**Assignment 03**

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**Please illustrate how to formulate research objectives**

When formulating research objectives, we should have goals describing what we hope to achieve. They should be a combination of a main objective and several sub-objectives. The main being an overall statement that describes the primary focus of the research, and the subs describing specific aspects. All the sub-objectives should also be clear and unambiguous, numerically listed, contain solely one aspect, and start with some sort of action word (e.g., ‘to identify’, ‘to discover’, or ‘to explore’).

**Please illustrate how to formulate a research problem in quantitative and qualitative research**

Typically, when we are first considering to research a problem we will begin looking at broad subjects or areas. Many researchers like to choose a topic that is not well covered or lacking competition; either for the novelty of the topic or because of ease towards publishing. Then, they begin to choose sub-topics for the research problem, or key aspects to investigate, picking the most interesting in relation to the main topic. Afterwards, the researchers will raise questions about those main and sub-topics and formulate objectives. Finally, the researcher will assess and double-check those objectives.

**Please illustrate how to choose research topics**

There are a plenty of factors to consider when picking a research topic. For one, a researcher needs to ensure that their chosen topic is novel and will produce genuine contributions to their area of research. They also need to consider whether the scope of their research is so narrow that the results are not generally applicable, or to not make the scope so large that they cannot finish the research.

To generate ideas though, a researcher has several resources available to them. They can contact their own faculty or advisors for ideas since they are experts in their area of research. Or they can refer to conference journals and research papers. Sometimes the conclusions or literature reviews within those sources will reveal any shortcomings or unknowns within the field, which might inspire future studies.

**Please illustrate the difference between concepts and variables**

Concepts are abstract and cannot be imperially measured, whereas variables are something concrete and immutable. A concept is something that could vary by interpretation or perspective, like which candy bar is the best. And a variable how much a specific candy bar weighs or how many ingredients there are. We can, however, attempt to measure concepts by using variables in a subjective way; like, we could argue that a certain candy is the best because X% of people prefer Skittles, and only Y% prefer Snickers.

**Please give two examples each of Qualitative and Quantitative variables to explain their differences**

Qualitative variables are categorical and used to group different variables.

1. A nominal ranking used to describe lower, middle, and upper classes
   1. For which the scale is governed by quantitative variables, like yearly income
2. A constant variable, whether it is or is not winter

Quantitative variables consist of interval and ratio scales. Intervals have equal units of measurements with an arbitrary starting point. And ratios have equal units of measurement from a fixed starting point at zero.

1. Income per year in thousands of united states dollars.
2. Cost of a candy per ounce.