

Elements of Research : The research process

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Research Objectives

- Different research activities are conducted in various purposes
- Gain familiarity with a new phenomenon or develop new insight in to a phenomenon (नयाँ घटनासँग परिचितता, घटनामा नयाँ अन्तरदृष्टि विकास)
- Review and synthesize the existing knowledge (अवस्थित ज्ञानको समीक्षा र संश्लेषण गर्नु)

Example: TV, Computer

- To **portray** accurately the characteristics of a particular individual, situation or group (एक विशेष व्यक्ति, स्थिति वा समूहको विशेषताहरू सही रूपमा **चित्रण** गर्न)

Research Objectives

- Generate new knowledge
- Explore and analysis more general issues
- Improving the understandings on misunderstood phenomenon.
- Application testing: validity and reliability (वैधता र विश्वसनीयता)
- Helping in decision making

Characteristics Scientific Research

1. Purposiveness: Scientific Research has a specific goal and well-defined purpose
2. Objectivity
 - Research with out bias
3. Reliability
 - It means consistency (getting same and similar results), can be termed as verifiability

Characteristics Research

4. Validity

- Stands for accuracy of procedures, research instruments, tests etc.

5. Accuracy

- Degree to which research process, instruments and tools are related to each other

Characteristics Research

6. Generalizability

- Degree to which research findings can be applied to a larger population

7. Replicable

- नक्कल गर्न मिल्ने
- Results of research can be verified

8. Research is systematic process

9. Research requires **patience and courage** - धैर्य र साहस

10. Research is based upon observation and experiments

11. Research **is directed towards solution of problem**

Characteristics of Good Researcher

SEARCH

S- Scientific वैज्ञानिक

E-Efficient, Effective, Economical कुशल, प्रभावकारी, आर्थिक

A-Active

R- Research oriented, Resourceful अनुसन्धान उन्मुख

C- Creative रचनात्मक

H- Honest इमानदार

Characteristics of Good Researcher

1. Intellectual Curiosity

- A good researcher undertakes a deep thinking and inquiry of the things and the situations around him

2. Prudence-विवेक

- The researcher is careful to conduct his research study at the right time and at the right place wisely, efficiently and economically (अनुसन्धानकर्ताले आफ्नो अनुसन्धान अध्ययनलाई सही समयमा र सही ठाउँमा बुद्धिमानी, प्रभावकारी र आर्थिक रूपमा सञ्चालन गर्न सावधान)

Characteristics of Good Researcher

3. Healthy Criticism

- The researcher is always doubtful as to the truthfulness of the results-नतिजाको सत्यतामा अनुसन्धानकर्ता सधैं शंकालु

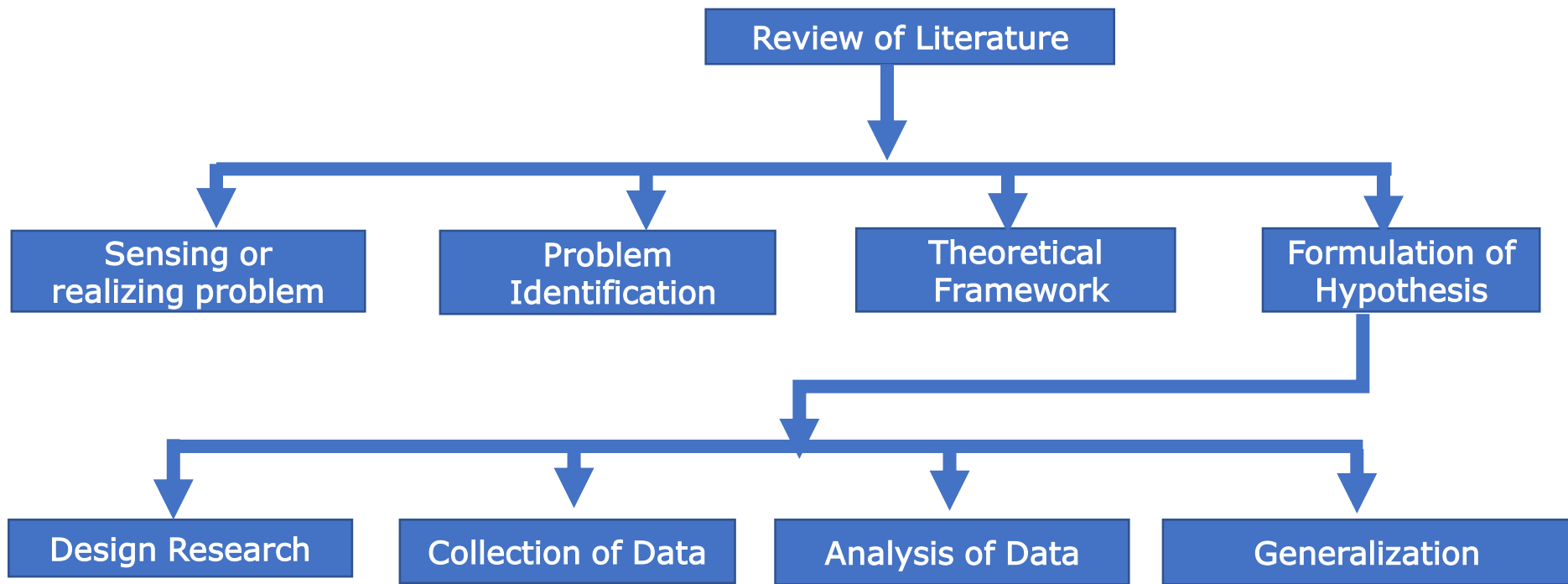
4. Intellectual Honesty

- An intelligent researcher is honest to collect or gather data or facts in order to arrive at honest results

5. Intellectual Creativity

- A productive and resourceful investigator always create new researches

Scientific Research Process



Scientific Research Process

1. Sensing or Realizing Problem

- The first step in any scientific inquiry is observing the situation and sensing the problem
- New problems keep on emerging on the environment

We somehow sense these developments occurring in the environment

- At this stage, we may not know exactly what is happening but we can definitely sense that things are not going on as smoothly as they should be

Scientific Research Process

- Researcher should realize and be worried with such problem
- Realization can be made through feeling, study, experience and observation
- If researcher is not able to find out the problem then he/she can feel the difficulty in the environment

Scientific Research Process

2. Problem Identification

- On observing carefully over something in the environment we would find many problems that are affect the environment
- Researcher try to identify what exactly are the problems in the situation
- The factors associated with the problem are also identify
- At the beginning of the process the researcher must single out the problem he/she wants to study

Scientific Research Process

- Researcher should find out the problem and its causes through the collection of information and analysis of situation
- For example, if the sales of an organization is decreased then decrease in the sale is symptom so the researcher should find out the causes of decrease in the sales. It may be due to lack of motivation, incompetent sales force etc.
- How to enhance the competence is the research problem

Scientific Research Process

3. Review of literature

- Literature review refers to the study of previous research and documents
- Researcher should find out the study gap from the review of literature
- It simultaneously helps to develop theoretical framework

Scientific Research Process

Theoretical Framework

- Third step of scientific research
- We make to an attempt to integrate the information logically so that the reason for the problem can be conceptualized
- The critical variables are examined and the association among them is identified
- Putting all the variables and their association together, a theoretical framework is developed

Scientific Research Process

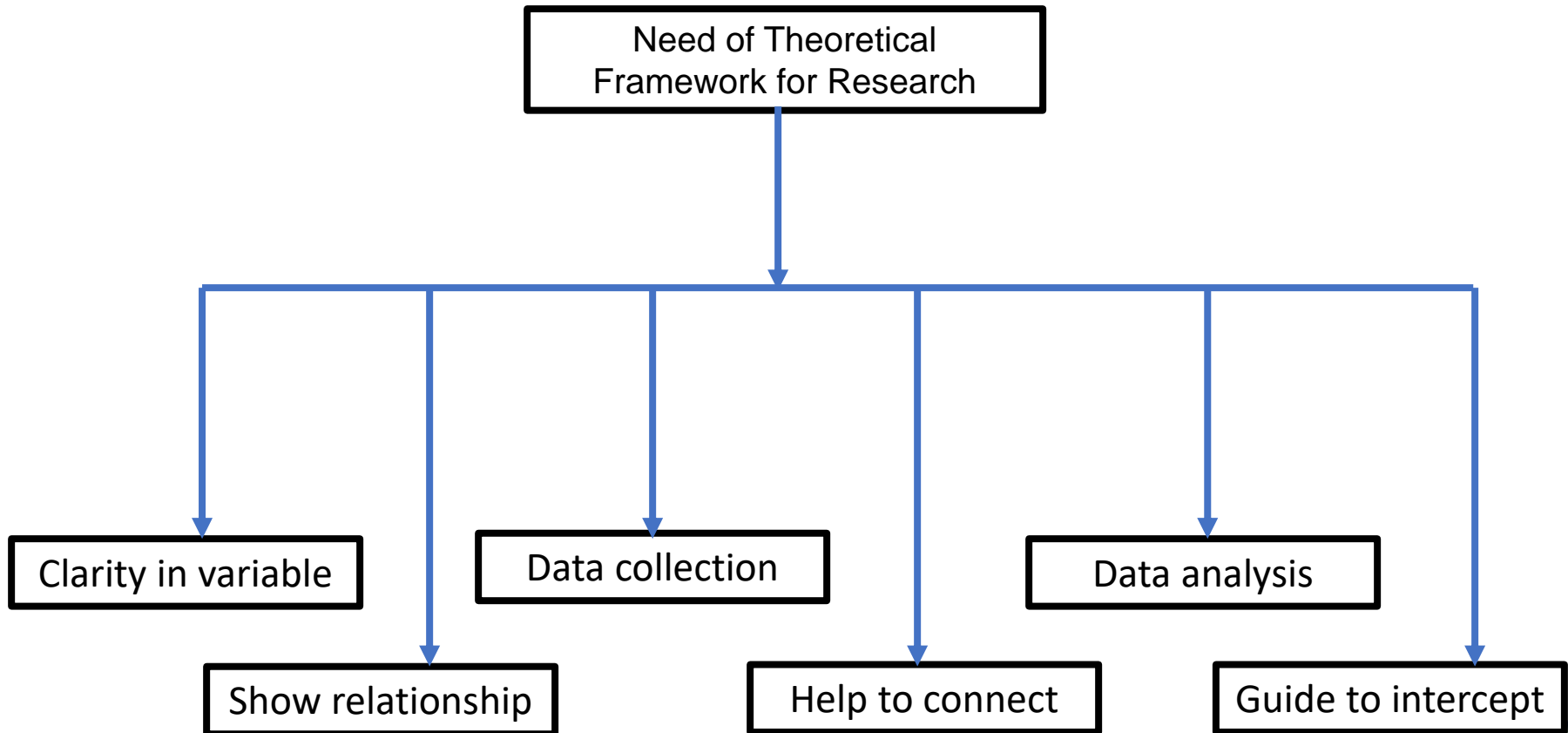
Needs of Theoretical Framework

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Scientific Research Process

Needs of Theoretical Framework

- Therefore, theoretical framework identifies the variables states the relationship of two or more variables and reasons of expecting such relationship.



Scientific Research Process

1. Clarity in variable

- Theoretical framework defines variables used in the research clarifying major measuring factors of the variables.
- Such factors help in clarifying the variables

2. Data collection:

- Theoretical framework provides guideline about the nature of data required i.e. primary and secondary data.
- It also helps to develop questionnaire for data collection.

Scientific Research Process

3. Data analysis

- A relationship presented by the theoretical framework helps to choose the tools that are most suitable for the analysis of data.

4. Show relationship:

- It present the tentative guess relationship between dependent, independent, moderating and intervening variables based on previous theory.

Scientific Research Process

5. Help to connect with theories

- It connects to the present research work with the previous theories.
- Theoretical framework is prepared based on previous theories and it is tested to see whether the relationship is accepted or rejected.
- Thus it helps to connect theory with the present research work.

6. Guide to intercept:

- It guides to intercept the results in cohesive manner.
- It helps to consider possible framework and reduces biasness that may be seen in the interception

Scientific Research Process

4. Hypothesis Formulation

- In the fourth step of scientific research, hypothesis are formulated
- A hypothesis is not simply a guess ! It's a statement of what we believe will happen based on the information we have collected
- From our hypothesis, we would able to predict the results.
It helps to solve our problem
- Our hypothesis has to help us get closer to the right result

Scientific Research Process

- Hypothesis are logically conjectured (अनुमान गरिएको) relationship between 2 or more variables expressed in the form of testable statements
- Hypothesis are drawn from the theoretical framework as developed in step III

Scientific Research Process

4. Hypothesis Formulation

Example: An investigator is interesting to study about the relationship between the performance of graduate products of Pokhara University (CM) and Tribhuvan University (CM)

1. Null Hypothesis (H_0): There is no significant difference in the performance of CM products of two university
2. Alternative Hypothesis (H_1): The performance of CM products of PU is higher than that of TU

Scientific Research Process

- H_0 is defined as statistical hypothesis and is the default or original. H_0 is a hypothesis which the researcher tries to disprove , reject or nullify.
- Null often refers to the common view of something while the H_1 is what the researcher really thinks is the cause of phenomenon
- Hypothesis may not be always accepted. Sometime, it may be rejected. Hypothesis helps to systematize the results and draw conclusions

Scientific Research Process

5. Research Design

- Research design is a framework of research
- Research design is the conceptual structure **within which the research would be conducted**
- Main purpose of selecting a research design is to provide the **collection of relevant evidence with in less time, cost and effort**
- Selection of research design depends upon the research purpose (research objectives)
- Research design is prepared before initiating research

Scientific Research Process

6. Collection of Data

- Collection of information on the basis of research problem and objectives is referred as data collection
- It is the work performed in the field/outside the organization
- Success of research depends largely on data collection
- Reliable (भरपदो) data collection helps to draw reliable conclusions
- In dealing with any problem it is necessary to collect adequate and appropriate data

Scientific Research Process

- At this stage, the researcher has to administer the research instruments (questionnaire, interview schedules, observations schedules etc) to gather data as expected in step I
- Depending upon the nature of the problems either primary or secondary data are collected
- Generally for most research primary data are appropriate

Scientific Research Process

7. Data Analysis

- After the data have been collected, the researcher analyzes the those data
- A researcher should **classifies** all the collected data and information on the basis of their feature and nature
- **Classified data are then codified, tabulated and presented in the chart and tables**
- **Such presented data are analyzed using mathematical, statistical, financial and accounting tools**

Scientific Research Process

- By using various statistical measures the data are analyzed
- After analyzing the data, the researcher's next job is to test the hypothesis which he had formulated earlier
- Hypothesis may be tested through different statistical tests such as t-test, ANOVA test, Shapiro-Wilk test, Kruskal-Wallis test etc

Scientific Research Process

8. Generalization

- Final step of scientific research process
- Research should give answer to research questions
- Researcher develop report incorporating all the procedures and findings so as to inform to the outsiders.
- Such conclusions of research are applied in all the similar organization which is regarded as generalization

Scientific Research Process

- If a hypothesis is tested, it may be possible for the researcher to arrive at certain generalizations
- If his research had no hypothesis to start with, he/she would be explaining his finding, on the basis of some theory (also known as interpretation)

Thank You.
for listening.....