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B.Com Honours

Semester VI

Calicut University

METHODOLOGY FOR BUSINESS RESEARCH

Course Code: COM6CJ306 • Module 2 Notes

Module II: Research Design, Sampling, & Measurement Scales

Covers problem formulation, literature review, sampling design (probability vs non-probability), sample size determination, variables classification, and measurement scales (Nominal, Ordinal, Interval, Ratio).

Unit 5: Research Problem & Hypothesis Formulation

Problem Formulation: Transforming vague business issue into precise researchable question. Hypotheses: Testable propositions (\$H_0\$: Null Hypothesis of no effect vs \$H_1\$: Alternative Hypothesis).

Unit 6: Literature Review & Research Gap

Literature Review: Critical evaluation of existing published scholarly research. Purpose: Synthesize current knowledge, establish theoretical background, & identify unaddressed "Research Gaps".

Unit 7: Research Design, Sampling Techniques, & Sample Size

Probability Sampling: Every population element has known non-zero chance of selection (Simple Random, Stratified, Systematic, Cluster Sampling).

Non-Probability Sampling: Selection based on subjective judgment (Convenience, Purposive, Quota, Snowball). Yamane Sample Size Formula: $n = \frac{N}{1 + N(e)^2}$.

Unit 8: Variables in Business Research

Variable Typologies: Independent Variable (Cause/Predictor), Dependent Variable (Effect/Outcome), Moderating Variable (Alters relationship strength), & Mediating Variable (Explains causal mechanism).

Unit 9: Measurement & Scaling Techniques (Nominal to Ratio)

Four Levels of Measurement:

1. **Nominal:** Labeling/Classification (Gender, Dept).
2. **Ordinal:** Order/Ranking (Rank 1st, 2nd, 3rd).
3. **Interval:** Equal intervals, arbitrary zero (Temperature, 5-point Likert Scale).
4. **Ratio:** Absolute true zero point (Income, Height, Sales Volume).

Practical Solved Problem 1 (Taro Yamane Sample Size Calculation): Target population \$N = 10,000\$ retail investors. Desired margin of error \$e = 5\%\$ (0.05). Calculate minimum required sample size (\$n\$).

Yamane Formula: $n = N / [1 + N * (e)^2]$

Step-by-step Solution:

1. Population \$N = 10,000\$, Margin of Error \$e = 0.05 \implies e^2 = 0.0025\$.
2. Denominator Calculation = $1 + 10,000 \times 0.0025 = 1 + 25 = 26$.
3. Sample Size $n = \frac{10,000}{26} = 384.61 \approx \mathbf{385}$ respondents.

Practical Case Framework 2 (Four Levels of Measurement Scales Comparison Matrix): Compare scale level, mathematical properties, allowable statistics, and business example.

Measurement & Scaling Hierarchy Table:

Scale Level	Mathematical Properties	Permissible Statistics
Nominal Scale	Classification & identity only	Mode, Frequency Percentages, Chi-Square
Ordinal Scale	Classification + Relative Rank Order	Median, Percentiles, Rank Correlation
Interval Scale	Classification + Rank + Equal Distance	Mean, Standard Deviation, Pearson r, t-test
Ratio Scale	Class + Rank + Equal Distance + True Zero	Geometric Mean, Coefficient of Variation

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