Short Article

Significance of Hypothesis in Research

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A B S T R A C T

Hypothesis is of utmost importance as it related to prediction or postulate of a researcher. It can be tested and verified. The aim of forming hypothesis is to provide a direction for the research and establish relationship between variables. When formulating a hypothesis deductive reasoning is utilized as it aims in testing a theory or relationships. Finally, hypothesis helps in discussion of findings and conclusion of study.

Keywords: Relationship, Phenomenon, Tool, Prediction, Types of Hypothesis, Testing

"Stepping Stone To a Soon-To-Be-Proven Theory"

Introduction

After selection of the research problem, the researcher derives the hypothesis which is the most important step in the research process. A good hypothesis not only provides a valid explanation for some outcome but also guides the researcher in right direction.

Definition of Hypothesis

A hypothesis is a specific statement of prediction. It is a preliminary or tentative explanation or postulate by the researcher of what a researcher considers the outcome of an investigation will be. It is an informed/ educated guess which describes a possible relationship between two or more phenomenon and variables. It is the most specific way in which an answer to a problem can be stated. A hypothesis differs from a problem. A problem is formulated in the form of a question; it serves as the basis or origin from which a hypothesis is derived. A hypothesis is a suggested solution to a problem. A problem (question) can be directly tested, whereas a hypothesis can be tested and verified.

A hypothesis is formulated after the problem has been stated and the literature study has been concluded. It is formulated when the researcher is totally aware of the theoretical and empirical background to the problem.

Purpose of Hypothesis

- It offers explanations for the relationships between those variables that can be empirically tested.
- It furnishes proof that the researcher has enough background knowledge to enable the person to make suggestions in order to extend existing knowledge.
- It gives direction to an investigation.
- It structures the next phase in the investigation and therefore furnishes continuity to the examination of the problem.
- It is a powerful tool in research process to achieve dependable knowledge.

Characteristics of a Good Hypothesis

- It should have elucidating power.
- It should strive to furnish an acceptable explanation of the phenomenon.
- Must be verifiable.
- Formulated in simple, understandable terms.
- Correspond with existing knowledge.
- Testable considering the current knowledge.
- Realistic.
- Clear and unambiguous terms.
- States the expected relationship between variables.
- It should be limited in scope.

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Importance of Hypothesis in Research

- It facilitates the extension of knowledge in an area.
- It enables the researcher to relate logically known facts to intelligent guesses about unknown conditions.
- It provides direction to the research.
- It provides a basis to the researcher for selecting sample and statistical techniques.
- It provides the basis for reporting the conclusions of the study.

Formulating a Hypothesis

Hypothesis are guesses or tentative generalizations, but these guesses are not merely accidents. Hypotheses are the products of considerable speculation as well as imagination. The hypotheses are generated via a number of means but are usually the result of a process of inductive reasoning where observations lead to the formation of a theory. Researchers then use a large battery of deductive methods to arrive at a hypothesis. It can be understood from the following diagram.
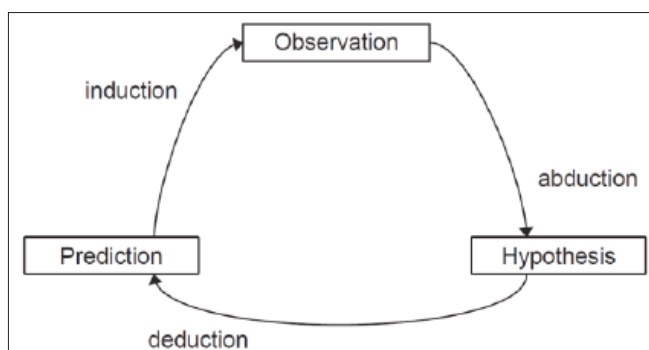

Figure 1.Process of formulating the hypothesis

Hypothesis a forerunner for a research problem and many a times is encircled as an enquiry or question. It typically asks what or why about the relationship among variables. It is just a provisional enquiry which emerged from literature reviews, surveys and instinct. This may be an inquiry or an announcement or a statement. These explainable statements can be used by the investigator for the research problem.

Usually three important factors that affect the formulation of the hypothesis are-richness of background knowledge, versatility of intellect and analogy.

Types of Hypothesis

Hypothesis can be classified in terms of their deviation (inductive and deductive hypotheses) and in terms of their formulation.

1. Research hypothesis: It is a relationship between variables and indicates the nature of the relationship. If A is valid, B follows. For example a student who prepares well for exam will have less of test anxiety.

Here the researcher may relate two variables like test anxiety and study habits.

2. Null hypothesis: A null hypothesis challenges the assertion of a declarative hypothesis and denies it altogether. It states that even wherein it appears to keep true; it is far due to mere threat. It is by the researcher to reject the null hypothesis via showing that the final results stated in the declarative hypothesis does occur and the measure of it is specified that it cannot be simply declined as have happened accidentally or some coincidence.

The null hypothesis can be further categorized in the following two categories:

a. Non directional null hypothesis: This type will test for differences or relationships. Examples of statements are presented below:

- There is no difference between two groups on variable x.
- There is no difference among three or more groups on variable x.
- There is no relationship between variable x and variable y.

b. Directional null hypothesis: This type can predict the direction of the differences. The reason for this estimation be the investigator's previous information or evidence of expert knowledge or self-observation of facts or events and not a simple prediction. The researchers suggest this can be proved statistically also. For example:

- Group B has a higher mean score than Group A.
- Group B has a higher mean score than Group A and Group C.
- There is no positive relationship between the variables x and y.

Hypothesis Testing

The statistician Ronald Fisher explained the concept of hypothesis testing with a story of a lady testing tea who claimed that tea with milk tasted different depending on whether the milk was added to the tea or the tea added to the milk.

After the formulation of the hypotheses according to the criteria discussed above, they are subjected to the empirical as well as logical testing. Some hypotheses are simple and can be tested directly. In some situations, they are complex and necessitate collection of evidence by selecting or developing data collection instruments, data analysis and to interpret the results in the light of hypothesis. The steps are as follows:

1. Identify the null and alternative hypothesis.
2. State the level of significance.

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3. Select the standardized test statistic.
4. State the rejection region.
5. Calculate the standardized test statistic and see if it fails in the rejection region.
6. Make a statistical decision.
7. If the test statistic falls in the critical region: Reject null hypothesis in favor of alternative hypothesis. If the test statistic does not fall in the critical region: It can be concluded that there is not enough evidence to reject null hypothesis.

Conclusion

According to the researchers'/ investigators' point of view, the hypothesis may be conveniently considered as a tentative or working assumption, but it is an essential tool to achieve dependable knowledge. It not only explains the relationship between the different variables under study but provides the basis for reporting the conclusions of the study also. Therefore, the researchers must take all the precautions in framing right hypothesis in a right way.

Conflict of Interest: None

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