DATA ANALYSIS

The data, after collection has to be processed and analysed in accordance with the outline laid down for the purpose at the time of developing the research plan. The term analysis refers to the computation of certain measures along with searching for patterns of relationship that exist among data groups. Thus in the process of analysis, relationships or differences supporting or conflicting with original or new hypothesis should be subjected to statistical tests of significance to determine with what validity data can be said to indicate any conclusions.

Elements/Types of Analysis:

---Descriptive & Inferential analysis or statistical analysis.

Descriptive analysis is largely the study of distributions of one variables. This study provides us with profile of companies, work groups, persons and other subjects on any of a multitude of characteristics such as size, composition, efficiency etc. This sort of analysis may be in respect of one variable or in respect of two variables or in respect of more than two variables.

---Inferential analysis--- It is concerned with the various tests of significance for testing hypotheses in order to determine with what validity data can be said to indicate some conclusion. It is also concerned with the estimation of population values. It is mainly on the basis of inferential analysis that the task of interpretation is performed.

---Correlation and causal analysis--- Correlation analysis studies the joint variation of two or more variables for determining the amount of correlation between two or more variables. Causal analysis is concerned with the study of how one or more variables affect changes in another variables.

---Multivariate analysis--- It is defined as all statistical methods which simultaneously analyse more than two variables on a sample of observations.

---Multiple regression analysis--- This analysis is adopted when the researchers has one dependent variable which is presumed to be a function of two or more independent variables. The object is to make a prediction about the dependent variable based on its covariance with all the concerned independent variables.

---Multiple discriminant analysis--- This analysis is appropriate when the researcher has a single dependent variable that cannot be measured but can be classified into two or more groups on the basis of some attribute.

---Multivariate analysis of variance or multi-ANOVA--- This analysis is an extension of two-way ANOVA wherein the ratio of among group variance to within groups variance is worked out on a set of variables.

---Canonical analysis--- It can be used in case of both measurable and non-measurable variables for the purpose of simultaneously predicting a set of dependent variables from their joint covariance with a set of independent variables.

DATA INTERPRETATIONS:-

Interpretation refers to the task of drawing inferences from the collected facts after an analytical study. In fact it is a search for broader meaning of research findings. It has two aspects viz. the effort to establish continuity in research through linking the results of a given study with those of another and the establishment of some explanatory concepts. In one sense interpretation is concerned with relationships within the collected data, partially overlapping analysis. Interpretation also extends beyond the data of the study to include the results of other research, theory and hypotheses. Thus interpretation is the device through which the factors that seem to explain what has been observed by researcher in the course of the study can be better understood and it also provides a theoretical conception which can serve as a guide for further researcher.

Why interpretation?

---It is through interpretation that the researcher can well understand the abstract principle that works beneath his findings.

---It leads to the establishment of explanatory concepts that can serve as a guide for future research studies.

---Researcher can better appreciate only through interpretation why his findings are what they are and can make others to understand the real significance of his research findings.

---The interpretation of the findings of exploratory research study often results into hypothesis for experimental research.

Techniques---

---Researcher must give reasonable explanations of the relations which he has found and he must interpret the lines of relationship in terms of the underlying processes and must try to find out the thread of uniformity that lies under the surface layer of his diversified research findings.

---Extraneous information, if collected during the study must be considered while interpreting the final results of research study for it may prove to be a key factor in understanding the problem under consideration.

---It is advisable, before embarking upon final interpretation to consult some one having insight into the study and who is frank and honest and will not hesitate to point out omission and errors in logical argumentation.
---Researcher must accomplish the task of interpretation only after considering all relevant factors affecting the problems to avoid false generalization.

**Frequency Distribution**: Mathematical distribution whose objective is to obtain a count of the number of responses associated with different values of one variable and to express these counts in percentage term.

**Mean**: The average that value obtained by summing all elements in a set and dividing by the number of elements.

**Mode**: A measure of central tendency given as the value that occurs the most in a sample distribution.

**Median**: A measure of central tendency given as the value above which half of the values fall and rest fall below.

**Range**: Difference between the largest and smallest values of distribution.

**Inter Quartile Range**: The range of a distribution encompassing the middle 50% of the observation.

**Variance**: The mean squared deviation of all the values from the mean.

**Standard Deviation**: Square root of the variance.

**Coefficient of Variation**: It is the sampling theory for the standard deviation as the percentage of mean.

**Skewness**: Characteristic of a distribution that assesses its symmetry about the mean.

**Kurtosis**: Measure of relative peaked ness or flatness of the curve defined by frequency distribution curve.

**Cross Tabulation**: It is a technique that describes two or more variables simultaneously and results in tables that reflect the joint distribution of two or more variables that have a limited number categories or distinct value.

**Chi Square Statistics**: The statistics used to test the statistical significance of the observed association in a cross table. It assists in determining systematic association that exist between two variables.

**Chi Square Distribution**: Skewed distribution whose shape depends solely on the number of degrees of freedom. As the number of degrees of freedom increases, the chi square distribution becomes more symmetrical.

**t Test**: It is a univariate hypothesis test using the t distribution which is used when the standard deviation is unknown and the sample size is small.

**t Statistics**: It is a parametric test that assumes that the variable has a symmetric bell shaped distribution and the mean is known and the population variance is estimated from the sample.

**t Distribution**: A symmetric bell shaped distribution that is useful for small sample testing less than thirty.

**z Test**: A univariate hypothesis test using the standard normal distribution.

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