

# **RESEARCH PLANNING and DESIGN**

(from Researching Information System and Computing, Practical Research Method, a few lecturer's note and my writing)

# What kind of Ur research?

- Di chapter 1, sudah disampaikan ragam dari research, di antaranya adalah Quantitative or Qualitative Research
- Kind of Ur research → influence the Research methods and Planning/Design of Research
- Research methods are the tools to gather your data  
→ Method for collecting data quantitative has differences in collecting for qualitative data

# Qualitative Research

- Qualitative research **explores attitudes, behaviour and experiences**
- Through such methods as interviews or focus groups. It attempts to get an in-depth opinion from participants
- Fewer people take part in the research
- Ex:
- **Action research** → the researcher works in close collaboration with a group of people to improve a situation in a particular setting.
  - The researcher does not 'do' research 'on' people, but instead works with them, acting as a facilitator

- **Ethnography** has its roots in anthropology
  - The emphasis in ethnography is on **describing and interpreting cultural behaviour.**
  - Ethnographers immerse themselves in the lives and culture of the group being studied
- **Grounded Theory.** It tends to be a popular form of inquiry in the areas of education and health research.
  - The emphasis in this methodology is on the generation of theory which is grounded in the data – this means that it **has emerged from the data**

# Quantitative Research

- Quantitative research generates statistics through the use of large-scale survey research
- Using methods such as questionnaires or structured interviews, etc
- This type of research reaches many more people, but the contact with those people is much quicker than it is in qualitative research

# Research Method

- **Interviewing** → Unstructured, Semi-structured, Structured
  - **Unstructured** or in-depth interviews are sometimes called life history interviews
  - **Semi-structured**, perhaps the most common type of interview used in qualitative social research. the researcher wants to know specific information which can be compared and contrasted with information gained in other interviews
  - **Structured interviews** are used frequently in market research. The interviewer asks you a series of questions and ticks boxes with your response

- **Focus Groups**
  - Discussion groups or group interviews. A number of people are asked to come together in a group to discuss a certain issue
- **Questionnaires** → closed-ended, open-ended or a combination of both
  - **Closed-ended** questionnaires are probably the type with which you are most familiar. Most people have experience of lengthy consumer surveys which ask about your shopping habits and promise entry into a prize draw
  - **Open-ended** questionnaires are used in qualitative research, although some researchers will quantify the answers during the analysis stage
  - Many researchers tend to use a **combination of both open and closed questions**. That way, it is possible to find out how many people use a service and what they think about that service on the same form

- **Participant Observation** → direct observation and participant observation
  - **Direct observation** tends to be used in areas such as health and psychology
  - **Participant observation**, however, the researcher becomes much more involved in the lives of the people being observed



# Research Design

- Plan for getting from the **research question to the conclusion**
- Blueprint for **data collection** and interpretation
- Deals with the **logic of scientific inquiry**
- A **strategy for testing** hypothesis
- Interpretative work
- Understanding phenomenon
- A plan for **conducting scientific research** for the purpose of learning about a phenomenon of interest

- **Overall plan** or framework for the investigation, anticipate all of the subsequent stages of the research process.
- Decision also be made for:
  - Selecting unit of analysis
  - Selecting variable to observed and controlled
  - How to measured variables
  - How to analyze of data
- Good Research Design should rule-out alternative explanations (ada 1<sup>st</sup> research ada 2<sup>nd</sup> research etc)

→ Riset akan menjadi baik, jika pemahaman atas Research Design juga bagus

- Each of these types of research have problems with both **internal and external validity**
- Internal validity is the ability of the research design to provide support for claims about the presence of a **relationship between the independent and dependent variable**
- External validity is the generalizability of the results to non-research or **“real world” settings**

- Classified into three broad categories, according to the amount of control the researcher maintains over the conduct of the research study
- The three general categories are experimental research, field research, and observational research

In general,

- **Experimental research** is high on internal validity and low on external validity,
- **Observational research** is low on internal validity and high on external validity,
- and **field research** has medium levels of both types of validity

# Variable

- **Dependent is** variables that the researcher interested in explaining or describing
- **Independent is** the explanatory variables that do the influencing and explaining, also called predictor variable
- In terms of **cause and effect**, the independent variable is the presumed cause and the dependent variable is the presumed effect
- Ex: when the relationship between educational attainment (years of schooling) and income is studied, educational attainment is the IV and income is DV

- A **variable is quantitative** if its value or categories consist of numbers and if differences between its categories can be expressed numerically
  - Income/salary
  - Age
- **Qualitative variables** have discrete categories, usually designated by words or labels, and nonnumerical differences between categories
  - Gender → male & female
  - Pref → Like & dislike

# Experimental Research

- Researcher **controls the setting** in which the research is conducted (the “laboratory”)
- and also **manipulates the levels of the independent variable or variables**, and follows this by observation of the corresponding changes in the dependent variable or variables
- By controlling the surroundings in which the research is conducted, **the researcher can eliminate some environmental conditions** that might confuse the results



- Independent variable or dependent variables are manipulated and the environmental conditions or the setting of the research is controlled
- ED yg sederhana membutuhkan paling tidak dua variabel dan dua grup peserta yg diobservasi
- Dua variabel → Independent & Dependent
- Dua grup → experimental & control
  - Manipulasi independent variabel dilakukan pada experimental grup, pada control grup tidak dilakukan manipulasi IV

- Hampir semua riset science exacta included informatika menggunakan experimental design
  - Compare algorithm
  - Test speed of collecting data by crawler
  - Application new algorithm

# Field Research

- The researcher retains **control over the independent variables, but conducts the research in a natural setting**, without any control over environmental influences
- the independent variable is manipulated, but the setting is uncontrolled

- Disebut juga riset lapangan, di luar laboratory
  - Pertanian
  - Forestry
  - Informatika → Live video image data collection (still any control)

# Observational Research

- The researcher is **limited to measure**, rather than manipulating the independent variable.
- Like field research, observational research designs exert **no control over the setting** in which the hypothetical process occurs
- **The independent variable is measured under different levels that are the result of natural manipulations**, and the setting is uncontrolled

- Seperti field research tapi perbedaannya pada control, hampir no control oleh periset. Lebih sering digunakan pada social science
  - Tradisi perang suku di Papua → uncontrol
  - Budaya sekaten

# Case Study Research

- Merupakan strategi riset yang **melibatkan investigasi empirik terhadap fenomena tertentu**
- Case dapat berupa sebuah organisasi, komunitas, kota, negara atau orang
- Tidak dapat men-generalisasi kasus
- Ada batasan
- Lebih sering di social science
  - Study cara mengajar ...
  - Dampak penggunaan social network di UNS..