

INTRODUCTION TO RESEARCH METHODOLOGY

What is Research?

- **Definition:**
 - Something that people undertake in order to find things out in a systematic way, thereby increasing their knowledge
- **Characteristics:**
 - Data are collected systematically
 - Data are interpreted systematically
 - There is a clear purpose to find things out

Apa itu Penelitian? (KBBI)

- Penelitian adalah..... “Kegiatan pengumpulan, pengolahan, analisis, dan penyajian data yang dilakukan secara sistematis dan objektif untuk memecahkan suatu persoalan atau menguji hipotesis untuk mengembangkan prinsip-prinsip umum.

More Understanding on What is Research ?

- Research is a careful and systematic process of inquiry to find answers to **problem of interest**.
- Research include: use of **facts**, use of **theories**, **data (fact) analysis**, **sampling**, **doing an experiment**, **going to library to read up on a topic**.
- To do ‘research’ is to **investigate the problem systematically and thoroughly**.
- Goal of research is to **solve ‘problem’ of interest**

A GOOD RESEARCH

GOOD
THEORY

GOOD
DATA

GOOD
METHOD

CONVERGENT
THINKING

CONCLUSIONS

CREATIVITY

DIVERGENT
THINKING

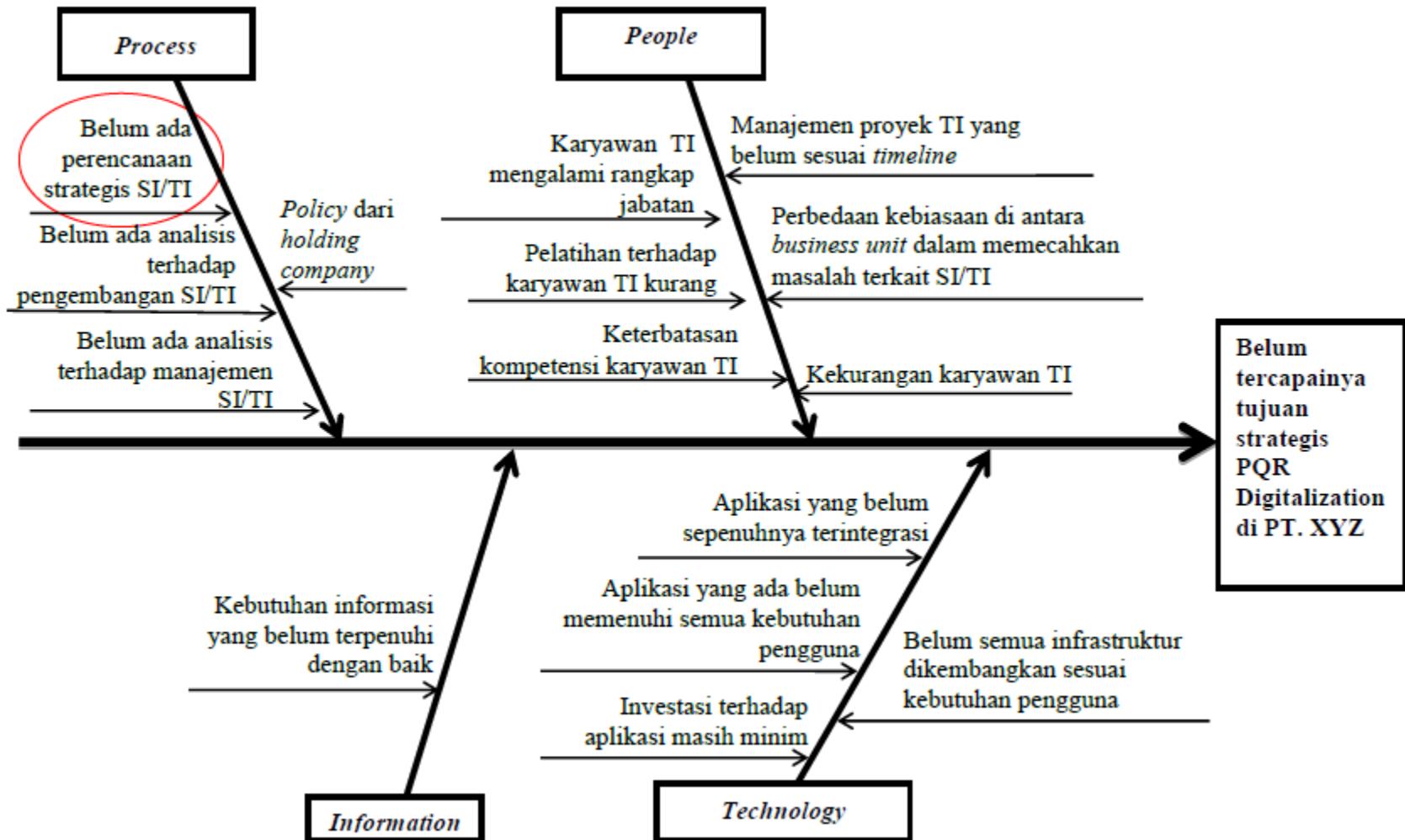


- ANALYSIS
- DECISION
- DESIGN
- ACTIONS
-
-

Mendapat Ide Penelitian

- Publikasi ilmiah
 - Lakukan kritik paper
 - Lakukan kajian terhadap paper tsb dan apakah bisa diterapkan di tempat kita
 - Bagian saran
- Tempat kerja
- Conference
- Topik dari pimpinan atau dosen pembimbing

Identifikasi Akar Masalah Penelitian Terapan



Methods and Methodology

- **Methods :**
 - The techniques and procedures used to obtain data.
- **Methodology :**
 - The theory of how research should be undertaken.
 - Conceptual frameworks and assumptions used to inform

Research Methodology

- A **research methodology will consist of phases, sub-phases, which will guide the** researchers in their choice of the methods, techniques, procedures, tools, etc., that might be appropriate at each stage of the research and also help them plan, manage, control and evaluate the progress of research.
- A research methodology represents a way to do scientific inquiry.

Stages on Research Process

- Formulating and clarifying a topic
- Reviewing the literature
- Designing the research
- Collecting data
- Analysing data
- Writing up

Nature of Research in CS/IS/IT

- Research in CS often requires experimental design as well as theoretical (basic) research
 - We have to have a methodology in order to conduct research CS
 - *Science approach : new knowledge, theory*
- Research in IS often requires system development
 - Hence, we have to have a methodology in order to develop a system (IS/IT system)
 - *Engineering approach: construction of useful products*
 - This IS Development Methodology can be used as a Research Methodology in IS/IT field.
- Research in IT often requires survey of system components

Deductive and Inductive

- **The two main research approaches are :**
- **Deduction–**
 - theory and hypothesis are **developed and tested**
- **Induction–**
 - **data are collected and a theory developed from the data analysis**

Orisinalitas Penelitian

1. Orisinalitas pada Metode yang digunakan
2. Orisinalitas pada Masalah Penelitian
3. Gabungan keduanya

Contoh Kontribusi pada Metode

- **Judul:**
Penerapan Metode XYZ untuk **Pemecahan Masalah Konvergensi Prematur pada Algoritma Genetika** untuk Penentuan Desain Bendungan
- **Kontribusi:** Menerapkan Metode XYZ yang sebelumnya tidak pernah digunakan orang untuk memecahkan masalah konvergensi premature pada Algoritma Genetika

Contoh Kontribusi pada Masalah

- **Judul:**
Penerapan Algoritma Genetika untuk Penentuan Desain Bendungan dengan Enam Parameter
- **Kontribusi:** Penentuan Desain Bendungan dengan Enam Parameter (kebanyakan peneliti menggunakan dua parameter)

Contoh Tanpa Kontribusi

- Penerapan Algoritma Genetika untuk Penentuan Desain Bendungan **di Kupang**
- Penerapan Algoritma Genetika untuk Penentuan Desain Bendungan **di Jember**
- Penerapan Algoritma Genetika untuk Penentuan Desain Bendungan **di Solo**

... and finally ...

- “there is no one best way for undertaking all research”

Latihan: Menentukan Permasalahan Penelitian

- Lakukan gap analysis

| Harapan | Realita | Problem (GAP) | Akar masalah | Tujuan Penelitian | Pertanyaan Penelitian |
|---------|---------|---------------|--------------|-------------------|-----------------------|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

Struktur Proposal Tesis

- Pendahuluan
 - Permasalahan penelitian
 - Tujuan penelitian
 - Ruang lingkup penelitian
- Tinjauan Pustaka
 - Tinjauan Teori yang digunakan
 - Tinjauan Penelitian yang relevan
 - Tinjauan Obyek Penelitian
 - Kerangka Pikir Penelitian
- Metodologi Penelitian
 - Sampling
 - Analisis data
 - Tahapan penelitian

THANK YOU