



Understanding the Demand for a Structured Learning Platform Among University Students

Understanding the Demand for a Structured Learning Platform Among University Students

Name & Roll Number

MD FAISAL HASEEB - 241013063004

YASH RAD- 240313062016

ARJIT MISHRA- 240313062003

OWAIS SAIFI- 240313062009

Course / Department

MBA – Data Analytics

Submitted to

Dr. Punita Duhan

Date of Submission

24th April, 2025

Methodology

We have used the convenience sampling by creating Google Form and distributing it among WhatsApp groups of various universities. We collected responses from 58 students across eight variables consisting of both open-ended and closed-ended questions. Question numbers 1, 2, and 3 were open-ended, whereas questions 4, 6, and 8 were closed-ended and collected on a Likert scale (1–5). Question 5, relating to whether students use digital content for their academic needs, was in binary form (yes/no or 1/0).

To ensure anonymity, we made Question 1 optional. This is reflected in the data, as a few respondents chose not to reveal their names.

For most of the analysis, we used Python with Jupyter Notebook and packages including Pandas, Seaborn, and Matplotlib. We also used Excel, but only for very limited purposes.

Notes: Due to flaws in the questionnaire design the data quality related to question 7 was too bad to be used in statistical analysis. Therefore we haven't carried out any statistical operation on this chunk of the data.

Research Problem:

The current university framework for undergraduate students does not fully address students' learning needs. Lecture-based teaching often lacks depth, clarity, and interactivity, making it difficult for students to grasp complex concepts. As a result, many students rely on external digital resources such as YouTube videos, third-party educational websites, and private coaching to supplement their studies. However, these resources are often unstructured and inconsistent in quality.

Edu Era aims to bridge this gap by offering structured, high-quality digital content tailored to students' academic requirements. To ensure the platform's success, a comprehensive market research study is necessary to analyze student demand, engagement levels, and the effectiveness of digital learning in improving academic performance.

Objectives:

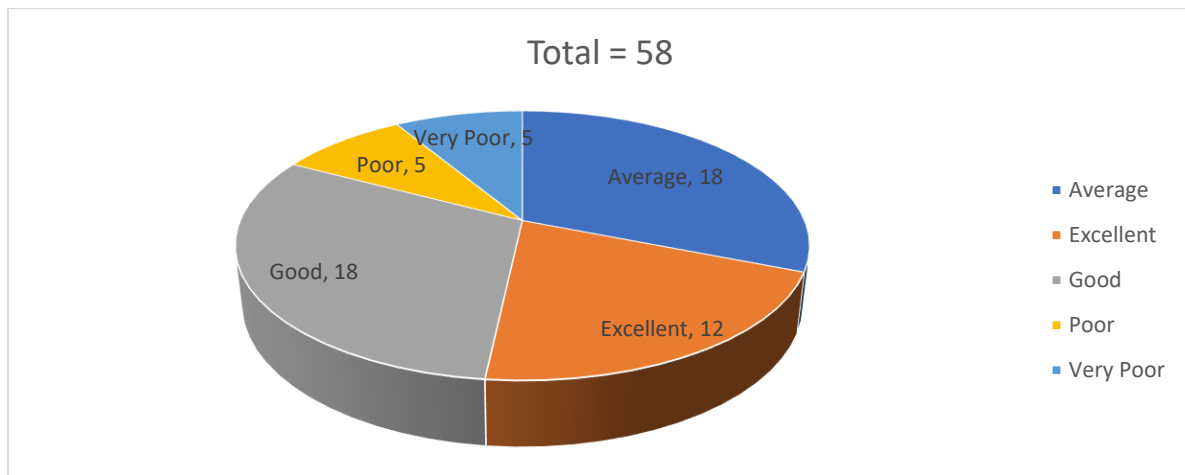
1. To find out the sufficiency of class lectures in terms of covering the syllabus.
2. To find out whether students frequently use the digital contents to supplement the class learning.
3. To find out the sufficiency of the existing online resources.
4. To find out whether there is a need for a structured online platform.

Research Questions:

1. To what extent do you think your university lectures sufficiently cover the topics required for your courses? (Rate on a scale of 1 to 5).
2. Do you regularly use external digital content (e.g., YouTube, third-party websites) to supplement your classroom learning? (Yes/No)
3. Do you think the existing free online resources are sufficient to meet your academic needs? (Rate on a scale of 1 to 5).

4. Do you think a structured platform would be more effective than the current method of searching for scattered online resources? (Rate on a scale of 1 to 5).

Effectiveness of the class lecture in terms of covering the syllabus



There are equal number of students who view the class lecture very poor and poor in terms of it covering the syllabus. This could be attributed to many things including the inadequate number of classes being conducted or the improper allocation of hours allotted to different subjects.

More than one third of the students rate the effectiveness of classes average in terms of them covering the syllabus. Whereas there is a significant number of students who view them as excellent in this context. 18 students thought the lecture was good, and the same number thought it was just average.

Hypothesis testing:

H_0 : Median = 3

H_1 : Median \neq 3

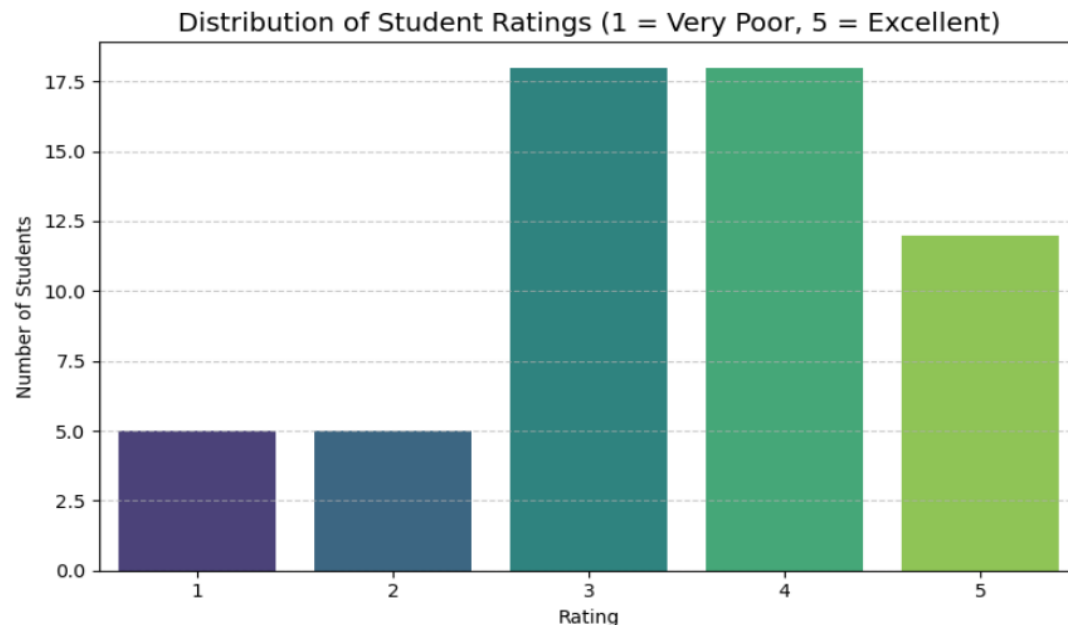
Significance level(α) = 0.05

We have chosen the **Wilcoxon Signed-Rank Test** in order to compare whether the respondents have rated the effectiveness of class lectures as **average (3)** or they rate them either **below average or above average**. All the conditions for the test are satisfied:

1. Single sample.
2. Variable is ordinal (1–5 scale).
3. Testing the median.
4. Almost uniform distribution.

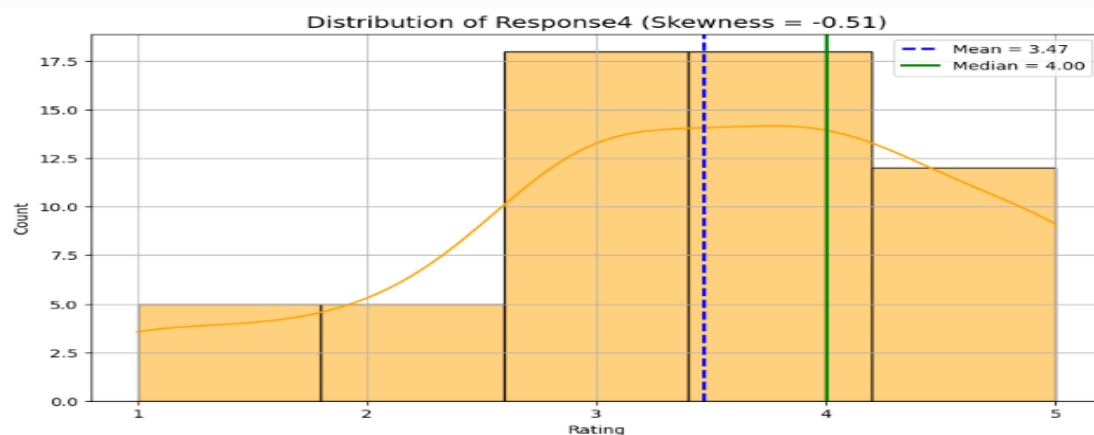
Mean: 3.4655172413793105
Median: 4.0
Mode: 3

Wilcoxon Test Statistic (W): 220.0
p-value: 0.009781997654499719



The **p value** is **~0.00978** and it's less than 0.05. Therefore we have enough evidence to reject the null hypothesis i.e **Median = 3** which led us to accept the alternate hypothesis i.e **Median \neq 3**

Comparing the Mean to Median

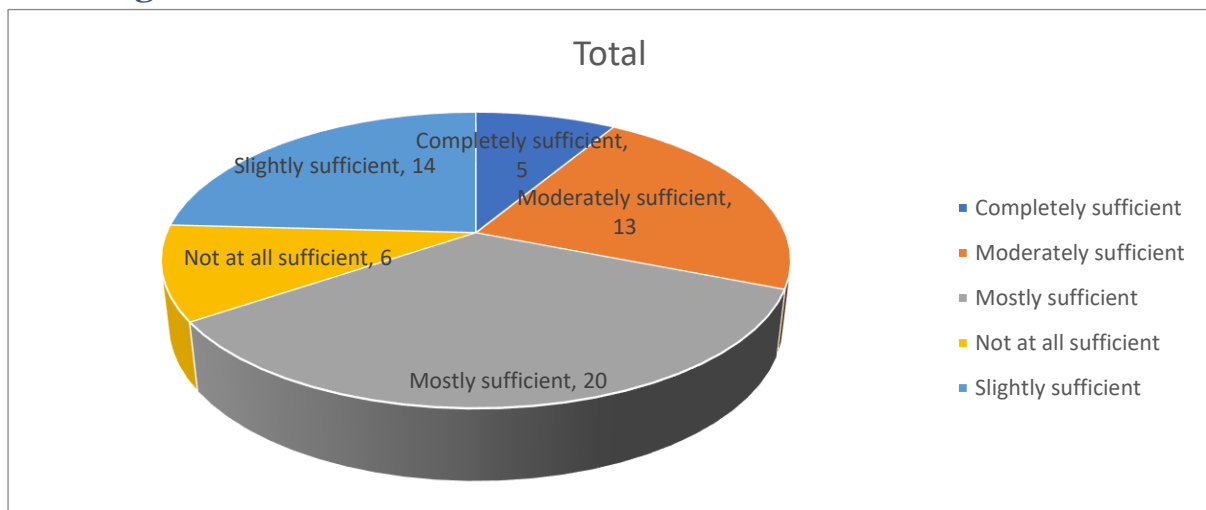


Mos of the students rate their class lecture average in terms of covering the syllabus.

However, **mean of the responses is less than the median**, which suggests that the distribution is **left-skewed** (negatively skewed), as also reflected in the figure (mean < median). This is due to a minority of the students who rate their class lecture as either poor or very poor in terms of covering the syllabus.

The left skewness suggests that there are slightly **more students who perceive classroom lectures as below average** in terms of covering the syllabus, compared to those who believe the lectures are above average.

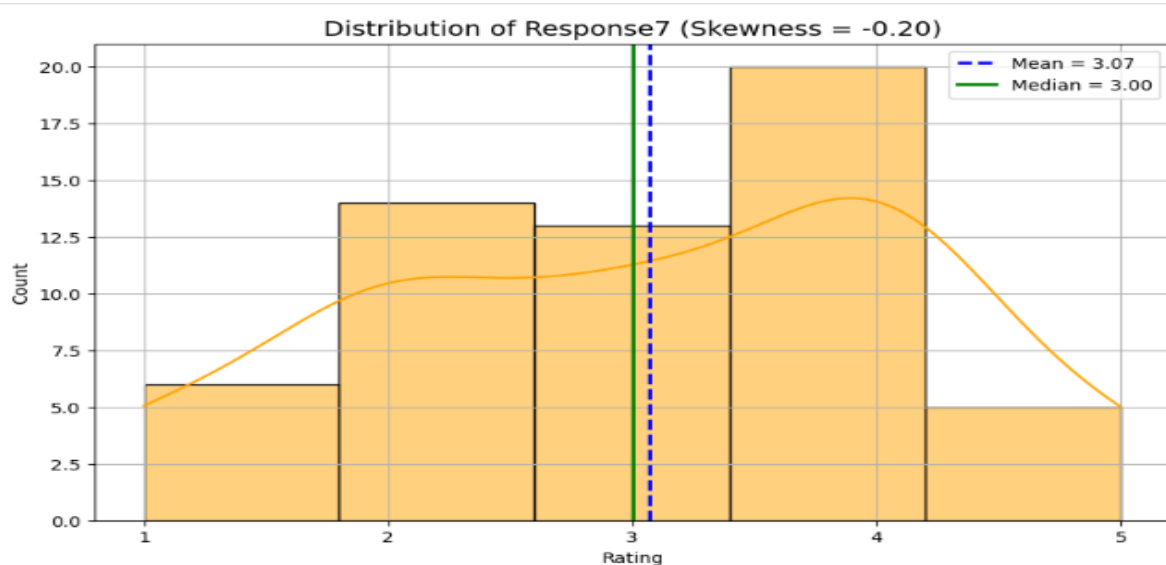
Existing online resources



Out of 58 students 6 of them are of the opinion that the existing online digital contents are not at all sufficient. This can be due to mainly two reasons- either the kind of existing digital contents available do not tailor to the demand of the students or lack of awareness among the students themselves regarding the various sources which they can refer to on internet.

Majority of the students i.e 33 believe that the existing digital contents are either moderately sufficient or mostly sufficient to meet their academic needs. This can be attributed to the mushroom growth of various educational web sites and Youtube channels in the post covid period. The better internet connectivity and availability of cheaper internet can be considered rationale behind this as the students are now able to dig deeper to find the contents relevant to their courses.

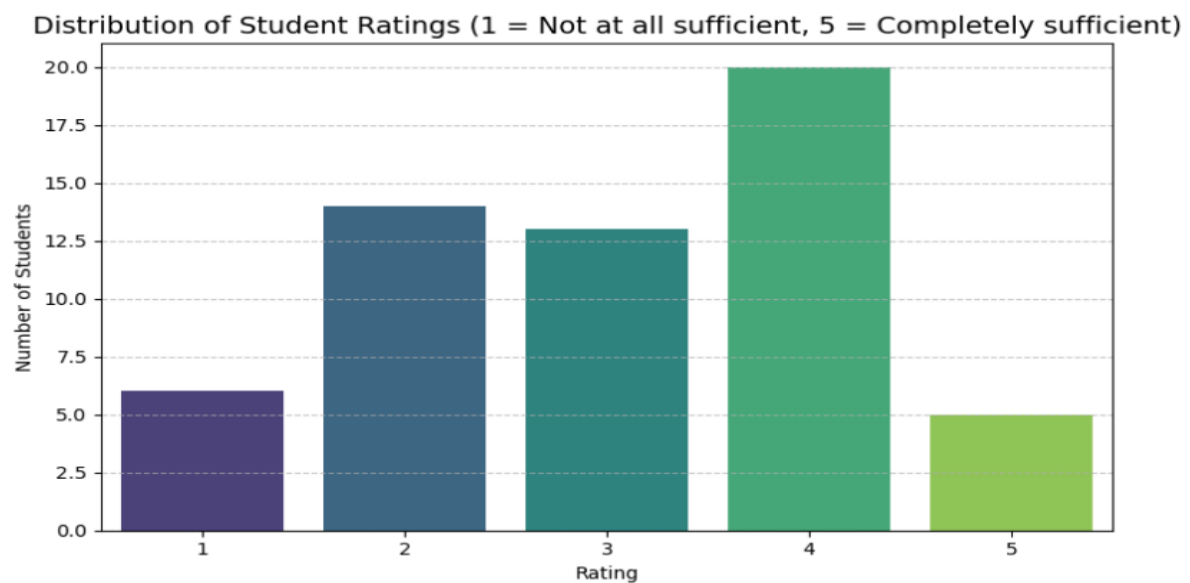
The outliers on either side of the scale are almost similar. The number of students who think that the existing digital contents are completely sufficient (5) is almost equal to the number of students who think that the existing digital contents are not at all sufficient (6).



It can be seen the above fig. the the responses are almost uniformly distributed, indicating that an equal number of students fall on either side of the 'moderately sufficient' rating (3). In other words, the number of students who rate the lecture below moderately sufficient (i.e., 1 or 2) is equal to the number who rated it above (i.e., 4 or 5). Although the dat is eslightlt left skewed which can be due to a few outliers or the extreme reponses by a few students who view that the existing free online resources are not at all sufficient to meet their academic needs.

Mean: 3.0689655172413794
Median: 3.0
Mode: 4

Wilcoxon Test Statistic (W): 485.0
p-value: 0.7205201468991618



Hypothesis testing:

Step: 1

H_0 : Median = 3 H_1 : Median \neq 3

Step: 2

Significance level(α) = 0.05

Step : 3

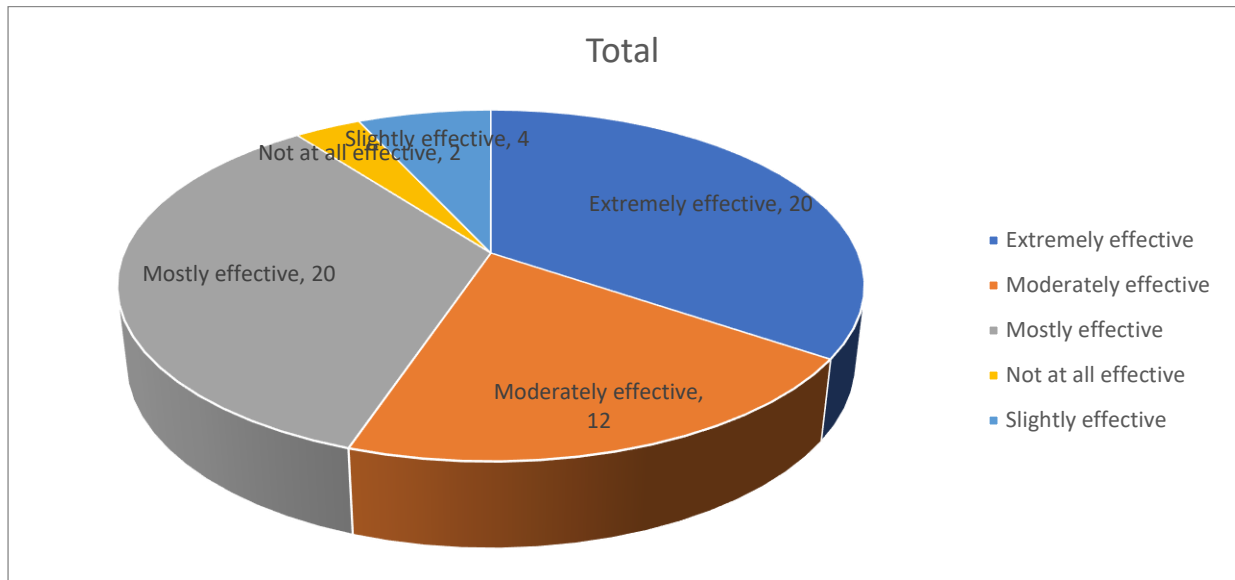
We have chosen the **Wilcoxon Signed-Rank Test** in order to compare whether the respondents have rated the effectiveness of class lectures as **average (3)** or they rate them either **below average or above average**. All the conditions for the test are satisfied:

1. Single sample.
2. Variable is ordinal (1–5 scale).
3. Testing the median.

4. Almost uniform distribution.

At 5% significance level, we fail to reject the null hypothesis that median is equal to 3

Need for a structured online platform



Except for a few outliers, nearly 85% of students believe that a structured online platform would be effective in providing digital content for their academic needs. This suggests that the company should go ahead with the platform launch. An equal number of students rate the platform as “mostly effective” and “extremely effective.”

Inferential Statistical Analysis

Need for a structured online platform = $f(\text{sufficiency of the lecture, use of digital contents, sufficiency of existing online resources})$

Need for a structured online platform = Y/Q_8

Sufficiency

of the lecture = X_1/Q_4

sufficiency of existing digital contents = X_2/Q_5

frequency use of digital contents = X_3/Q_6

$$Y = \beta_0 + \beta_1 Q_1 + \beta_2 Q_2 + \beta_3 Q_3$$

Hypothesis Testing:

$$H_0 : \beta_1 = 0$$

$$H_1 : \beta_1 \neq 0$$

$$H_0 : \beta_2 = 0$$

$$H_1 : \beta_2 \neq 0$$

$$H_0 : \beta_3 = 0$$

$$H_1 : \beta_3 \neq 0$$

Significance level(α) = 0.05

Ordered Logistic Regression Summary (Q8 ~ Q4 + Q7 + Q5)							
Variable		Coefficient	Std. Error	z-value	p-value	CI Lower	CI Upper
0	Q4	-4.0747	1.1264	-3.62	0.0003	-6.2824	-1.8670
1	Q7	-5.2262	1.4554	-3.59	0.0003	-8.0786	-2.3737
2	Q5	-1.0004	1.4288	-0.70	0.4838	-3.8008	1.8000
3	1/3	-36.9531	10.2174	-3.62	0.0003	-56.9788	-16.9274
4	3/5	1.9919	0.2970	6.71	0.0000	1.4098	2.5740

At 5% significant level we reject the null hypothesis that $\beta_1 = 0$ or there is no relation between need for a structured online platform and sufficiency of the lecture as the p value(0.0003) is significantly lower than 0.05. The negative regression coefficient indicates that there is an inverse relation between the dependent variable - need for a structured online platform and the sufficiency of the lecture. The lower the sufficiency of the lecture the higher will be the need for a structured online platform which seems align to our intuition.

At 5% significant the hypothesis that $\beta_2 = 0$ or there is no relation between sufficiency of existing online digital contents and the need for a structured online platform is rejected as the p value(0.0003) is significantly lower than the significant level i.e 0.05. The negative regression coefficient(-5.2262) indicates that there is an inverse relationship between independent variable- sufficiency of existing online resources and the dependent variable need for a structured online platform, means as one decreases, other increases and vice versa. It can also be interpreted as lower sufficiency of existing online digital contents higher is the need for a structured online platform.

However, if we compare which one- sufficiency of the lecture or sufficiency of existing digital contents has a stronger relationship with the dependent variable, we find that that sufficiency of existing digital contents has stronger relation with the dependent variable. This can be arrived at following the comparison of regression coefficients of these two independent

variables. The regression coefficient of sufficiency of existing digital contents(-5.2262) is greater than the regression coefficient of Need for a structured online platform(-4.0747).

At 5% significant level, we almost fail to reject the null hypothesis i.e $H_0: \beta_s = 0$ or it lead us to believe that almost there is no relation between the frequently usage of digital content and the need for a structured online platform as in this case the p value is close to 0.05 i.e 0.4838

The responses corresponding to the frequency of use of digital contents have been collected in binary form i.e either 1 or 0 which has caused the model to cover less variation. Therefore, this counter intuitive result could be due to the less variation covered in the data collection.

Another reason which can be attributed to the low significance/almost insignificance of Q6 is that the most of change in Y can be explained by the changes in Q4 and Q6. This could also be happen due to the non linear nature of relationship between Q8 and Q5.

Conclusion/Recommendation:

It's clear from the model that there is significant relationship between need for a structured online platform (Y/Q8), sufficiency of the lecture $X_1/Q4$ and sufficiency of existing digital contents $X_2/Q6$.

The company should focus on the students of universities/colleges where the lecture quality is low or not able to cover the syllabus. For that purpose the company may consider to carry out a survey in a few university or colleges.

We couldn't find the magnitude of the relationship between Q8 and Q6 due to the reasons mentioned above but we do have found that that a trend – that the user who frequently use the digital contents for academic purpose are leaned to feel the need for a structured online platform where the can access all the relevant digital contents at one place.

Due to flaws in the questionnaire design(Q7 was open-ended we received the unreliable responses), we could not find the impact of time spend(Q7) in searching for the contents on the need for a structured online platform. Therefore we recommend a more comprehensive study in future where all these flaws have been taken into account and more variables like gender, location, better internet connectivity etc. have been included