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(Paper – 1)  
Research Methods And Statistical Techniques  
Topic – Hypothesis  
e-content

# HYPOTHESIS

Hypothesis refers to an assumption that is made to find out solution of a problem. It is useful tool to solve all research problems and issues.

The researcher formulates tentative answers or solutions to the research problems. These proposed solutions or explanations constitute the hypothesis. Hypotheses are suppositions that are tested by collecting facts that lead to their acceptance or rejection. They are not assumptions to be taken for granted neither are they beliefs that the investigator sets out to prove. They are "refutable predictions".

# Definition of Hypothesis

According to George A. Lundberg, “An hypothesis is a tentative generalization, the validity of which remains to be tested. In its most elementary stages the hypothesis may be any guess, imaginative idea or institution whatsoever which becomes the basis of action or investigation afterwards.”

Goode and Hatt defines, “Hypothesis is a proposition which can be put to test determine its validity.”

# Characteristics of a Good Hypothesis

- i) Consistent with known fact and theories, and might be even expected to predict or anticipate previously unknown data,
- ii) Able to explain the data in simpler terms,
- iii) Stated in the simplest possible terms, depending upon the complexity of the concepts involved in the research problem,
- iv) Stated in a way that it can be tested for its being probably true or probably false, in order to arrive at conclusion in the form of empirical or operational statements.

# Qualities of Good Hypothesis

Ability to test

Clear and  
precise

Logical and  
simple

Subjective  
approach

# Importance of Hypothesis

- Providing right direction to the study.
- Helpful in delimiting the field of study.
- Helpful in collecting relevant data.
- Helpful in getting logical conclusions.
- Contribution in the construction of theories.
- Hypothesis should be testable.
- Hypothesis should be brief and clear.

# Functions of Hypothesis

- Hypothesis helps in making an observation and experiments possible.
- It becomes the start point for the investigation.
- Hypothesis helps in verifying the observations.
- It helps in directing the inquiries in the right directions.

# Types of Hypothesis

- Simple hypothesis
- Complex hypothesis
- Directional hypothesis
- Non-directional hypothesis
- Null hypothesis
- Alternative hypothesis



# Simple Hypothesis

It shows a relationship between one dependent variable and a single independent variable. For example – If you eat more vegetables, you will lose weight faster. Here, eating more vegetables is an independent variable, while losing weight is the dependent variable.

# Complex Hypothesis

It shows the relationship between two or more dependent variables and two or more independent variables. Eating more vegetables and fruits leads to weight loss, glowing skin, reduces the risk of many diseases such as heart disease, high blood pressure, and some cancers.

# Directional Hypothesis

It shows how a researcher is intellectual and committed to a particular outcome. The relationship between the variables can also predict its nature. For example- children aged four years eating proper food over a five year period are having higher IQ level than children not having a proper meal. This shows the effect and the direction of effect.

# Non-directional Hypothesis

It is used when there is no theory involved. It is a statement that a relationship exists between two variables, without predicting the exact nature (direction) of the relationship.

# Null Hypothesis

A null hypothesis is a hypothesis that expresses no relationship between variables. It negates association between variables.

It provides the statement which is contrary to hypothesis. It's a negative statement, and there is no relationship between independent and dependent variable. The symbol is denoted by "H<sub>0</sub>".

Example – Poverty has nothing to do with the rate of crime in a society.

Illiteracy has nothing to do with the rate of unemployment in a society.

# Alternative hypothesis

The hypothesis that sample observations are influenced by some non random cause. The alternative hypothesis, denoted by  $H_1$  or  $H_a$ .

# Testing of Hypothesis

Testing hypothesis is an important activity in the research process. The important steps in testing hypothesis are:

- 1) State the research hypothesis ( $H_1$ )
- 2) Formulate the null hypothesis ( $H_0$ )
- 3) Choose a statistical test
- 4) Specify a significance level
- 5) Compute the statistical test
- 6) Reject/accept the  $H_0$
- 7) Draw the inference i.e. accept/reject  $H_1$

# Steps

- **Step 1 : State the Research Hypothesis (H1)**

There is a significant difference between undergraduate and post-graduate students with regard to their reading habits.

- **Step 2: Formulate the Null Hypothesis (H0)**

There is no significant difference between undergraduate and post-graduate students with regard to their reading habits.



- **Step 3: Choose a statistical test**

Let us suppose that we have decided to use Chi-Square statistic ( $\chi^2$ ) to test the relationship between the variables considered in the research hypothesis.

- **Step 4: Specify a significance level**

Further we suppose that we would like to test our hypothesis at .05 level of significance.

- **Step 5: Compute the statistical test**

In this step the researcher has to cross tabulate his/her data and compute Chi-square test .

- **Step 6: Reject/accept the H0**

Since the calculated value of Chi-square is more than the critical value we reject the null hypothesis.

- **Step 7: Draw the inference i.e. accept/reject H1**

We accept the research hypothesis because the null hypothesis has been rejected. Hence, we can infer that there is a significant difference between undergraduate and post-graduate students with regard to their reading habits.



**Thank You**