3.4 Collection of data

3.5 Statistical analysis of data

The collected data was classified and tabulated in accordance with the objectives to arrive at meaningful and relevant inferences. The data was analyzed using the following statistical tools.

3.5.1 Frequency and Percentages

Frequency and percentages were worked out to find the distribution of the respondents according to socio-personal characteristics……..

3.5.2 Arithematic Mean:

It was obtained by adding all the scores and dividing their total by number of observations.

$$A = \frac{1}{n} \times \sum_{i=1}^{n} x_i$$

A = arithmetic mean

n = the number of terms (e.g., the number of items or numbers being averaged)

x_1 = the value of each individual item in the list of numbers being averaged

Median:

The "median" is the "middle" value in the list of numbers. To find the median, your numbers have to be listed in numerical order, so you may have to rewrite your list first.

Median= Size of [(N+1)/2] th item

3.5.3 Standard Deviation

Standard Deviation is the most widely used measure of dispersion of a series .It is defined as the square root of arithmetic mean of the squares of deviations of individual observations from their arithmetic mean .It is worked out by following formula:

$$S = \sqrt{\frac{\sum\left(x-\bar{x}\right)^2}{n}}$$

Where,

S= Standard deviation

X=Individual observation

$\overline{X}$ = Mean of x

N= Number of items.

3.5.2 Chi square test

Chi square test was applied to test the statistical independence ……………

$$X^2 = \sum \frac{(\text{observed - expected})^2}{\text{expected}}$$

$$x^2 = \sum \frac{(o-e)^2}{e}$$

3.5.7 Karl Pearson's coefficient of Correlation (r):

Correlation was used to measure the degree of linear relationship between ……………..

$$r = \frac{\sum XY - \frac{\sum X \sum Y}{N}}{\sqrt{\left(\sum X^2 - \frac{\left(\sum X\right)^2}{N} \times \sum Y^2 - \frac{\left(\sum Y\right)^2}{N}\right)}}$$

The values of various statistical tests used to check level of significance, were compared with the critical values given in the statistical tests. If calculated values are more than the table value, it shows that there is significant difference in means/percentage.

T-Test (Paired T Test):

To Test the Siqnificance of Mean of Two Dependent Samples

it can be tested with the help of following formula

$$t = \frac{\bar{d}\sqrt{n}}{S}$$

where d - mean of difference of two samples i.e. (2nd-1st)

n = No. of Pairs

S = Standard Deviation

S can be located by methods

$$S = \sqrt{\frac{\sum (d-\bar{d})^2}{n-1}}$$

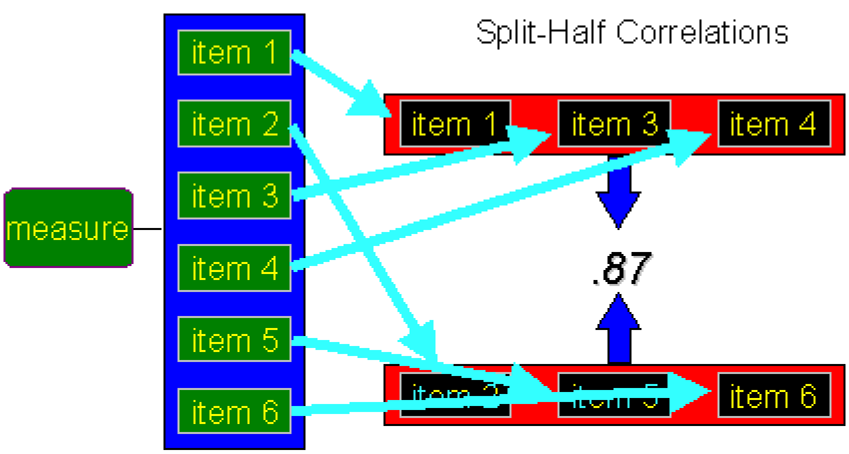
Unpaired T Test

Two-tailed unpaired T-test

- n: number of data points in the one sample ($N = n_1 + n_2$)
- ΣX: sum of all data points in one sample
- $\overline{X}$: mean of data points in sample
- $\Sigma(X^2)$: sum of squares of data points in sample
- s^2: unbiased estimate of population variation
- t: t ratio
- df = degrees of freedom = N1 + N2 – 2
- Formulas

$$s^2 = \frac{\Sigma(X_1^2) - \frac{(\Sigma X_1)^2}{n_1} + \Sigma(X_2^2) - \frac{(\Sigma X_2)^2}{n_2}}{n_1 + n_2 - 2} \qquad t = \frac{\overline{X}_1 - \overline{X}_2}{\sqrt{\frac{s^2}{n_1} + \frac{s^2}{n_2}}}$$

Split-half method:



- Correlating scores on one half of the test with scores on the other half of the test
  - **3.5.7 Karl Pearson's coefficient of Correlation (r):**
  - Correlation was used to measure the degree of linear relationship between ……………..

- $$r = \frac{\sum XY - \frac{\sum X \sum Y}{N}}{\sqrt{\left(\sum X^2 - \frac{\left(\sum X\right)^2}{N} \times \sum Y^2 - \frac{\left(\sum Y\right)^2}{N}\right)}}$$

- The values of various statistical tests used to check level of significance, were compared with the critical values given in the statistical tests. If calculated values are more than the table value, it shows that there is significant difference in means/percentage.