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Final Exam

## Chapter 1: The Scientific Approach and Knowledge

The scientific approach is a specific type of critical thinking that involves formulating hypotheses, conducting experiments, and analyzing data. A researcher may utilize this approach to a topic with a desire to understand the topic more. This approach also helps to identify and minimize biases that may interfere with this understanding. A researcher may choose to use this approach to make better decisions for both the individuals and broader policies. The scientific approach helps us to increase our knowledge base.

The scientific approach involves several key steps:

1. Identify your topic.
2. Find, read, evaluate past research.
3. Conducting experiments or collecting data to test the hypothesis.
4. Choose a Research design.
5. Plan and carry out your study.
6. Analyze Data
7. Communicate results.

The goal of scientific knowledge is to provide an accurate and comprehensive understanding of the natural world, and to inform decision-making and practical applications in a wide range of fields.

## Chapter 2: Scholarly versus Popular Sources

Primary data refers to the data that is collected directly from the source. It is original data that has not been previously collected, analyzed, or published. Examples of primary data include surveys, interviews, observations, experiments, and focus groups, and academic journals. For example, if a company wants to know the opinions of its customers regarding a new product, it may send out a survey to gather primary data. Secondary data, on the other hand, refers to the data that has already been collected by someone else and is publicly available. It is information that has been previously collected, compiled, and analyzed by another researcher or organization. Examples of secondary data sources include books, journals, and newspapers. In completing my research for my thesis, it would be more beneficial to utilize primary data. One of the main sources is academic journals. I have found that academic journals have helped in supporting my variables in research.

#### Chapter 4: Probability and Nonprobability sampling

Probability sampling and nonprobability sampling are two methods of selecting samples from a population. In probability sampling, samples are selected randomly and there is a known probability of being selected. In simple terms every person in the population has a fair chance of being selected. Nonprobability sampling is a method where not every person has an equal chance of being selected. In non-probability sampling individuals are selected based on criteria. Probability sampling uses random selection and non-probability sampling is any method of sampling that doesn't rely on random selection. Non-Probability sampling could be more convenient for usage. Easier does not mean better as non-probability sampling may also introduce bias.

#### Chapter 5: Central tendency and measures of variability

Measures of central tendency and measures of variability are two types of descriptive statistics used to summarize and describe data. Measures of central tendency provide a single value that represents the typical or central value of a set of data, measures of variability describe the degree of spread or spreading of the data around the central value. The central tendency is the number that represents the central score of a sample and measures of variability show how much scores differ in your sample. Central tendency can show the mode, median, and mean. The mean is simply the average of all the values in the collection of data. The median is the middle value. The mode shows the most used value within the data. Variability can show the observed minimum, observed maximum, and the range. The central tendency provides information about the typical value of the data; it does not describe the variation of the data.

#### Chapter 6: One tailed hypothesis or Two-tailed hypothesis

A one-tailed hypothesis is a hypothesis stating the direction (higher or lower) in which a sample statistic will differ from the population or another group. In a one Two-tailed hypothesis the hypothesis is stating that results from a sample will differ from the population or another group; but without stating how the results will differ. These two types of hypothesis are based on statistical hypothesis testing. A Researcher choosing between the two would need to consider several factors. Consideration of the research question, previous knowledge, and the expected effect would be the determining factor when choosing between the two.

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