KOM 5113: Communication Research Methods
(Second Face-2-Face Meeting)

Siti Zobidah Omar, Ph.D.
zobidah@putra.upm.edu.my
Second Semester (February), 2012/2013
Issues concerning measurement

- Precision and accuracy
- Reliability and validity
- Levels of measurement
- The use of several measures
- How measurement was conducted
- Who conducted the measurement
- What is the standard
Precision and accuracy

- Precision concerns the fineness of distinctions made between the attributes that compose a variable.
- Exact precision is not always necessary.
- Accuracy represents what is actually there in the real world.
- Precise and accurate measurement will provide data are for quality research.
Reliability and validity

- Reliability refers to the likelihood that a given measurement procedure will yield the same description of a given phenomenon if the measurement is repeated.
- A particular technique applied repeatedly to the same object would yield the same result each time.
- Related to random error.
* researcher-worker reliability – train enumerators, practice, supervise data collection

- Reliability for statements can be determined by computer application
- Normally alpha value of .7 and above are accepted as reliable measure
Validity refers to the extent to which a specific measurement provides data that relate to accepted meaning of a particular concept being studied.

It is the extent to which an empirical measure adequately reflects what is meant and is being measured.

Related to systematic error.
For any measurement to be valid, it must first demonstrate reliability. As such, the measurement is no more valid than it is reliable.

We need to develop measure to be both reliable and valid in order to get reliable and valid data for quality research.
Levels of measurement

- Need to know for analysis purposes
- Refer to the specific objectives of the study
- Statistical procedures require specific level of measurement
- May combine the level of measurements in a questionnaire set, but each question must have its own level of measurement
- When possible, use the highest level of measurement
Four levels of measurement:
* nominal – categorization, naming, labels
* ordinal – ranking along some progression
* interval – ranking with uniform distance btw them, zero does not mean absence of
* ratio – ranking with uniform distance and have true zero. Highest level of measurement
Indexes and scales

- Both are ordinal measures of variables
- Both rank-order the units of analysis in terms of specific variables
- A person score on either a scale or an index gives an indication of his/her relative ‘higher/lower position’ with other people
- Both are composite measure of a variable, i.e. measurements based on more than one data item
- An **index** is constructed simply by **accumulating scores** assigned to individual attributes

- A **scale** is constructed by **assigning scores** to pattern of responses, recognizing that some items reflect a relatively weak degree of the variable while others reflect something stronger – take advantage of intensity
Example:

- Likert scaling – a measurement used to determine the relative intensity of different items. It is used in creation of simple indexes. Normally used for ‘strongly agree’ (score of 5 or 4) and ‘strongly disagree’ (score of 1 or 0). Some researchers recommend the use of 7 level instead of 5 for more ‘interval like’ measure.
The use of several measures

- Necessary for validity and reliability check
- For some specific crucial variables, not all
- Depending on the resources available such as time, manpower and money
- For example, conduct survey and on-site observation, followed by focus group interview or interview the ‘chief,’ and verify the information through relevant documents
How measurement was conducted

- Getting data through personal, face-to-face interview with the respondents is highly recommended so that all questions are answered and probing can be done. Besides this, additional data can be gathered and verification can be conducted through observations.
Who conducted the measurement

- The researcher is the best person to conduct the measurement as he/she knows best
- If enumerators were to be employed, then adequate training must be given
- If the third party is involved in conducting the measurement, it must be qualified and familiar with the procedures – check past records
What is the standard

- Difficult to determine
- Take stock on what and how other researchers had done it before, what is common or widely used
- Be sensitive to the strengths and limitations of particular measurement procedures
- Taking all these, what is the best we can do
Population and sampling procedures

- Population is the entire group being observed
- Almost always assumed to be infinite in size, too large and difficult to measure
- The total collection of all cases in which the researcher is interested and wishes to understand
- Sometime known as universe
Representativeness – a sample is representative of the population from which it is selected if the aggregate characteristics of the sample closely approximate those same aggregate characteristics in the population that are relevant to the substantive interest of the study.
There are probability and non-probability sampling

Probability sampling is done to cater for randomization – the application of the principles of random sampling to a chunk from a population in which a number of equivalent groups are to be established whose differences from one another can be only attributed to chance
Four types of random sampling techniques:
- Simple random sampling (SRS): a method of choosing cases from a population by which every case has equal chance of being selected independently. Most commonly used in research. Requires complete population list. E.g. use of random number table, numbers in hat.
- Systematic sampling: a method of sampling by which the first case from a list of population is randomly selected and then every $k^{th}$ case is selected. Also requires a complete population list. Sampling interval = population size/sample size
- Stratified sampling: a method of sampling by which cases are randomly selected from sub-lists of the population. The sampling plan can be either proportional or disproportional. Stratification depends on variables and select sample from each strata randomly. Requires a complete sub-list of the population or stratum
- Cluster sampling: a method of sampling by which geographical units are randomly selected and from selected areas, randomly select samples proportionately. Requires a complete list of geographical units.
Non-probability sampling is done according to certain criteria – the best possible way

- The samples must be independent
- There should be adequate number of sample
- Results cannot be generalized to the population
Types of non-probability sampling:
- Purposive or judgmental sampling: a method of sampling based on certain judgment or specific purpose
- Quota sampling: a method of sampling to include proportionate number of all parties involved
- Convenient sampling: a method of sampling done as one pleases and feels appropriate
- Volunteer sampling: a method of sampling done based on those who likes to participate
- Snowball sampling: a method of sampling done by getting suggestion for next sample from a current sample
Research instrument development

- Done in getting the data
- Typical categories of data:
  - primary data: first hand, original, direct form respondents, directly related to problem, objectives, variables, and cost more
  - secondary data: work has been done on the data, cost less, try to fit in what is available
- quantitative data: related to numbers and measurement is easy
- qualitative data: related to values, emotion and subjective, measurement is relatively difficult
- discrete data: a fixed quantity or attributes
- continuous data: amount can be further defined, fractions or decimals make sense
Research instrument or questionnaire is needed for:
- uniformity across respondents
- replicable
- the exact information needed according to objectives and variables
- ease of data collection, process and analysis
In designing research instrument, consider:
- respondents of the study
- methods of data collection
- the amount of data
- resources in terms of money and personnel
- the time needed to complete data collection
- the flow of questions
In formulating questions in the research instrument, consider:
- the research problem, research questions, objectives, hypotheses and variables of the study
- the statistical procedures for data analysis
- the level of measurements
- background information of the respondents
- the category of data required
- match the question(s) to research objectives, hypotheses and variables
- reliability and validity of data
- the language used to solicit response as well as to avoid confusion
Types of questions

- Closed-ended questions
  - Choose one or more from list
  - Yes, no
  - Easy to analyze
  - Quantitative

- Open ended-questions
  - Fill in the blanks
  - Others
  - Qualitative
Experience or behavioral questions
  - Related to what they had done in real life

Opinion or value questions
  - Related to their thoughts and views

Feeling questions
  - Related to their emotional reaction to certain thing
Knowledge questions
- Related to what they know, right or wrong

Reportorial questions
- Related to what they see, read, hear or talk about

Devil’s advocate questions
- Related to their views on controversial issues

Hypothetical questions
- Related to their speculation about alternative occurrences
For closed-ended questions regarding knowledge:
Response – Right  Wrong

attitude:
Response – Agree ... Disagree

practice:
Response – Always ... Never
Respondents of a study

- Source of primary data for the study
- Unit of analysis – individuals, organizations, etc.
- Also known as informants
- Must be identified or determined early
- Must get their consent for pre-testing and data collection – research ethic
- Refer to RQs, ROs and variables for the nature or types of respondents required
Techniques of data collection

- Also known as research design
- How data is going to be collected after the sample had been determined and research question had been developed
- Always conduct pre-test or pilot study of the research instrument before actual data collection
Pre-test is conducted to fulfill the followings:
- check the RI in terms of organization, flow, numbering, timing, understanding, etc.
- will get the actual data?
- the respondents must be similar to sample
- the number of respondents around 30
- do analysis to see results
Observations

- Structured vs. unstructured
- Participatory vs. outside
- Full cycle vs. snapshots
- Written records vs. visual records
- Inputs from informants vs. own judgment
- Individual vs. group
Survey methods

- Most often used in communication research
- Convenient method for gathering descriptive data from large representatives of population
- A straightforward method – ask questions, record answers and analyze data
- Use of research instrument that was specifically developed or standard questionnaire
Data collection for survey method can conducted by researcher or enumerators – called researcher-administered questionnaire:
- done in face-to-face interview or telephone
- the researcher or enumerator asked questions to the respondents and fill in the answers
- help respondents in minimizing error, high return
- can probe for more information and do observation
Another method is self-administered questionnaire – the respondents answer the questions by themselves:
- questionnaire distributed in advance through mail or dropped at locations
- respondents answer the questionnaire at their own discretion
- suitable for sensitive variables and questions require facts and accurate information
- low response rate, thus follow-ups must be done through remainders or telephone calls
- indicate collection time and provide stamped self-addressed envelopes
- have someone to coordinate at the location for drop and pick up technique
- cover letters and letter of consent must be sought from relevant authority to enhance return
Can conduct group interview to collect data – researcher reads the questions and respondents fill in the answers:
- helps in speeding data collection
- better return
- group safety, anonymous
- can probe for more information and conduct observation
It is common to give respondents a token of appreciation as a way to say thank you. Give after data collection and make sure they are not aware about it – element of surprise.

Data collection needs to be planned: make arrangement for place, appointment with relevant authority and with the respondents.

If it involves agency, prior approval is a must.
Enumerators need to be trained before they are sent for data collection.

They should be aware of the goals of research and methods of data collection.

Familiarize them with the research instrument.

Let them practice in administering interview as unskilled interviewer can destroy the validity and reliability of a well-designed research instrument.
The following skills need to be emphasized:
- establishing rapport with respondents
- introducing him/herself
- ways in asking initial questions, rephrasing questions and probing for more information
- ways to listen with interest
- ways to record responses
- ways to end interview session
For directive interviews, the interviewer reads questions to respondents clearly and accurately, then record their answers.

For non-directive interviews, the interviewer phrase questions appropriately for specific respondents, know when to direct respondents, know when the interviewer can interject, and know when and how to probe for more information, then record their answers.
Advantages of interviews:
- can increase depth of response by probing
- can clarify questions to respondents
- can encourage full participation
- can observe respondents’ demographic features
- can detect non-verbal responses
- can enhance response rate
- can reach remote respondents through telephone
Experimental methods

- Conducted to test or find out the causal effect of independent variables on dependent variables
- Usually conducted in laboratory or controlled environment created by the researcher
- Elements of treatment or manipulation and control are normally present
Types of experimental design include:
- full or true experimental design
- quasi-experimental design
- pre-experimental design
- factorial design

Content analysis

- A research technique for making references by systematically and objectively identifying specified characteristics within a text
- A method for studying mass mediated and public messages
- The main goal of CA is to describe the characteristics of messages embedded in public and mediated text
Sometimes regarded as true communication research as it involves directly with media, media contents and messages – texts, photos, pictures, scenes, advertisements, etc.

CA involves studying information or materials already existed, not bounded by structured questionnaire, and can handle massive data with the help of computers.
Steps in CA:
- decide to use CA
- determine what material should be included
- select units of analysis
- develop coding categories
- code the material
- analyze and interpret the results
A CA report should consist:
- the study objectives, and justification of the choice of data, methods, and design
- a description of the procedures including sampling, units of analysis, coding instructions, results of inter-coders reliability test, procedures for data handling and analysis, and efforts at validating the procedures, and
- the findings and their significance contribution
Focus group

- Usually conducted to complement other data collection methods
- If done before data collection, the purpose is to get inputs for statement of problems, research questions, research objectives and major variables of the study
- If done after data collection, the purpose is to get in-depth data, make observations, and verify information
- Need a group of about 10 people, somewhat similar to respondents of the study
- Need to be facilitated by someone who knows about the research – facilitator needs to be trained to guide discussion, probe for information, and capture the main points
- Ought to have key questions to start the discussion and everyone should be given the chance to participate
It is recommended that the session is recorded – video and/or audio

- Good to have someone to record the interaction so that the facilitator can focus on discussion

- Stop when no new information is generated or saturation point is reached, look for non-verbal signs or clues

- Do not forget to give token of appreciation
Data analysis

- Developing coding scheme
- Data processing
- Data entry
- Data cleaning & transformation
- Data analysis
- Interpretation of results
Developing coding scheme

- Use question number as variable (name)
- Assign variable label accordingly
- Assign value label accordingly
- E.g. 1. What is your gender?
  - [  ] Male [  ] Female
  Variable name = Q1
  Variable label = gender
  Value label = 1 = male; 2 = female
E.g. 2. Choose three TV programs that you like:  [  ] Sports  [  ] Dramas  [  ] Music  
[  ] Movies  [  ] Serials  [  ] Cartoons
Variable name = Q2a; Q2b; Q2c ...
Variable label = Sports, Dramas, Music ...
Value label = 0 = not selected, 1 = selected
E.g. 3. How long do you watch TV in a week?

______________ hours

Variable name = Q3
Variable label = Hours watching TV/week
Value label = actual numbers
Data processing

- Done once questionnaires are collected
- Sort questionnaires according to location, date, respondents groups, etc
- Count and number the questionnaires
- Check for missing page, answers
- Check for outlier, unexpected response
- Check for open ended-questions and code
Data entry

- Done after data had been processed
- Done according to the code book
- Manual entry or optical scan sheet
- Save data regularly
- Run frequency after all data had been entered
Data cleaning & transformation

- Check at frequency run print-out
- Consult code book
- Check for ‘unwanted’ responses
- Revise wrong entry
- Transform data according to research questions, objectives and statistical requirement
- Transform ratio data into ordinal
- Form new variables by combining variables
- Collapsing responses into fewer categories
- Forming an index or score
- Give new name to new variable so that original data is still in tact
- Use compute or record to create new variable
Data analysis

- Done after the data had been cleaned
- Refer to the objectives of the research
- Statistical procedures according to the level of measurement: nominal, ordinal, interval and ratio, and continuous or discrete data
- Descriptive statistics vs. inferential statistics
- Do not over analyze the data
Descriptive statistics

- Basis for all statistical procedures
- To examine data distribution and decide on advanced statistical procedures
- Describing, explaining and summarizing the findings or data
- Use measure of central tendency (MCT): mode, median and mean
- Use measure of dispersion (MD): range, standard deviation and variance
- Use of maximum, minimum, percentages, frequencies, proportions and ratio
- Use cross-tabulation to show relationship
- Use tables, graphs, charts to present findings
Inferential statistics

- There should be hypotheses to be tested
- Data should fulfill statistical test requirement
- To generalize findings to the population
- To infer to make prediction
- Use parametric statistics: t-test, ANOVA, regression, factor analysis, pearson corr.
- Use non-parametric statistics: chi-square, Mann-Whitney U-test, spearman corr., Kruskal Wallis test
Interpretation of results

- Construct tables to summarize data to answer research objectives
- Explain or highlight what is the main finding
- Relate finding to theory, past research
- State the probable cause of the finding
- Comparing percentages is better than frequencies or numbers
Need to combine a number of questions to answer the objective, construct tables

The order of findings not necessarily follow the order in the questionnaire

List ‘big’ value or positive statement first in the table

Discuss the findings and make conclusion based on the findings
That's all, see you in third face-to-face