COMPARISON OF STUDENT STRENGTH OF F. Y. B. SC. MATHEMATICS & PHYSICS STUDENTS OF SNJB's K.K.H.A. ARTS, S.M.G.L. COMMERCE & S.P.H.J. SCIENCE COLLEGE CHANDWAD.

C. B. KUMBHARDE
Assistant Professor (Mathematics), SNJB's K.K.H.A. Arts , S.M.G.L. Commerce & S.P.H.J. Science College Chandwad.

Abstract
This paper Compares F.Y.B.Sc. Mathematics & Physics student strength of SNJB's K.K.H.A. Arts, S.M.G. L. Commerce & S.P.H.J. Science College Chandwad. Data of F.Y.B.Sc. Mathematics & Physics student strength were collected from department of Mathematics & Physics of last six years. The data were analysed using χ_2(Chi-square) test. Generally, students offering Mathematics also offer Physics but the result is surprisingly different.

Keywords: *-Observed frequency, Expected frequency,χ^2 (Chi-square) test, Level of significance, Degrees of freedom*

Introduction: - Students offer various subjects so they have to deal with idle time. If optional subjects reduced the idle time will be reduced. So I have taken up this problem "Can`Physics is made compulsory for students offering Mathematics?" Thus we test the null hypothesis "Students who offer Mathematics also offer Physics." If Physics made compulsory then it will reduce idle time for students which will be used for extra activities.

Collection of data:- Data were collected, of last six years regarding students who chosen Mathematics & Physics, from department of Mathematics & Physics of SNJB's K.K.H.A. Arts, S.M.G.L. Commerce & S.P.H.J. Science College, Chandwad. Which was as follows

Academic Year	Number of students chosen		Row Total
	Physics	Mathematics	
2012-13	22	25	47
2013-14	39	32	71
2014-15	71	46	117
2015-16	67	80	147
2016-17	66	84	150
2017-18	84	99	183
Column Total	349	366	715

Grand Total

Hypothesis testing: -
Null hypothesis (H_0): Students who offer Mathematics also offer Physics
Alternate hypothesis (H_1): Students who offer Mathematics may not offer Physics.
Expected frequency E_{ij}, was calculated using following formula

$$E_{ij} = \frac{Row\ total \times Column\ total}{Grand\ total} \qquad 1 \le i \le 5, 1 \le j \le 2$$

O_{ij} (Observed Frequency)	E_{ij} (Expected Frequency)	$\frac{(O_{ij}-E_{ij})^2}{E_{ij}}$
22	**23**	0.043478
39	**35**	0.457142
71	**57**	3.438596
67	**72**	0.347222
66	**73**	0.671232
84	**89**	0.28089
25	**24**	0.041667
32	**36**	0.444444
46	**60**	3.266666
80	**75**	0.333333
84	**77**	0.636364
99	**94**	0.265957
Total 715	**715**	10.22699

where value of E_{ij} & $\frac{(O_{ij}-E_{ij})^2}{E_{ij}}$ is rounded off.

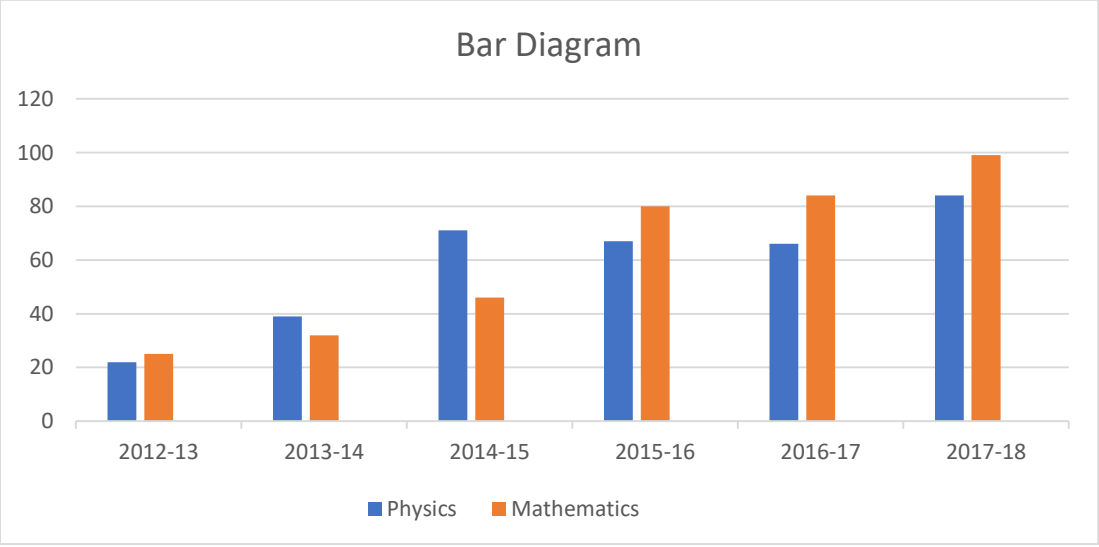
Then χ^2 is calculated using following formula $\chi^2 = \sum \frac{(O_{ij}-E_{ij})^2}{E_{ij}}$

$$\therefore \chi^2 = 10.22699$$

And **table value of χ^2** at 1% level of significance & 5 degrees of freedom = **15.086**

Conclusion:-
As 10.22699 < 15.086, Accept the null hypothesis at 1% level of significance that is Students who offer Mathematics also offer Physics, generally which is not the case.

Discussion



After observing above multiple bar diagram, there is a change in trend from the academic year 2012-13 to 2014-15. In 2014-15, 25% students offered Physics but not mathematics while in 2015-16 to 2017-18 trend again change more than 15% student offered mathematics but not take Physics .After 4 to 5 years if the same study is repeated then result might be different.

Reference:-

N. Gurumani: - An introduction to biostatistics, 2^{nd}revised edition, MJP publishers, Chennai 600 005