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Research methods - RES 431

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Answer to the question no-1

Analysis of variance ANOVA is a statistical formula used to compare variances to across the means of different groups. A range of scenarios use it to determine if there is any difference between the means of different groups.

Basic Principles of ANOVA there are given below:- The basic Principles of ANOVA is to test for difference among the means of the populations by examining of the amount of variation within each of these samples, relative to the amount of the variation between the samples. In terms of variation within the given population it is assumed that the values of differ from the mean of this population only because of random effects. i.e, there are influences on which are unexplainable whereas in examining differences between population we assume that the difference between the mean of the ith population and the grand mean is attributable to what is called a specific factor as treatment effect. thus while using

ANOVA we assume that each of the samples is drawn from a normal population and that each of these populations has the same variance. we also assume that all factors other than the one or more being tested are effectively controlled. we further assume the absence of many factors that might affect our conclusions concerning the factor to be studied. in short, we have to make two estimates of population variance viz. one based on between samples variance and the other of based on within samples variance.

F = Estimate of population variance between samples variance bivided by estimate of population variance within samples variance

ANOVA technique

(i) obtain the mean of each sample obtain: $\bar{x}_1, \bar{x}_2, \bar{x}_3 \cdots \bar{x}_K$ when there are K samples

(ii) work out the mean of the sample means as follows:

$$\overline{\bar{x}} = \frac{\bar{x}_1 + \bar{x}_2 + \bar{x}_3 + \cdots + \bar{x}_K}{}$$

(iii) Take the deviations of the sample means from the mean of the sample means and calculate the square of such deviations which may be multiplied by the number of items so, ANOVA is the important for basic think.

Answer to the question no- 2

A hypothesis in research is an assumption that is made based on some evidence. This is the initial point of any investigation that translates the research questions into predictions. it includes components like variables, population and the relation between the variables. A research hypothesis is a hypothesis that is used to test the relationship between two or more variables.

Mention procedures for hypothesis testing, there are given below:- Hypothesis testing is a formal procedure for investigating our ideas about the world using statistics it is most often used by scientists to test specific predictions, called hypotheses that arise from theories.

There are five main steps in hypothesis testing:-

(1) State your research hypothesis as a null hypothesis and alternate hypothesis (Ho) and (Ha or H1)

(2) Collect data in a way designed to test the hypothesis.

③ Perform an appropriate statistical test.

④ Decide whether to reject or fail to reject your null hypothesis.

⑤ Present the findings in your results and discussion section.

① State your null and alternate hypothesis:- After developing your initial research hypothesis it is important to restate it as a null (Ho) and alternate (Ha) hypothesis so that you can test it mathematically. The alternate hypothesis is usually your initial hypothesis that predicts a relationship between variables

② collect data:- For a statistical test to be valid, it is important to perform the sampling and collect data in a way that is designed to test your hypothesis. if data are not representative, then you cannot make statistical inferences about the population you are interested in.

③ Perform a statistical test:- There are a variety of statistical tests available, but they are all based on the comparison of within-group variance versus between group variance. Alternatively, if there

is high within-group variance and low between-group variance then your statistical test will reflect that with a high p-value. This means it is likely that any difference you measure between groups is due to chance.

(4) Decide whether to reject or fail to reject your null hypothesis :- Based on the outcome of your statistical test, you will have to decide whether to reject or fail to reject your null hypothesis. In most cases you will use the p-value generated by your statistical test to guide your decision. and in most cases, your predetermined level of significance for rejecting the null will be 0.05 that is, the less than 5% chance that you would see these results if the null hypothesis were true.

(5) Present your findings :- The results of hypothesis testing will be presented in the results and discussion sections of your research paper dissertation or thesis. in the formal language of hypothesis testing we talk about rejecting or failing to reject the null hypothesis. You will probably be asked to do this in your statistics assignments.

Answer to the question no-3

Interpretaion required to conduct a research and why there are given below: The interpretaion of data helps researchers to categorize, manipulate, and summarize the information in order to answer of critical questions. The importance of data interpretain is evident and this is why it needs to be done properly. Data is very likely to arrive from multiple to sources has a tendency to enter the analysis tends to be extremely subjective that is to say, the nature and goal of interpretation will very from business to business, likely correlating to the type of data being analyzed. The scale of measurement must be decided for the data as this will have a long-term impact on data interpretation ROI. The varying scales include:

(i) Nominal scale :- non-numeric categories that cannot be ranked or compared to quantitatively.

(ii) ordinal scale :- Exclusive categories that are exclusive and exhaustive but with a logical order. Quality ratings

and agreement ratings are examples of ordinal scales.

(iii) Interval :- A measurement scale where data is grouped into categories with orderly and equal distance between the categories there is always an arbitrary zero point.

(iv) Ratio :- contains features of all three.

For a more in-depth review of scales of measurement, read our article on data analysis questions. Let's take a closer to look at those specific methods and possible data interpretation problems.

Major techniques of interpretation there are given below:-

(1) over the phone interpretation :- what you'll do when you and the person with whom you want to communicate are not available for face-to-face. The technique is possible when both parties establish an appointment and the participants of the call can hear only the voice.

(2) Consecutive interpretation :- This is what the consecutive interpretation technique looks like.

(3) Simultaneous interpretation :- Simultaneous

interpreters interpret simultaneously, along with the speech given. they listen to the speech through headphones and the understand the meaning of the sentences so there are no mistakes.

(4) whispered interpretation :- it's a quite simple technique where the interpreter sits or stands next to a small group of audience that belongs to a different culture and whispers an interpretation of the speaker's spoken sentences. it can be done through headphones and the microphones as per the preference of participants.

(5) Video interpretation :- Isn't it really nice to finally have something to look after the convenience of deaf or hard of hearing participants in the meeting. it's popularly used in sensitive situations and a video interpretation can easily connect you with clients without much fuss.

so it is the most important of major techniques of interpretation.

Answer to the question no-4

Explain the concept of research report there are given below:- A research report is a reliable source to recount to details about a conducted research. it is most often considered to be a true testimony of all the work done to the corner specificites of research. The various sections of research report are:-

(i) Research report summary:- The entire objective along with the overview of research are to be included in a summary which is a couple of paragraphs in length. it should be interesting to enough to capture all the key elements of the report.

(ii) Research introduction:- There always is a primary goal that the researcher is trying to achieve through a report. in the introduction section, one can cover answer related to this goal and establish a theses which will be included to strive and answer it in detail.

(iii) Research methodology:- This is the most importants section of the report

where all the important information lies. the readers can gain data for the the topic along with analyzing the quality of provided content and the research can also be approved by other market researchers.

(iv) Research Results :- A short description of the results along with calculations to conducted to achieve the goal will form this section of results.

(v) Research Discussion :- The results are discussed in extreme detail in this section along with a comparative to analysis of report.

(vi) Research references and conclusion :- conclude all the research findings along with mentoning each and every author, article or any content piece from where reference were taken.

different steps in writing a report there are given below :-

(1) Have a clear research objective : A researcher should read the entire proposal again, and make sure that the data they provide contributes to the objectives that were raised from the beginning.

(ii) Establish a working model :- Each study must have an internal logic, which will have to be established in the report and in the evidence.

(iii) Read aloud while writing :- while reading the report, if the researcher hears to something inappropriate.

(iv) Check grammer and spelling :- without a doubt, good practices help to understand the report. use verbs in the present tence. Find new words and other ways of saying things. Have fun with the language whenever possible.

(v) Be clear with messages :- A researcher should always write every section of the report with an accuracy of details and language.

(vi) Be creative with titles :- Particularly in segmentation studies choose names that give life of research. such names can be survive for a long time after the initial investigation.

(vii) Create an effective conclusion :- The conclusion in the research reports is the most difficult to write, but it is an incredible opportunity to excel.