KONSEP DASAR STATISTIK

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RULES

1. **PJ mata kuliah wajib mempersiapkan perlengkapan sebelum proses pembelajaran**
2. **Membawa Laptop (optional)**
3. **Terpasang Software SPSS**
4. **Terkoneksi Internet**
5. **Mengumpulkan *hasil praktik* selesai perkuliahan di SIP**

EXERCISE

A man buys a horse for $60, then sells it for $70.
He buys the horse back for $80, and then sells the horse for $90.
How much money did he make or lose?

ANSWER

The man made $20.

He made $10 each of the two times he sold the horse.

Net cash

-$60 + $70 = +$10

+$10 - $80 = -$70

-$70 + $90 = +$20

RESEARCH IN BEHAVIORAL SCIENCES

One of the main **objectives** of a behavioral scientist is to develop theories and principles which provide insights (wawasan) into human and organizational behavior.

These theories and principles have to be evaluated against actual **observations**. This is called the **validation** of theories by **empirical research**.

Broadly, research can be classified into two groups—**qualitative** research and **quantitative** research.

Qualitative Research

Qualitative research involves (melibatkan) collecting qualitative **data by way of in-depth interviews, observations, field notes, open-ended questions** etc.

The researcher himself is the primary data collection instrument, and the data could be collected in the form of **words, images, patterns** etc.

Data analysis involves searching for **patterns, themes, and holistic features**.

Results of such research are likely to be context specific and reporting takes the form of a **narrative with contextual description and direct quotations** from researchers.

Quantitative Research

Quantitative research involves collecting quantitative data based on **precise measurement using structured, reliable, and validated data collection instruments or through archival data sources.**

The nature of the data (sifat) is in the form of **variables and data analysis involves establishing statistical relationships.**

If properly done, results of such research are **generalizable to entire populations.**

Quantitative research could be classified into **two groups** depending on the data collection methodologies—**experimental** research and **non experimental** research.

The choice of statistical analysis depends on the nature of the research

Experimental Research

Experimental Research forms the basis of much of the psychological research.

The main purpose of experimental research is to establish a **cause and effect relationship (sebab – akibat)**.

Please note that it is only in a properly designedexperimental research that a researcher can establish a cause and effect relationship conclusively.

Non-Experimental Research

Non-Experimental Research is commonly used in sociology, political science, and management disciplines.

This kind of research is often done with the help of a **survey**. There is **no random** assignment of participants to a particular group, nor do we manipulate the independent variables.

As a result, one **cannot** establish a cause and effect relationship through non-experimental research.

There are two approaches to analyzing such data.

First is **testing for significant differences** across the groups (such as IQ levels of participants from different ethnic backgrounds),

while the **second is testing for significant association** between two factors (such as firm sales and advertising expenditure).

TYPES OF VARIABLES

A variable is a characteristic of an individual or object that can be measured.

There are two types of **variables qualitative and quantitative**

Qualitative Variables

Qualitative variables are those variables which differ in kind rather than degree. These could be measured on nominal or ordinal scales.

1. The **nominal scale** indicates categorizing into groups or classes. For example, gender, religion, race, color, occupation etc

2. The **ordinal scale** indicates ordering of items. For example, agreement disagreement scale (1—strongly agree to 5—strongly disagree), consumer satisfaction ratings (1—totally satisfied to 5—totally dissatisfied) etc.

Qualitative data could be dichotomous in which there are only two categories (for example, gender) or multinomial in which there are more than two categories (for example, geographic region)

Quantitative Variables

Quantitative variables are those variables which differ in degree rather than kind. These could be measured on interval or ratio scales.

1. The **interval scale** indicates rank and distance from an arbitrary zero measured in unit intervals. For example, temperature, examination scores etc.

2. The **ratio scale** indicates rank and distance from a natural zero. For example, height, monthly consumption, annual budget etc. SPSS does not differentiate between interval and ratio data and lists them under the label *Scale*.

PEMBAGIAN STATISTIK

The major concern of **descriptive statistics** is to present information in a convenient, usable, and understandable form.

For example, once the data have been collected, some of the frst things that a researcher would want to do is calculate their *frequency*, *graph* them, calculate the *measures of central tendency* (means, medians, modes), calculate the *dispersion* of the scores (variances, standard deviations), and identify *outliers* in the distribution of the scores.

These procedures are called **descriptive statistics** because they are aimed primarily at describing the data.

Inferential statistics, on the other hand, is not concerned with just describing the obtained data.

Rather, it addresses the problem of making broader **generalizations** or **inferences (simpulan)** from the **sample** data to the **population**.

This is the more complicated (rumit) part of statistical analysis, and this will focus on the role that inferential statistics plays in statistical analysis.

REFLEKSI

1. **Informasi penting hari ini**
2. **Manfaat penting dari informasi penting hari ini**
3. **Tindak lanjut yang dapat saudara lakukan**

Thank You!

Any Questions?