Journal of Mathematical Problems, Equations and Statistics

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Educational programs and their dual impact on employability and long-term well-being

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Abstract
The primary focus of this exploration is to establish a relationship between education and employability. An original question that has troubled several individuals has been posed and this research aims at tackling this abstract concept through mathematical concepts. Through a comprehensive analysis of skill sets, virtues, and other educational qualifications, I have tried to mathematically prove whether there is even a link. I have used Pearson's correlation coefficient to find the relation between education and employability and the chi-square test to find whether employability impacts various virtues like happiness, and satisfaction to name a few which will show if qualitative factors also impact this relationship.

Keywords: Education, employability, higher education, career development, human capital, satisfaction, happiness, health, employment outcomes, economic well-being, and quality of life

1. Introduction

1.1 Thesis Statement
This research aims to examine the benefits of education by looking over the dynamics of Adampur, a humble village in the Saharanpur district. By doing so, discover the relationship between education and employability. Furthermore, looking at virtues such as satisfaction, happiness, and health, aiming to provide insights into the holistic benefits of education beyond immediate employment outcomes.

1.2 Rationale
The importance of education has been ingrained in me since I was a child. It even outweighs other significant traits, like experience or practical ability, at least in the eyes of society. As a mathematics and computer student, with a keen interest in statistics and data science, I have always been intrigued by the thought of being able to investigate a link between two different subjects and joining them together through a correlation. I want to find a link between the two variables by using analytical inquiry to study the link between education and employment and identify how important education truly is to find career opportunities.

I have always wanted to comprehend what enables an individual to get a better job, and at the end of the day, get a better income. For many, there is a direct link between the amount of education they have received, the type of work they do, and the salary they receive. I have set out to study if this is just a direct correlation or if education is just one of the many factors needed to get a good job. This study aims to inform everyone the true value of education by studying the education of individuals in the Adampur area of Saharanpur and what job opportunities they get, along with their satisfaction with their job and whether their job is using the best of their abilities. The ultimate goal of this research is to contribute to the economic betterment of the community. My objective is to find a relation, a sort of a link between an individual's educational background and the career path they pursue. The ultimate goal is to contribute to the economic betterment of the community. This research aims to illuminate individuals to their true potential no matter their level of education make them see their potential and guide them to a future where they are much more content with what they do.

We have heard time and again, "Study now and the rest of your life would be a walk in the park", but today, I have set out to find the truth, if education truly matters as much as we are told, or if it is perhaps not the sole determinant in navigating life's challenges and if some other things just matter more at the end of the day.

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2. Methods

First, I needed to identify what variables we needed to keep track of in the research. For this, I came up with the following.

1. **Qualifications:** This can help us to know how educated these individuals are which will be one of the independent variables we will need to form an equation for the link between education and employability using Pearson's correlation and with the correlations during the Chi-Square test.

2. **Salary Package:** This will help us to determine the basic difference between the people with more and less education. This will be the second independent variable to form the relation from Pearson's correlation.

3. **Satisfaction and Happiness:** These are some of the most critical components of an individual's life. If an individual is not satisfied with their own life, he/she cannot be content, they will always be stressed out and end up with a lot of stress and regret. As a result, this will be one of the variables used for the Chi-Square test.

4. **Health:** Health is one of the most crucial components in the life of any individual and no amount of money can outweigh health and in the long run, you cannot even be happy if health is not by your side. We have taken this variable into account as one of the virtues for the Chi-square test.

5. **Creativity:** Creativity is the ability to generate new and innovative ideas as well as enhance other ones. This virtue tells us how intellectual each job is, tests if higher education does offer a student more knowledge, and is and is also taken into account as one of the virtues in the Chi-Square test.

Next, I needed some individuals so that I could gather the statistics and continue with my research. For this step, I went to Chuck Adampur, a humble village located in the district of Saharanpur. Here, I went door to door and managed to get 100 people to fill out the form with the variables given above.

Fig 1: Here is a sample of the form I used while gathering the data for my research

Then, It was finally time to compile the results and find if my research was successful or not. I used Pearson's correlation coefficient as well as the Chi-Square test to first see if there was a relationship between education and salary using the Pearson's coefficient. Afterwards, I decided to test the relationship between the virtues I mentioned above using the Chi-Square test and got to a conclusion.

3. Background
Chak Adampur village is located in Saharanpur tehsil of Saharanpur district in Uttar Pradesh, India. It is situated 6km away from Saharanpur, which is both district & sub-district headquarters of Chak Adampur village. The total geographical area of the village is 133.14 hectares. Chak Adampur has a total population of 2,342 people. The literacy rate of this village is 62.34%. (According to Census 2011). The following village is acting as a sample for me to prove my hypothesis of the relationship between education and employability. The village has various unique features, challenges, or opportunities that make studying the link between education and employability interesting.

4. Pearson's Correlation
Pearson's correlation is a statistical metric used to analyse the strength and direction of a two-variable linear connection. It expresses how much one variable changes when another variable changes, on a scale of -1 (perfect negative correlation) to 1 (Perfect positive correlation), with 0 indicating no correlation.

When the value of 'r' is between 0 and 1, there is a positive correlation, hence, when one variable changes, the other variable also changes in the same direction. When the value of 'r' is between 0 and -1, there is a negative correlation, hence, when one variable changes, the other variable also changes in the opposite direction.

When the value of 'r' is 0, there is no correlation between the variables, hence, there is no correlation.

In simpler terms, it helps us understand if there's a consistent pattern between two sets of data points.
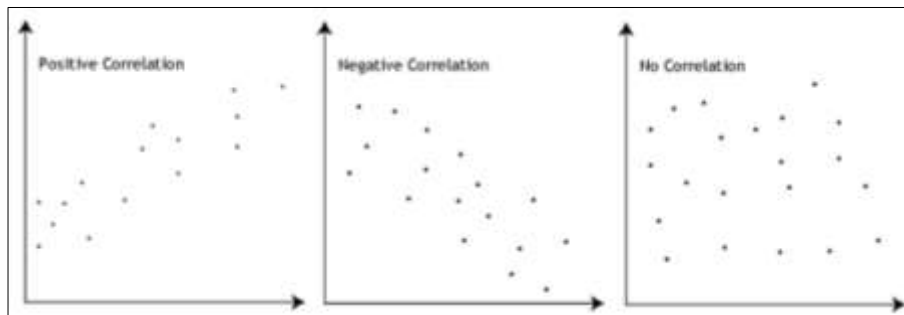

Fig 2: Taken from Google images

For example, if one variable increases when the other increases, the correlation is positive; if one decreases when the other increases, it's negative. A correlation close to 1 or -1 suggests a strong relationship.

Mathematically, the following formula can be used to calculate Pearson's correlation.

$$r = \frac{n\sum xy - (\sum x)(\sum y)}{\sqrt{[n\sum x^2 - (\sum x)^2][n\sum y^2 - (\sum y)^2]}}$$

Observation
After collecting data from 30 randomly selected individuals in the Chuk Adampur area of the Saharanpur district of Uttar Pradesh, and entering this data into the Pearson's correlation formula given above, I have found the Pearson's correlation between salary expectancy and education obtained to be 0.837487967.
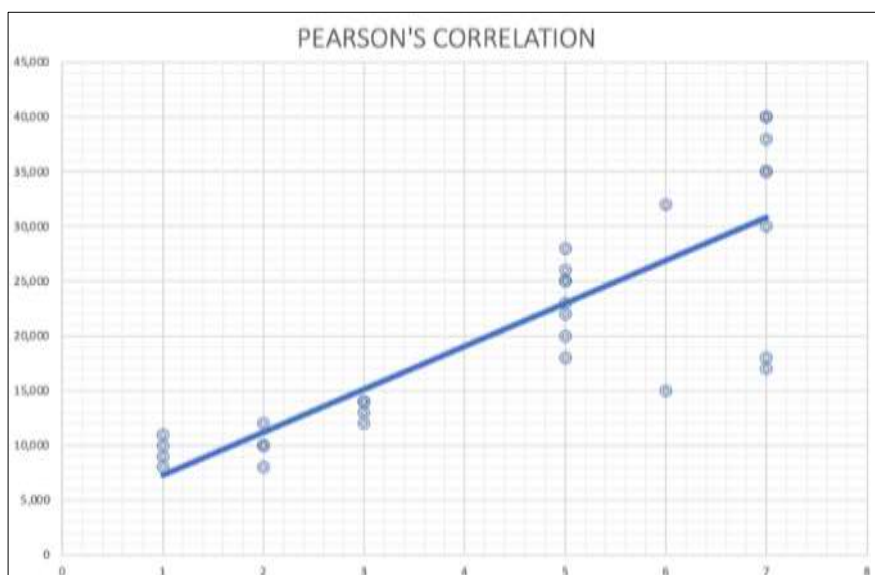

Fig 3: The x-axis of the graph above is the grid of education. Since educational qualifications can't be ranked, I took a numerical value for each qualification as stated below

Table 1: The following is the grid used for ranking education levels

Grid for education	Ranking
Primary School	1
Middle School	2
High School	3
Bachelor's	4
Masters	5
Diploma	6
Expertise	7

Further, the y-axis is each individual's salary package (in INR). This implies a positive linear relationship between education level and salary. This reflects a reliable pattern in the data, though we must note that this number implies a strong positive correlation and some external factors may have contributed to this. This finally suggests that individuals with higher education levels tend to have higher job performance scores.

5. Chi-square test

It is a statistical test used to find and associate the difference between expected and observed data. It compares observed data with expected data and assesses if any significant difference exists. It is used to find if the variables tested are independent or not.

The following test is a non-parametric test that helps determine whether the variables are independent or not.

Null hypothesis (H_0): The virtues such as happiness quotient, creativity, health, and satisfaction are independent of their education level.

Alternative hypothesis (H_1): There is a significant association between the virtues and their education level.

Table 2: Observed frequency

Education Level	Virtues			
	Happiness Quotient	Creativity	Health	Satisfaction
Till Class 8	16	17	5	8
Class 9 and 10	17	17	18	20
Class 11 and 12	17	18	18	23
Bachelor's	39	40	39	44
Masters	41	42	41	47
Diploma	19	19	19	22
Expertise	14	14	14	14

Degree of freedom

Degree of freedom = (row-1) x (column-1)

= (7-1) x (4-1)

=18

Level of Significance: 5%

Expected Frequency Table

Expected Frequency $(E_{ij}) = \dfrac{\text{Row Total X Column Total}}{\text{Overall Total}}$

Chi-Square Calculated Value (using GDC): 10.2536
Chi-Square Tabulated Value: 9.390

$$\chi^2 = \Sigma \quad \frac{(O_{ij} - E_{ij})^2}{E_{ij}}$$

Where,
O_{ij} is the observed frequency
E_{ij} is the expected frequency
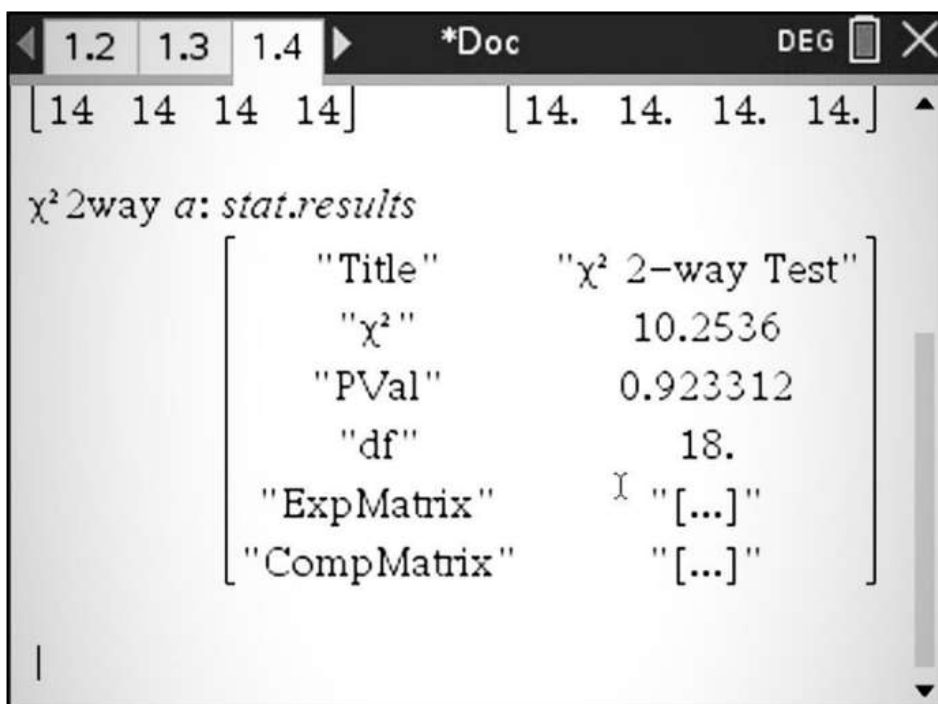
Critical Value: 0.923312

Fig 4: Taken from GDC

Observation

$$\sum \chi^2 > \chi^2_{\text{critical value}}$$

After collecting data from 100 randomly selected individuals in the Chuk Adampur area of the Saharanpur district of Uttar Pradesh, and entering this data into the Chi-Square Test given above, I have calculated the chi-square value to be greater than the tabulated chi-square value for 18 degrees of freedom and at 5% level of significance. This leads to the rejection of the null hypothesis.

Therefore, we have sufficient evidence to conclude that the virtues of a person are directly related to his/her qualifications. We can assert with confidence that there exists a statistically significant relationship between the virtues of an individual and their qualifications.

In practical terms, this suggests that the two variables are not independent of each other, rather they exhibit a discernible association.

6. Discussion

The results from Pearson's correlation make it quite apparent that education and employability do have a link, however small it may get at some stages. We observe that education inspires skill in a certain activity and as a result, most people who have an education beyond high school have skill-focused careers such as that of a teacher, lawyer, or doctor. This type of work entitles them to a handsome salary and overall satisfaction with their work. On the contrary, individuals with a lesser degree of education, definitely get less intellectual fields of work, working as labourers, street vendors, and construction workers, leading these people to be moderately or lowly satisfied with their jobs.

From the Chi-Square test, we can note that individuals with higher levels of education have turned out to be happier, healthier, more creative, and as a result, way more satisfied with their lives. Higher levels of education contribute to individuals acquiring knowledge and various skills needed to pursue fulfilling careers and engage in activities that bring inner joy. Education further helps provide a sense of accomplishment and personal growth further leading to increased amounts of happiness. The second virtue we talked about was health, people who obtain a higher level of education have access to better healthcare information, adopt healthier lifestyles and can afford quality healthcare services. Further, creativity highlights the exposure to different perspectives, creative thinking skills and other innovative ideas contributing to a more fulfilling life. The last virtue which we took under consideration was satisfaction, higher education may open doors to more rewarding career opportunities, financial stability which inturn provides a greater life satisfaction. They skills help us provide the strength to navigate life challenges effectively. Financial stability, resulting from educational attainment, can alleviate stress and enhance overall life satisfaction.

7. Limitations of Research

- The study may have a relatively small sample size, as I collected data from a very small area. This could limit the generalizability of the findings to a broader population. Larger and more diverse samples are often needed for greater validity. The following findings may be specific to this geographical location and may not be representative of other regions with different socio-economic, cultural, or educational contexts.
- Employability often involves soft skills, which can be challenging to quantify objectively. The study may face difficulties in accurately assessing and measuring the impact of educational programs on the development of these skills. There are only four virtues taken into consideration in the following research.
- Further, different cultural or personal perspectives on well-being could influence the results.
- Individuals who voluntarily participated in the study at the time of data- -collection may differ from those who chose not to participate, introducing bias. This could impact the representativeness of the sample and potentially alter the findings.

8. Conclusion

The research was successful in proving there to be a positive linear relationship between education and employability as well as education and virtues such as happiness, health and total satisfaction by the use of Pearson's correlation as well as the Chi-Square test. It is apparent that education is a must and boosts the chances, not only for getting a good salary but also remaining happy, healthy and content with your life.

I would like to think of education as an investment into your future. Although it is not guaranteed to bring you success or happiness, it has definitely been proven that it boosts your chances and also gives you the skills to be successful in whatever line of work you decide to pursue. We also notice that people with higher education surpass those with less education not only in the salary, but also in their posts.

A higher education degree also acts as a sort of a guarantee during the employment process and it is much more likely that a man with a higher education gets a job than the other way around. This is prominently because the individuals with degrees are seen as more skilled human capital than others. Therefore, this also means that people with higher education can get better salary packages by doing the same job as an individual without a degree.

These findings can also help form educational policies because of the fact that people with degrees and a higher education are more likely to get better jobs and the following can also be advertised to students to encourage them to get a higher education, in turn lowering the illiteracy rates. These and other things can serve as motivation for the students to keep learning new things and acquiring new skills which can help them in their careers.

With the knowledge of these skills, these students can start to feel empowered, confident and better about themselves which can motivate them to pursue their life goals and reach their potential. This can also fix many mental health problems because once an individual becomes confident in his/her ability, they can use it to shape their careers and with it, the trajectory of their life.

A higher literacy rate can also impact the society because when even as much as one individual is able to accomplish their aspirations because of the education they have pursued, others too start to value education and this value keeps on getting passed down from generation to generation.

In conclusion, education provides satisfaction and stability. As we can see from this research, education is definitely an important factor in contributing to the career and overall life of any individual while also affecting the virtues of that individual. At the end of the day, education is the only thing that no one can take away from you and you can use it at any

time to build a career from the very start because skill, talent and knowledge can never be ignored.

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