

METODOLOGI PENELITIAN

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Variables

Defining Variables / making hypothesis

Variables:

1. Independent Variable:

What I can change

2. Dependent Variable:

What I observe through
research methodology

Variables (contn'd)

3. Intermediate Variable:

What I observe as a results of changing independent variable, then I can treat it as independent variable

Two types: Moderating Variables and Intervening variables

Moderating variables – has a strong effect on relationship between independent and dependent variables

Intervening variables – a function of the independent variables → helps to explain the influence of IV on DV

4. Controlled Variable:

Quantities that you want to **remain constant**, and you must observe them as carefully as the dependent variables. Most experiments have more than one controlled variable. Some people refer to controlled variables as "**constant variables**."

Examples (simple)

- "If I open the faucet [**faucet opening size is the independent variable**], then it will increase the flow of water [**flow of water is the dependent variable**]."
- "Raising the temperature of a cup of water [**temperature is the independent variable**] will increase the amount of sugar that dissolves [**the amount of sugar is the dependent variable**]."
- "If a plant receives fertilizer [**having fertilizer is the independent variable**], then it will grow to be bigger than a plant that does not receive fertilizer [**plant size is the dependent variable**]."
- "If I put fenders on a bicycle [**having fenders is the independent variable**], then they will keep the rider dry when riding through puddles [**the dependent variable is how much water splashes on the rider**]."

Examples (advanced)

"The method of programming [independent variable] construction project employed by a contractor influenced the project performance [intermediate variable] and hence participant satisfaction [dependent variable] of the project."

"The amount of rainfall infiltration [independent variable] influence the soil's moisture content [intermediate variable], hence reduction of suction and shear strength of the soil [intermediate variables], hence lower the factor of safety of slope [dependent variable].

"The amount of water [independent variable] added to a concrete mixture influence the consistency [intermediate variable], of a concrete mix, hence its strength and durability [dependent variable]

Examples (advanced)

“The **magnitude** and the **distance** between a location to the hypocenter of an earthquake [**independent variable**] will influence the type of **damage** [**dependent variable**] for the same **type of structure and foundation soil** [**controlled variables**]

“**The height of a candle** (measured in centimeters at a regular intervals of time (for example, every five minutes) [**independent variable**]) can be used to define **how fast** does a certain **type of candle** burn [**dependent variable**] if the candle was protected against wind [**time interval, type of candle and wind are controlled variables**]

Examples (advanced)

• "The type of battery [independent variable] will influence how long the battery will maintain its voltage [dependent variable] in low, medium, and high current drain devices [current is controlled variable].

To do this research you have to use the **type of device** with respect to current for example

1. High current: same type of CD player, same music track, same volume level)
2. Medium current: same flashlight with same bulb
3. Low current: same camera flash

The research should be done in a controlled **temperature** (battery works better in a warm temperature)