on Online Entertainment before and after pandemic.

Paired T-test has been done to compare the means on Expenditure per month on online entertainment before/after the pandemic and to determine if the two means are statistically equivalent or not. The p value was found to be 0.005, which is less than the 0.05 . Thus, alternative hypothesis is accepted and it can be concluded that the average expenditure per month on online entertainment before/after

pandemic are statistically not equal with a 95 % confidence level.

4. CONCLUSION

- Social outings were the most preferred form of offline entertainment among 49.2 % of students before the pandemic. The second-most preferred option was cultural and sports activities (39.2 %). Only 5.8 % of students preferred TV/radio.

Post-pandemic, a noticeable shift is observed .Social outings remain the most popular offline entertainment choice (39.2 %) followed by cultural and sports activities (30.8 %). Comparing with the pre-pandemic preferences data, that’s a sharp decrease of 10 % and 8.4 % for social outings and cultural/sports activities respectively. 20.8 % students now prefer TV/radio (increase of 15 % from pre-pandemic)

- Pre-Covid, online streaming services was the most preferred option of online entertainment among students (40 %) followed by video/online gaming (28.3 %). Social media was the third preference (25.8 %) . Post- Covid, online streaming services seemed to have gained even more popularity, with 48.3 % students preferring it over other available online entertainment options .Social media was the second most preferred option (25 %) while video/online gaming was chosen by 21.7 % students (a decrease of 6.6 % when compared with pre-Covid preferences data).

- The average expenditure of the students per month on offline entertainment before and after pandemic are statistically equal with a 95 % confidence level.

- The average expenditure of the students per month on online entertainment before and after pandemic are statistically not equal with a 95 % confidence level. It is seen that there is a increase of 14.91% expenditure of the students after pandemic in the online entertainment mode.

- The average time spent by students per day for offline entertainment before pandemic was found to be 3.37 hours with a standard deviation of 1.86 hours. The average time spent by students per day for offline entertainment after pandemic was found to be 3.39 hours with a standard deviation of 2.37 hours. The average time didn’t change significantly before/after the pandemic. This is also being verified using statistical inference at 95%confidence

level.

- The average time spent by students per day for online entertainment before pandemic was found to be 3.22 hours with a standard deviation of 2.13 hours. After pandemic, the mean value increased to 4.08 hours, with a standard deviation of 2.514 hours. This signifies that students are now spending more time on online entertainment options than before the pandemic. This is also being verified using statistical inference at 95% confidence level.

- The association between the two attribute gender and offline entertainment preferences before pandemic is statistically dependent.

- The association between the two attribute gender and offline entertainment preferences after pandemic is statistically dependent.

- The association between the two categories gender and online entertainment preferences before pandemic are statistically dependent.

- The association between the two attribute gender and online entertainment preferences after pandemic are statistically dependent.

- Residence (rural or Urban) has no dependence with the preferences whether before pandemic or after pandemic and whether offline or online.

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