

# Lecture

## Empirical Model Building and Methods (Empirische Modellbildung und Methoden)

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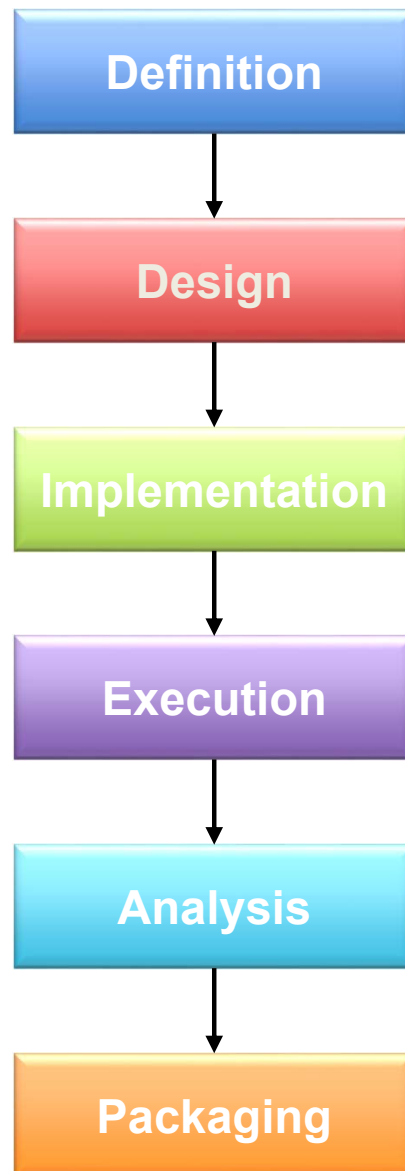
Chapter 3.5 – Execution

# Chapter objectives

**At the end of this chapter, you should**

- know the steps for executing empirical studies.
- understand practical issues concerning the execution of empirical studies.

# Empirical process - Execution



- Run study according to plan and collect required data.

# Execution

**3.5.1 Overview**

**3.5.2 Reactivity effect**

**3.5.3 Recommendations**

## 3.1 Introduction

Definition

## 3.3 Design

## 3.4 Implementation

## Execution

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### 3.5.3 Recommendations

## 3.6 Data analysis

## 3.7 Packaging

**An accurate and detailed design should support the un-biased execution of the empirical study with limited number of threats. But confounding variables may interfere with un-biased execution and influence results.**

## Examples

- During the introduction to the study, a researcher may comment that he or she has developed one of the evaluated methods.
- During the training of the control group, a researcher asserts that the notation is trivial and doesn't explain it.
- The study is performed by students of a certain lecture. During the execution, the lecturer mentions to a researcher that the subjects in the experimental group are the best in class.
- Subjects should design and program algorithms with increasing complexity levels across 6 weekly laboratory sessions. In the 3rd session of the control group, an power failure occurs.
- The time for a study is capped!

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## Rosenthal effect

- Refers to the phenomenon in which **the greater the expectation** placed upon people - often students and employees - **the better they perform.**

## Also named **Experimenter effect**

- Refers to the phenomenon in which participants **adjust their behavior to conform the expectation** of the researcher(s).
- In this case, researchers have indirectly communicated their expectations – e.g. regarding results and hypotheses - to participants.

## Hawthorne effect

- Refers to the phenomenon in which participants **improve or adjust their behavior** simply in response to the fact that **they know they are being studied.**

Third party is advisable!!!

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**(Perform a pre-evaluation)**

**Double blind, i.e., a different researcher is trained for performing the empirical study. He or she does not know the research hypotheses.**

**Provide all subjects identical standardized instructions.**

**If a treatment consist of several tasks to be solved in different sessions, apply them in the same order.**

**Keep identical laboratory conditions, e.g., room, light, noise, work material and temperature**

**Keep identical appearance and attitude**

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## Protocol/record

- All questions, events and circumstances. In particular, unexpected questions, events or situations.
- Subjects' behavior and attitudes.
- Researchers' behavior, attitudes and interventions.

## Keep the protocol up-to-date.

## In the case of interviews and observations,

- Transcribe field notes as soon as possible.
- Analyze intermediate results and use them for improving next field contacts.



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### After the study,

- ask subjects for feedback regarding their motivation, impressions, state of mind, difficulties, personal interest and opinion w.r.t the study and the researcher.
- ask for insights, not for the results
  - Good study design and performance matter!

Previous recommendations are not appropriate for all study types and settings.

# References

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