

90-MINUTE POSTGRADUATE WORKSHOP

Research Design, Sampling & Sampling & Data Collection Collection

How to make, justify and defend Chapter Three methodology choices.

Design & philosophy

Sampling

Instruments

Presenter: Tobit Research Consulting



By the end, students should be able to...

The emphasis is justification, not memorisation.

1

1. Choose a defensible design

Align philosophy, design and method with the research problem, objectives and questions.

2

2. Define who/what is studied

Distinguish target population, accessible population, unit of analysis and unit of observation.

3

3. Select sampling logically logically

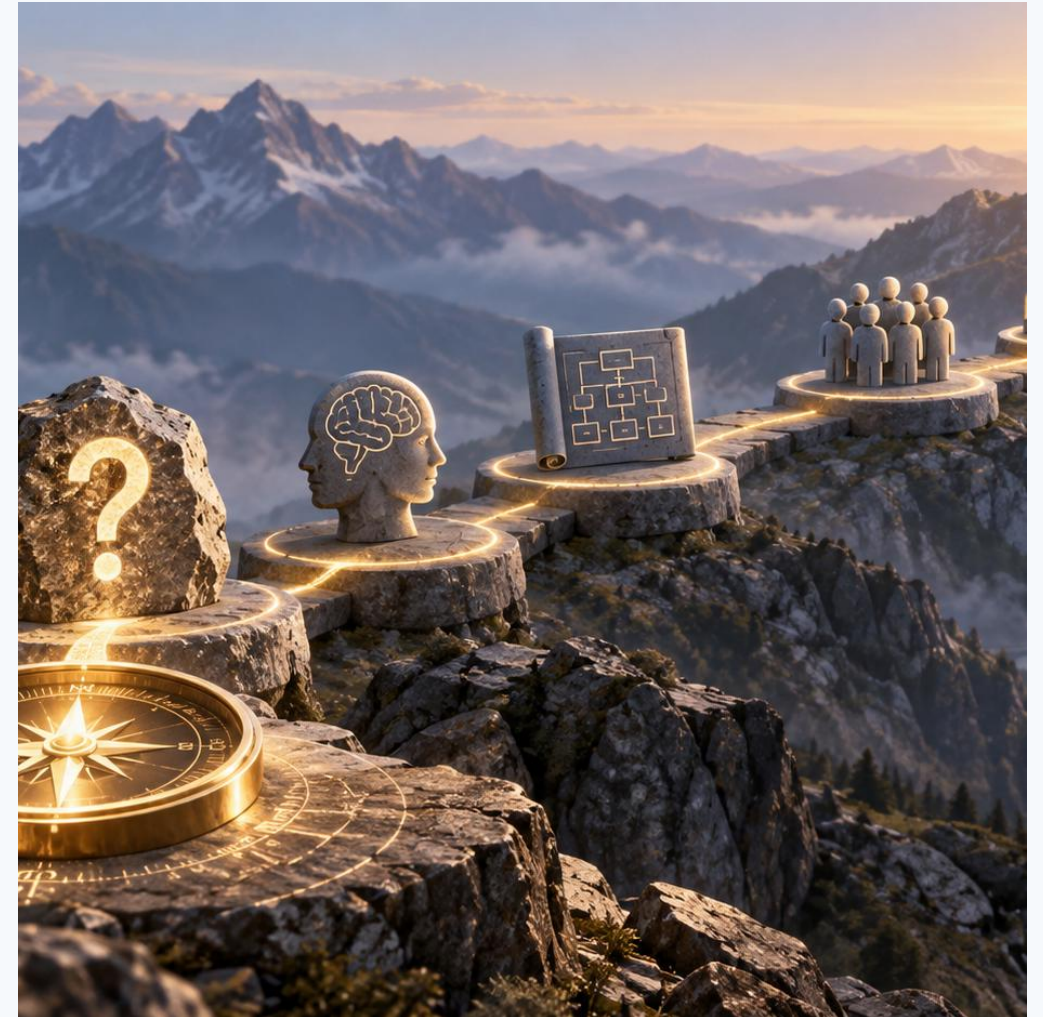
Build a sampling frame, select an appropriate technique, and justify sample size.

4

4. Build aligned instruments

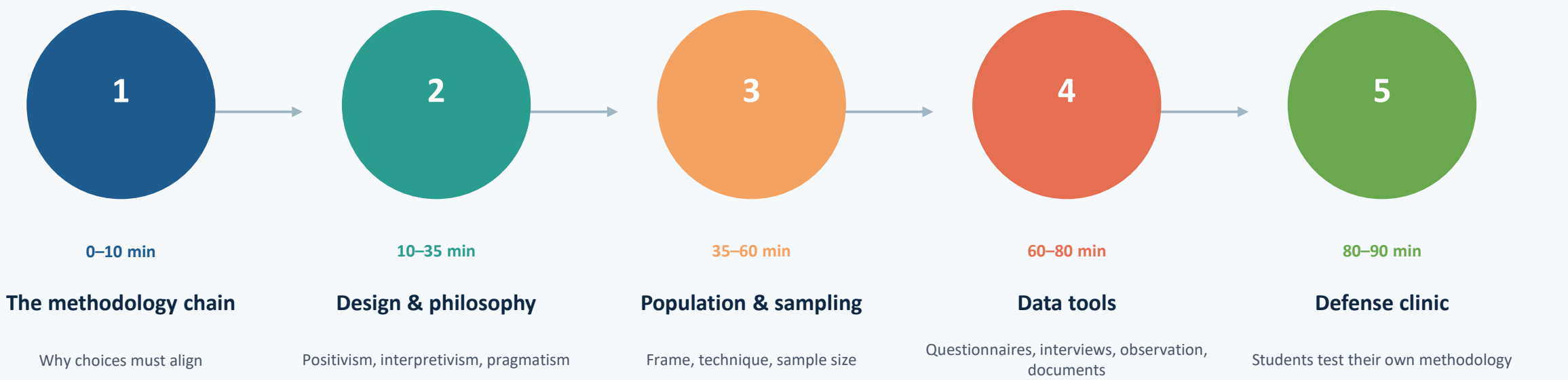
Move from objectives to variables, indicators, questions, measurement and quality checks.

Core message: Methodology is a chain of decisions. A weak link makes the entire study difficult to defend.



90-minute training flow

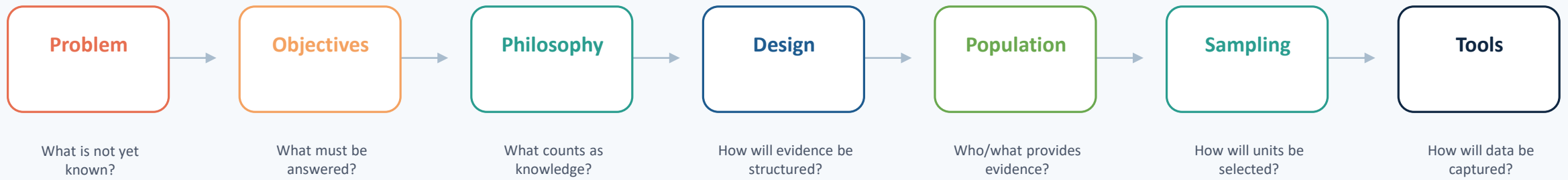
Suggested pacing for a live postgraduate class.



Trainer cue: pause after each block and ask students to apply the idea to their own study topic.

The methodology chain

Each decision should follow from the previous one.



Good methodology is not about using impressive terms. It is about showing why each choice is necessary for answering the study's own questions.

Research philosophy: the lens before the method method

Philosophy explains the assumptions behind how knowledge will be produced.

P

Positivism

Reality is measurable. The researcher tests relationships using structured tools and numerical evidence.

I

Interpretivism

Reality is socially constructed. The researcher explores meanings, experiences and context.

M

Pragmatism

The problem guides the method. The researcher may combine quantitative and qualitative evidence.



Explain philosophy as a lens: the same topic can look different depending on depending on what counts as valid evidence.

Philosophy should match the research question

Do not choose a philosophy because it sounds academic; choose it because it fits the evidence needed.

Positivism

Best question type

How much effect?
Which variable predicts?
Is there a significant relationship?

Typical tools

Survey, secondary data, experiment

Typical analysis

Regression, correlation, t-test, ANOVA

Interpretivism

Best question type

What meaning?
How do actors experience?
Why do people behave this way?

Typical tools

Interviews, focus groups, observation

Typical analysis

Thematic, narrative, content analysis

Pragmatism

Best question type

What works?
What explains the results?
How can a problem be solved?

Typical tools

Mixed questionnaires, interviews, documents

Typical analysis

Integration of quantitative + qualitative evidence

Research design: the plan for producing evidence evidence

Design is the blueprint that connects the question, data and analysis.

1

Descriptive

Describe characteristics, status, practices or opinions.

2

Correlational

Examine strength/direction of relationships.

3

Explanatory

Test effect, prediction, mediation or moderation.

4

Experimental

Manipulate treatment and compare outcomes.

5

Case study

Deep analysis of a bounded case or institution.

6

Mixed methods

Combine numeric trends with explanatory narratives.

Quantitative designs: when measurement is central

Use these when objectives require numerical description, relationships or effect testing.

Common quantitative logic

M

Measure

Variables must be defined and operationalized

R

Compare / Relate Relate

Groups or variables are examined together

I

Infer

Results are generalized or hypotheses tested

Examples: descriptive survey, correlational design, explanatory survey, survey, quasi-experiment, panel data design.



Qualitative designs: when meaning and context are central

Use these when the study seeks depth, experience, interpretation or process understanding.

A Phenomenology

Lived experiences of participants.

B Case study

A bounded institution, event or programme.

C Ethnography

Culture, practices and routines.

D Grounded theory

Developing explanation from data.

E Narrative

Stories, biographies or trajectories.

Quality emphasis

credibility • dependability •
confirmability • transferability

Mixed methods: more than “questionnaire + interview” interview”

A mixed method study must show how the two forms of data connect.



1

Sequential explanatory
Quantitative results first, then interviews explain surprising or important findings.

2

Sequential exploratory
Qualitative exploration first, then quantitative testing or measurement.

3

Convergent
Quantitative and qualitative data collected separately, then compared.

Common methodology mistakes to avoid

These are frequent weak points in postgraduate proposals and theses.

Mistake	Why it weakens the study	Better move
Choosing philosophy after analysis	Philosophy appears cosmetic	Start from knowledge claim and evidence needed
Calling every survey descriptive	Design does not match effect/objective	Use explanatory/correlational when testing relationships
Mixing methods without integration	Qualitative part becomes decorative	Show timing, priority and where data are merged
Copying a method from another thesis	Mismatch with your variables/context	Justify with your own objectives and population

Target population: know exactly who or what is studied

Population decisions must be precise enough for another researcher to locate the same units.

Target population

Entire group to which the study wants to generalize.



Example: all licensed DT-SACCOs in Kenya

Accessible population

Portion available to the researcher based on location, time and access.



Example: DT-SACCOs headquartered in Nairobi County

Sampling frame

Actual list or source from which units are selected.



Example: SASRA register, HR staff list, school roster



Unit of analysis vs unit of observation

Unit of analysis is what you make claims about; unit of observation is where data are collected from. In institutional studies, these may differ.

Sampling: selecting evidence-producing units

The goal is not just to reduce cost; it is to obtain credible evidence from the right units.

Probability sampling

Each unit has a known chance of selection. Best when generalisation and inferential statistics matter.

Non-probability sampling

Selection is based on purpose, access, expertise or referrals. Useful in qualitative and hard-to-reach populations.

Census

When the population is small and accessible, studying all units may be more defensible than sampling.



Probability sampling techniques

Choose based on the structure of the population and required representation.

1

Simple random

Use when a complete list exists exists and units are fairly similar. similar.



2

Systematic

Select every kth unit after a random start.



3

Stratified

Divide into meaningful groups, then sample within each stratum.



4

Cluster

Randomly select naturally occurring groups, then study all or some units within them.



Best practice: name the frame, describe the randomization process and show how many units are drawn from each group where applicable.

Non-probability sampling techniques

Use purposefully, but be clear about limits to generalisation.

1

Purposive

Select participants with specific knowledge or characteristics.

2

Convenience

Select units that are easiest to access. Use cautiously.

3

Snowball

Participants refer others, often for hidden populations.

4

Quota

Fill pre-set categories without random selection.

Defensibility questions

- ◆ Why are these participants information-rich?
- ◆ What inclusion and exclusion criteria apply?
- ◆ How will bias be reduced?
- ◆ When will enough evidence be reached?

Sample size: justify the number scientifically

A sample size is defensible when the method matches the population, design and analysis.

1

Known finite population

Yamane formula, Krejcie & Morgan table, census if small

2

Unknown/large population

Cochran formula or power analysis

3

Regression / SEM / experiments

Power analysis or rules linked to predictors and effect size

4

Qualitative inquiry

Information power, saturation, depth and participant relevance

Never write: “The sample was selected because it was manageable.” Manageability is not a scientific sampling justification.

Worked example: finite population sample size

Use a formula only after confirming the assumptions fit the study.

Yamane formula

$$n = N / [1 + N(e^2)]$$

Example: $N = 350$, margin of error $e = 0.05$

$$n = 350 / [1 + 350(0.05^2)] = 186.7 \approx 187$$

Then explain sampling technique, allocation and expected response response rate.



Data collection tools: choose the tool that fits the evidence

Instrument choice should flow from objectives, variables and the kind of answer required.

1 Questionnaire

Best for structured measurement across many respondents.

2 Interview guide

Best for deep explanation and experiences.

3 Observation schedule

Best for visible behaviour, processes or physical settings.

4 Document review tool

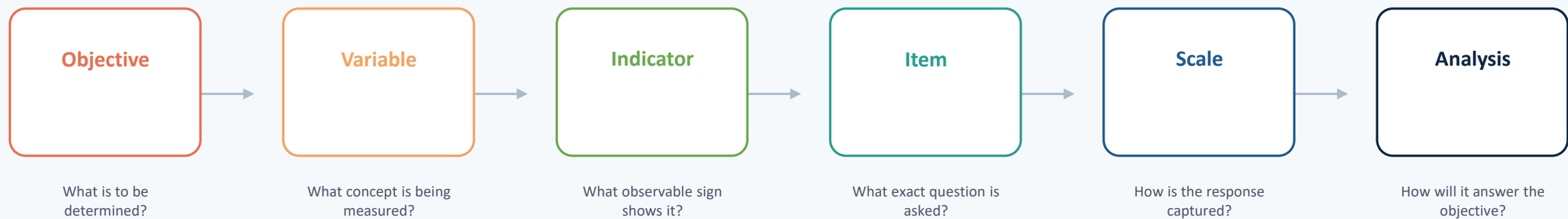
Best for extracting records, policies, reports or archival data.

Key rule: one objective may need one tool, several sections of one tool, or a tool, or a combination of tools.



Questionnaire design: from objective to item

Every item should have a job. Avoid questions that do not feed analysis.



Example: Objective → determine effect of debt collection strategies on NPL ratio. Variable → debt collection strategies. Indicator → reminder frequency, follow-up frequency, follow-up procedure, recovery timelines. Item → “Our SACCO sends loan reminders before due dates.” Scale → 1–5 Likert.

Tool selection matrix

Use the objective verb to guide evidence and instrument choice.

Objective verb	Evidence needed	Suitable tool	Typical output
Determine effect / relationship	Numeric variable scores	Questionnaire or secondary data sheet	Regression, correlation, mean scores
Explore experiences	Detailed narratives	Interview guide	Themes and quotes
Assess compliance/process	Observed actions or records	Observation or document review	Checklist scores or content categories
Explain surprising findings	Reasons behind results	Follow-up interviews	Integrated interpretation

Defending your methodology: five questions

Students should be ready to answer these without reading Chapter Three.

- 1 Why is this research design suitable for your objectives?
- 2 Why is this philosophy consistent with your evidence?
- 3 Who exactly is your population and what is the frame?
- 4 Why is this sampling technique and sample size defensible?
- 5 How do your tools measure the variables or answer the questions?

Live activity: pick one question, answer it in 45 seconds, then improve it using the alignment chain.



Final exercise: the methodology elevator pitch

Each student should leave with a clearer Chapter Three logic.

Complete this sentence

“My study adopts a _____ philosophy and a _____ design because the objective is to _____ objective is to _____. The target population is _____, the sampling frame is _____, and _____, and data will be collected using _____ because _____.”

Suggested methodology references

Useful sources for proposal and thesis Chapter Three development.

- ◆ Creswell & Creswell — Research design: qualitative, quantitative and mixed methods approaches.
- ◆ Saunders, Lewis & Thornhill — Research methods for business students.
- ◆ Kothari — Research methodology: methods and techniques.
- ◆ Sekaran & Bougie — Research methods for business: a skill-building approach.
- ◆ Mugenda & Mugenda — Research methods: quantitative and qualitative approaches.
- ◆ Krejcie & Morgan; Yamane; Cochran — commonly used sample size approaches.

Use references to justify the methodological logic, but always adapt the method to the specific study context.

DISCUSSION

Questions & Methodology Methodology Clinic

Bring one methodology choice you need to defend.

Research design • Philosophy • Sampling • Sample size • Tools

Thank you

