HARAMAYA UNIVERSITY

SCHOOL OF AGRICULTURAL ECONOMICS AND AGRIBUSINESS

AGRIBUSINESS AND VALUE CHAINS PROGRAM

RESEARCH METHODS IN

AGRIBUSINESS AND VALUE CHAINS

(*ABVM 552*)

COURSE MODULE

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Introduction

Dear students, this course module is written to overcome the prevailing shortage of reference source for research methods course for Master of Science in agribusiness and value chain management. The module aims to support the intellectual and research development of post graduate students in agribusiness and value chains and to add value to your research degree experience. Currently, there is a recognition that training in research skills and techniques is a key element in the development of a research student. To this end, research methods training is believed to provide the broad context for research and general training in research philosophy, design, techniques and methods.

Hence, this standalone module is prepared to deliver the course with a progressive logic, which means that it has been designed to illustrate research tools in a simple manner in a number of areas including formulating research problem and questions, research design, drafting proposal, data analysis and writing up and communicating the research results with emphasis on value chain analysis and modelling. The implication is that it is mandatory for you to go through all chapters of this module including self-check questions, review and discussion questions, learning activities and case studies to be able to develop the needed research skills.

Course Objectives

Upon completion of this module, you will be able to:

- Identify researchable problems in agribusiness and value chain,

- Turn research idea into clear research questions and objectives,

- Draft sound research proposal,

- Conduct formal and informal survey,

- Apply skills of collecting, summarizing and analyzing data,

- List research processes, methods and analytical techniques required to support postgraduate research; and

- Write research reports in agribusiness and value chain.

Mode of Course Delivery

The mode of delivery for this course will mainly depend on lectures, self-directed study, written presentations on value chain analysis, discussions and writing workshop on research proposal. Students have to write small scale proposal for agricultural commodity value chain analysis. Students will have an opportunity to undertake a small scale research to familiarize with data collection and analysis techniques using quantitative and qualitative approaches, interview techniques and scientific report writing techniques to enhance student centeredness and competence orientation.

Assessment Methods

The course evaluation will be both continuous assessment and final examination. At least 50 percent of the evaluation will be continuous assessment which includes proposal write-up assignments, tests, mid-term exam, group work and presentations. The rest will be covered by final examination.

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Chapter One: INTRODUCTION TO RESEARCH

Introduction

In this chapter you will be able to invigorate your knowledge on what research is and is not, why research is conducted, who does research and how research is conducted by agribusiness and value chain management professionals.

Learning Objectives

The major aim of this chapter is to refresh your memory on the basic tenets and principles of scientific research.

At the end of this chapter, you will be able to:

- Understand the types, purpose and meaning of research;

- Understand why and how research is conducted; and

- Distinguish between agribusiness and value chains research and the conventional social science research methods.

Section 1: Introduction

There is no absolute method of exploring a particular research problem. Therefore, researchers may use different methodologies to investigate similar types of problem around the world. Limiting factors include not only the cost and time involved, but also circumstances such as the availability of tools (mainly computer facilities), access to literature and publications and, above all, an environment that favors dissemination of knowledge. This module aims to put emphasis on the research methods employed in value chain related research problems.

Section 2: What is Research?

Dear students! To Bradford University, School of Management, research can be one of the most interesting features of any degree course as it offers you a measure of control and autonomy over what you learn. It gives you an opportunity to confirm, clarify, pursue – or even discover – new aspects of a subject or topic you are interested in. Research involves finding something new. 'New' may simply mean 'new to everyone', or it may simply mean 'new to you'. That's a major distinction, and one which

leads to a lot of misunderstandings, particularly for people entering academia from industry. The first of these meanings, 'new to every- one', is usually known as primary research. The second, 'new to you but not to everyone', is usually known as secondary research.

To John and his colleagues (2007), research is a diligent search, scholarly inquiry, investigation or experimentation aimed at the discovery of new facts and findings; or, broadly, it may relate to any subject of inquiry with regard to collection of information, interpretation of facts, and revision of existing theories or laws in the light of new facts or evidence.

Fundamentally, research is undertaken in order to enhance our knowledge of what we already know; to extend our knowledge about aspects of the world of which we know either very little or nothing at all, and to enable us to better understand the world we live in.

We can define a number of types of research study that are aimed at achieving different knowledge outcomes: Descriptive research (describing phenomena), Explanatory research (attempts to explain why behavior is the way it is), Predictive research (an attempt not only to explain behavior but to predict future behavior).

But to qualify as research, the process must have certain characteristics: it must, as far as possible, be controlled, rigorous, systematic, valid and verifiable, empirical and critical. In sum, for a process to be called research, it is imperative that it has the above characteristics.

Section 3: Why is Research Conducted?

Research is conducted for a number of reasons, which in turn depend on the objectives of any particular 'research problem'. Of course, there are particular reasons for undertaking research at various levels to discover something new. As discussed above, it may be to find out something we do not already know or to enhance our understanding of phenomena that we already know something about.

In the business arena including agribusiness and value chains, for instance, research tends to be undertaken in order to achieve one or more of the following objectives: to develop value chains; to gain a competitive advantage; to test new products and services; to solve a management/organizational problem; to provide information which may help to avoid future business problems; to forecast future sales; to better understand shifts in consumer attitudes and tastes; to enhance

profitability; to reduce operational costs; to enable management to prioritize strategic options for the future, among others.

Section 4: Who does Research?

The following is just a small sample of the kinds of organizations and individuals who conduct research: government departments, manufacturing or service companies, research institutions, consultancy firms, academics, voluntary organizations, advertising agencies, market research companies, and students!

The types of research each of the above undertake (descriptive, explanatory and predictive) will totally depend on the nature of the research problem they are confronted with and the research philosophy they pursue.

Section 5: How is Research Conducted?

This question is fundamentally related to the nature of the identified research problem. For example, if the 'problem' is of a purely physical nature, it may be appropriate to undertake controlled laboratory experiments. This is the situation where the researcher can actually control the research environment to a significant degree.

However, if the problem is one relating to, for example, animal or human behavior, it is much more difficult to control the research environment. In this case, it may be necessary (or even unavoidable) to conduct the research in a quasi-experimental fashion — that is, the researcher is able to control only a few aspects of the research environment, such as the time of day, to undertake observations or collect information from a sample from which to derive a generalized conclusion of the determinants of behavior in a particular setting. Researcher should always have a clear idea with regard to what is that he/she wants to find out about and not what they think they may find.

Learning Activity 1.1.
1. Give examples of descriptive, explanatory and predictive research in agribusiness and value chain.

2. Identify an agribusiness and value chain management related problem that can be considered as a quasi-experimental research.

Section 6: Agribusiness, Value Chains and Social Research Methods

Scientists and philosophers try to figure out the mechanisms of the real world. Their work may include any inquiry relating to the problems of the real world. Thus, research methods have gained popularity and acceptance in almost all branches of science which seek to answer research questions in a scientific way.

On the other hand, if a researcher does not follow any methodology, the whole research effort could produce a wrong or valueless result, or be a waste of time. In the first place, researchers should always have a conceptual plan for carrying out a particular study. Hence, this is the most critical step in research.

Business research deals with business phenomena such as the price or supply of a commodity, or sales forecasts for a particular item, knowledge about market behavior, marketing strategies required to achieve a goal, income distribution pattern among value chain actors, gender roles along the value chain, and so on. Researchers can apply tools according to the nature of the inquiry.

On the other hand, social and behavioral sciences deal with people who live in society, their culture and daily life. Social scientists thus follow a particular research strategy and apply the appropriate tools in order to fulfil the objectives of their study.

If we contrast research in agribusiness and value chain with other social sciences research, in the earlier case researchers may follow a particular research strategy and apply the appropriate tools in order to understand the following issues. Agriculture value chains (analyzing and evaluating the various tenets of value chains such as production, productivity, value additions, efficiency, marketing, gender and value chain, synergies, etc.), governance of value chains (Implications of the operating environment: Beyond the value chain, power relationships, etc.), Market or bargaining power (Buyer vs. Producer), innovation, information, information sharing, and knowledge, determinants of income distribution in value chain, conducting benchmarking and gap assessments of value chains, assessing the business environment, etc. In sum, value chain enquiry spans different economic branches and sectors, and hence effective analysis requires the participation of different disciplines. Look also in Greener (2008) to learn what might be special in business research.

Learning Activity 1.2.
1. How is the value chain research different from a conventional social science research?

2. Have a look on the web, use a search engine of your preference, to find examples of agribusiness and value chains and then classify as a research problem or not.

Section 7: Criteria of Good Research

Whatever may be the types of research works and studies, one thing that is important is that they all meet on the common ground of scientific method employed by them. One expects scientific research to satisfy the following criteria:

- The purpose of the research should be clearly defined and common concepts be used.

- The research procedure used should be described in sufficient detail to permit another researcher to repeat the research for further advancement, keeping the continuity of what has already been attained.

- The procedural design of the research should be carefully planned to yield results that areas objective as possible.

- The researcher should report with complete frankness, flaws in procedural design and estimate their effects upon the findings.

- The analysis of data should be sufficiently adequate to reveal its significance and the methods of analysis used should be appropriate. The validity and reliability of the data should be checked carefully.

- Conclusions should be confined to those justified by the data of the research and limited to those for which the data provide an adequate basis.

- Greater confidence in research is warranted if the researcher is experienced, has a good reputation in research and is a person of integrity.

In other words, we can state the qualities of a good research as under:

7.1. Good research is systematic
It means that research is structured with specified steps to be taken in a specified sequence in accordance with the well-defined set of rules. Systematic characteristic of the research does not rule out creative thinking but it certainly does reject the use of guessing and intuition in arriving at conclusions.

7.2. Good research is logical
This implies that research is guided by the rules of logical reasoning and the logical process of induction and deduction are of great value in carrying out research. Induction is the process of reasoning from a part to the whole whereas deduction is the process of reasoning from some premise to a conclusion which follows from that very premise. In fact, logical reasoning makes research more meaningful in the context of decision making.

7.3. Good research is empirical
It implies that research is related basically to one or more aspects of a real situation and deals with concrete data that provides a basis for external validity to research results.

7.4. Good research is replicable
This characteristic allows research results to be verified by replicating the study and thereby building a sound basis for decisions.

Questions for self-review:
1. What do you mean by research? Explain its significance in modern times.

2. What is a value chain research?

3. How is the value chain research different from other social sciences research?

Discussion Questions
1. Why do we need research? Discuss.

2. Discuss how value chain research is important in value chain development?

3. Discuss descriptive research, explanatory research and predictive research in the context of research in value chains.

References and further reading:

Gordon Rugg and Marian Petre (2007). A Gentle Guide to Research Methods, Open University Press McGraw-Hill Education, Berkshire.

Greener, Sue (2008). Business Research Methods. Ventus Publishing Aps.

John Adams, Hafiz T.A. Khan, Robert Raeside and David White (2007). Research Methods for Graduate Business and Social Science Students, Sage Publications Ltd, London.

Kaplinsky, R., and Morris, M. (2000). A Handbook for Value Chain Research, prepared for the Institute for International Development Research Center (IDRC).

Mark Saunders, Philip Lewis and Adrian Thornhill (2009). Research Methods for Business Students, 5th edition, Pearson Education Limited, Edinburgh Gate.

Chapter Two: RESEARCH METHODOLOGY

Introduction

Dear Students, this chapter introduces the importance of research methodology in order to generalize the research outputs. It will then deal with approaches to business and management research including agribusiness management and will also justify the importance of scientific approaches in research. A brief introduction of research cycle is provided at the end of the chapter.

Learning Objectives

The major aim of this chapter is to allow you understand the differences and similarities between research methodology and research methods; approaches and research philosophy.

At the end of this chapter, you will be able to:

- Distinguish research methodology from research methods;

- Understand approaches to research and research philosophy;

- Distinguish qualitative and quantitative research;

- Understand theory, concepts and hypothesis; and

- Recognize approaches to value chain research.

Section 1: Research Methods versus Research Methodology

The first thing to get absolutely clear about is that research method and research methodology are not the same thing! A research method is a way of conducting and implementing research. Research methodology is the science and philosophy behind all research. According to Greener (2008), research methods usually refers to specific activities designed to generate data (e.g. questionnaires, interviews, focus groups, observation) and research methodology is more about your attitude to and your understanding of research and the strategy you use to answer research questions.

Section 2: Research Approaches

Greener (2008) puts forth that in order to talk sensibly about qualitative and quantitative approaches we also have to introduce the following few research philosophies, listed hereunder, which may help us to build a picture.

2.1. Deductive versus Inductive

A deductive approach begins by looking at a theory, produces hypothesis from that theory, which relate to the focus of research, and then proceeds to test that theory. But that is not the only way to use theory in research. An inductive research starts by looking at the focus of research (the organization, a business problem, an economic issue, etc.) and through investigation by various research methods, aims to generate theory from the research.

2.2. Positivist versus Interpretivist

A positivist approach is usually associated with natural sciences research and involves empirical testing. Positivism states that only phenomena which we can know through our senses (sight, smell, hearing, touch, taste) can really produce knowledge. It promotes the idea of experimentation and testing to prove or disprove hypotheses (deductive) and then generates new theory by putting facts together to generate laws or principles (inductive). Positivists suggest that this type of research can be value free. Finally, positivist research is about objective rather than subjective (normative) statements and only the objective statements are seen to be the proper domain of scientists. The interpretivist argument promotes the idea that subjective thoughts and ideas are valid. An interpretivist researcher aims to see the world through the eyes of the people being studied, allowing them multiple perspectives of reality, rather than the one reality of positivism.

2.3. Objectivist versus Constructivist

Objectivism states that social entitles (like organizations, societies, teams) have an existence, which is separate from the people in them. Constructivists would say on the contrary that the organization has no an independent reality. It is constructed in the minds of those who think about it. So, every time we think about an organization, we are constructing it into some kind of reality.

2.4. Quantitative and Qualitative Research

2.4.1. Quantitative Research

This refers to the type of research that is based on the methodological principles of positivism and neo-positivism, and adheres to the standards of a strict research design developed prior to the actual research. In this case research is often guided by selected underpinning theory. Theory refers to a set of interrelated constructs and propositions that specify relations among variables to explain and predict phenomena. Quantitative research is applied for quantitative measurement and hence rigorous statistical and quantitative methods are used.

The quantitative research is usually classified as structured approach. Here everything that forms the research process - objectives, design, sample, and the questions that you plan to ask of respondents- is predetermined. It is more appropriate to determine the extent of a problem, issue or phenomenon by quantifying the variation.

In recent days, quantitative research is becoming popular in agribusiness and value chains research. The following ones may be considered as useful examples: accounting of input-output flows, general equilibrium models, various applications of econometrics (e.g., gravity model, treatment and effect model), and global commodity chain analysis; *inter alia*.

2.4.2. Qualitative Research

It employs methods of data collection and analysis that are non-quantitative, aims towards the exploration of social relations, and describes reality as experienced by the respondents. Qualitative research methods have long been used in the field of social sciences.

For instance, these are the principal methods employed by anthropologists to study the customs and behaviors of people from other cultures, and are also used in such diverse areas as sociology, psychology, education, history and cultural studies. Qualitative research can be used in value chain analysis to understand the environment in which all activities take place and important actors in the value chain. For instance, one could answer the question: "what is" of a situation? as it is often concerned with determining the current practices, status or features of situations.

In sum, the unstructured approach to inquiry is usually classified as qualitative research. This approach allows flexibility in all aspects of the research process. It is more appropriate to explore the nature of a problem,

issue or phenomenon without quantifying it. Both approaches have their place in research. Both have their strengths and weaknesses. In many studies you have to combine both qualitative and quantitative approaches. Mixed methods may result in a scientifically balanced analysis. The following are approaches of research worth learning.

2.5. Research Approaches

2.5.1. Pure Theoretical Research

Pure research is usually used to develop new knowledge that advances our understanding of the real world. It evaluates concepts and theories and thus attempts to expand the limits of existing knowledge. It may also help in rejecting or supporting existing theories about the real world.

2.5.2. Applied Research

Applied research is conducted when a decision must be made about a specific real-life problem. The principal aim of scientists conducting applied research is to improve human conditions, although the results can have commercial value. It is directly related to social and policy issues.

Examples of applied research include an investigation to improve agricultural crop production; or a study on the development and commercialization of technology with the potential to reduce carbon dioxide emissions. Types of applied research include action research (also known at times as evaluative research) and policy research in agribusiness and value chain. To be precise, action research involves an intervention by a researcher to influence change in any given situation and to monitor and evaluate the results. The researcher, working with a client, identifies a particular objective, e.g. ways of improving telephone responses to 'difficult' clients, and explores ways this might be done. The researcher enters into the situation, e.g. by introducing new techniques, and monitors the results. This research requires active co-operation between researcher and client and a continual process of adjustment to the intervention in the light of new information and responses to it from respondents.

2.5.3. Longitudinal/ Panel Studies

Longitudinal research involves the study of a sample (or cohort) on more than one occasion. In other words, longitudinal studies cover a long period of time, at times several decades, and follow the sample a repeated number of times. The longitudinal study is unique in its ability to answer

questions about causes and con- sequences, and hence provides a basis for substantiated explanatory theory. It is commonly used in many disciplines. For example, in psychology, longitudinal studies are often used to study developmental trends across the life span; in public health they are used to uncover predictors of certain diseases.

A longitudinal study that involves collecting data from the same sample of individuals or households over time (usually regular intervals) is called a panel study. Panel studies take as their basis a nationally representative sample of the group of interest, which may be individuals, households, establishments, organizations, or any other social unit (Example, to study income and expenditure pattern of value chain actors).

2.5.4. Cohort Studies

A cohort is a group of individuals who experience the same event or share the same characteristics, namely, marriage cohort (individuals who got married during the same year or years), birth cohort (individuals born in same year or years), and so on.

Learning Activity 2.1.
1. Enumerate the basic differences between qualitative and quantitative research.

2. Why do you think is using a combination of qualitative and quantitative research important in a real world situation?

Section 3: Theory versus Empirical Study

Sound evidence is superior to argument based on false evidence, limited evidence, or no evidence. Evidence has to be collected from the social world around us, and this requires that empirical research be done. 'Empirical', in this context, simply means 'based on evidence from the real world' in contrast to 'theoretical', which refers to ideas that are abstract or purely analytical. Empirical study is meant the level of knowledge reflecting that which is verifiable by experience or observation. An agricultural value chain analyses carried out in different parts of the country are some practical examples of empirical study.

3.1. Theory

A theory is a set of systematically interrelated concepts, definitions and propositions that are advanced to explain and predict phenomena (facts). Theory guides empirical study, except for grounded theory methodology,

for instance. Theories must be tested against the real world. 'Theory, in fact, is the building which is made from the hard-won bricks of the research studies' (Mann 1985). How can we collect sound evidence about the social world that can be used to increase our understanding of that world? Theory building is the means by which pure researchers expect to achieve the goal. It represents the real world and the events are supposed to be the reality.

During the past decades there has been extensive theory building in the field of value chains reflected in many definitions and analytical approaches. Scientific disciplines that add to the development of value chain theory can be grouped into four streams with different perspectives on inter-company relationships. These are: global value chain analysis, social network theory, supply chain management and institutional economics.

3.2. How are theories generated?

Theory may be developed with deductive reasoning by moving from a general statement to a specific assertion. Deductive reasoning is the logical process of deriving a conclusion from a known premise or something known to be true. At the empirical level, theory may be developed with inductive reasoning. Inductive reasoning is the logical process of establishing a general proposition on the basis of observation of particular facts.

3.3. Concepts

Concepts are an abstraction of the real world to allow us to more easily understand (by simplifying) the true nature of objects and events. Propositions are statements concerned with the relationships among concepts. A conceptual framework explains the logical linkage and inter-linkage among concepts by asserting a universal connection between them.

If you are using a concept in your study, you need to consider its operationalization - that is, how it will be measured. For this, you need to identify indicators - a set of criteria reflective of the concept - which can then be converted into variables. The choice of indicators for a concept might vary with researchers, but those selected must have a logical link with the concept.

In sum, the researcher needs to develop operational definitions for the major concepts he/she is using in the study and develop a framework for the study population enabling him/her to select appropriate respondents. Operational definitions give an operational meaning to the study population and the concepts used.

3.4. Hypothesis

A hypothesis is a proposition that is empirically testable. It is an empirical statement concerned with the relationship among variables. Or, it can simply be defined as a specific statement of prediction. Another important consideration in the formulation of a research problem is the construction of hypothesis. Hypotheses bring clarity, specificity and focus to research problem. The formulation of hypotheses provide a study with focus. It tells what specific aspects of a research problem to investigate. A hypotheses tells what data to collect and what not to collect, thereby providing focus to the study. As it provides a focus, the construction of a hypothesis enhances objectivity in a given study. A hypothesis may enable to add to the formulation of theory. It enables to specifically conclude what is true or what is false.

3.5. Research and Scientific Method

Scientific method involves the principles and processes regarded as characteristic of or necessary for scientific investigation process or approach to generating valid and trustworthy knowledge. Styles of reasoning, common fallacies (an error in reasoning/ logic or premise), useful quotations are usually considered in justifying the scientific method. Successively, the research method refers to the ways one collects and analyzes data methods developed for acquiring trustworthy knowledge via reliable and valid procedures.

Learning Activity 2.2.
1. What is a theory? Should every research be underpinned by theory?

2. How is deductive and inductive reasoning important in scientific research?

3. Induction involves a development of theory and deduction refers to rigorous testing of theory? Comment critically.

4. How should one go about developing working hypotheses?

Section 4: Approaches to Value Chain Research

Value chain analysis overcomes a number of important weaknesses of traditional sectorial analysis which tends to be static and suffers from the weakness of its own bounded parameters. For in restricting itself to sectorial analysis, it struggles to deal with dynamic linkages between

productive activities that go beyond that particular sector, whether they are of an inter-sectorial nature or between formal and informal sector activities.

Value chain also goes beyond the firm-specific analysis of much of the innovation literature. By its concentration on inter linkages it allows for an easy uncovering of the dynamic flow of economic, organizational and coercive activities between producers within different sectors even on a global scale. Because value chain enquiry spans different economic branches and sectors, effective analysis requires the participation of different disciplines. Finally, it should be noted that each value chain will have particular characteristics, whose distinctiveness and wider relevance can only be effectively captured and analyzed through an understanding of the broader issues which are involved. Consequently, to be useful, the methodology to be used should be based on particular characteristics of a given value chain.

Section 5: The Research Cycle

The research cycle is the application of the scientific method. The steps in the cycle are detailed in the following sections.

5.1. Formulate

The key stage is the initial understanding of the problem or situation to be modelled. This is the formulation phase. In reality, for a model to be any good, a great deal of time and effort must be devoted to this phase; otherwise, the model will be analogous to a house built on sand. In this phase, the 'stakeholders' in the research problem are identified, in order to place boundaries on the problem.

The literature is extensively reviewed to identify how others have undertaken similar research, what variables they have used and how measurements are made. Hypotheses or propositions are formed as to how the variables might influence one another.

5.2. Generate a Hypothesis

Conventional hypothesis statements help to guide the analysis. They take the form of the null hypothesis (Hn), that there is no effect or relationship, which is compared to the alternative hypothesis (Ha), that there is an effect or a relationship. H_0: annual income levels of producers in X value chain are not significantly different from annual income levels of traders in the same value chain H_1: Annual income levels are significantly higher for traders in value chain X.

5.3. Collect Data

If one can assume for the moment that the speculative model is acceptable, then data collected on selected variables are usually classified into independent and dependent types.

5.4. Explore Data

Primary data
Secondary data
Cross-sectional data
Panel data
Time series
Quantitative
Qualitative

5.5. Model and Implement/Monitor

Assuming that relationships exist and there are no problems in the data, the coefficients are computed, often using the statistical and/or econometric procedure of linear and/or other types of regression. This gives the model that is then examined to determine if the assumptions made are satisfied and that it gives a reasonable depiction of reality. This is the implementation/monitoring phase.

5.6. Sell Solution

Next comes the 'sell the solution' phase. This is an addition to Popper's formulation. It is incorporated here to avoid what has been a major failing of researchers in the past. This was a failure of communication, and great care and time must be taken to explain to users how the model has been arrived at and how it works.

Learning Activity 2.3.
1. What do you think is a precursor to a research hypothesis?

2. A hypothesis must be testable, but must also be falsifiable for its acceptance. Comment.

3. Present examples of defining a research problem in agribusiness and value chain research?

4. What is the difference between hypothesis and theory?

5.7. Summary of the Research Cycle

1. Specify the real problem. Investigation purpose (hypotheses to be tested);

2. Setup a model (from theory). Break the problem (1) into parts; Select variables; Make sensible assumptions; determine the limits of validity;

3. Formalize the model; Mathematical or statistical version of the problem (if appropriate); Find the relationships involved; Find a functional form;

4. 'Solve' the problem; Choose appropriate techniques; Amend the model and/or change approach if needed;

5. Interpret the results; does step 4 make sense in terms of step 1? If not, why not?

6. Validate the model; How realistic were the initial assumptions? What if one or more were changed? More refining needed? At what cost? If yes (and it is affordable), then back to step 2!

7. Generalization: can the model and results be generally applied to this class of problem? If yes, then a contribution to knowledge has been made. If no, then a major problem has occurred somewhere along the line!

8. Report the findings.

Questions for self-review:
1. What are the differences between research methods and research methodology?

2. Compare the different types of research approaches.

3. How does one find out if the characteristics or behaviors or events are related in such a way that the relationship is a causal one? Give an example in relation to agribusiness and value chain management.

4. What is research ethics? And why do you think it is important?

Discussion Questions:

1. Integrated use of inductive and deductive reasoning is the essence of scientific method. Discuss.

2. Which research approach do you think is applicable to research in value chains?

3. Discuss how research ethics is useful in agribusiness and value chains research.

4. Discuss how research is classified on the basis of its purpose and methods employed. Elaborate.

5. While trying to classify research taking purpose as the basis of classification, where do you place developmental research that includes agribusiness and value chains research?

References and further reading:

Gordon Rugg and Marian Petre (2007). A Gentle Guide to Research Methods, Open University Press McGraw-Hill Education, Berkshire. (Chapter 1).

Greener, Sue (2008). Business Research Methods. Ventus Publishing Aps.

John Adams, Hafiz T.A. Khan, Robert Raeside and David White (2007). Research Methods for Graduate Business and Social Science Students, Sage Publications Ltd, London.

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Chapter Three: LITERATURE REVIEW

Introduction

Dear Students, this chapter introduces the importance of critical reading of the materials so that you can bring clarity and focus to your value chain and agribusiness research problem; select appropriate underpinning theory; improve your methodology; broaden your knowledge; and contextualize your findings. Equally important, you will come to know that literature review is an integral part of entire research process and makes valuable contribution to every operational step as you move on.

Learning Objectives

The major aim of this chapter is to allow you understand that literature review is an essential preliminary task in order to acquaint yourself with the available body of knowledge in the area of agribusiness and value chains. It is vital to clearly understand that reviewing related past research studies is an important step in the process of carrying out research as it helps in problem formulation, hypothesis construction and selection of appropriate research designs.

At the end of this chapter, you will be able to:
- Understand the contribution of literature review to every operational step in your research;

- Understand the relationship between your research problem and the body of knowledge in the area;

- Better positioned to select a methodology that is capable of providing valid answer to your research questions;

- To critically analyze existing published research (primary, secondary and tertiary sources) in your area of interest;

- Enable the systematic and logical study of the general principles guiding inquiry;

- Understand how the findings of your study fit into the existing body of knowledge; and

- Place your findings in the context of what is already known in your field of enquiry.

Section 1: Introduction

In this chapter we consider the importance of undertaking a literature review (consulting the literature for a solution), what the review should do for you, how it links to your research questions, your research method(s), your theoretical framework and your findings. This chapter provides detailed explanations of how to undertake a literature review and why it is a pivotal element of research in agribusiness and value chains.

Section 2: The Importance of Literature Review

In any research project it is essential to understand what has already been done (if anything) in the specific topic you have chosen and what has been done in the wider subject area of that topic. Reviewing literature can be time-consuming, daunting and frustrating, but it is also rewarding. Its functions are to:

- Bring clarity and focus to your research problem;

- Improve your methodology;

- Broaden your knowledge; and

- Contextualize your findings.

2.1. Bring clarity and focus to your research problem

The process of reviewing the literature helps you to understand the subject area better and thus helps you to conceptualize your research problem clearly and precisely. It also helps you to understand the relationship between your research problem and the body of knowledge in the area.

2.2. Improve your methodology

A literature review tells you if others have used procedures and methods similar to the ones that you are proposing, which procedures and methods have worked well for them, and what problems they have faced with them. Thus you will be better positioned to select a methodology that is capable of providing valid answer to your research questions.

2.3. Broaden your knowledge base in your research area

It ensures you to read widely around the subject area in which you intend to conduct your research study. As you are expected to be an expert in your area of study, it helps fulfill this expectation. It also helps you to

understand how the findings of your study fit into the existing body of knowledge.

2.4. Contextualize your findings

How do answers to your research questions compare with what others have found? What contribution have you been able to make in to the existing body of knowledge? How are your findings different from those of others? For you to be able to answer these questions, you need to go back to your literature review. It is important to place your findings in the context of what is already known in your field of enquiry.

In addition to the above points, as a researcher, you need to know the answers to the following questions concerning the research topic you are considering for investigation:

- Has the work already been done?

- Who are the experts in the field?

- What are the main theoretical perspectives?

- What are the common research methods in the topic?

- What are the main problems in researching the topic?

- Are there any major controversies in this topic area?

- Is the topic open to hypothesis testing?

- Is the topic a trivial one?

The only way you can satisfactorily answer these questions is by reading as much as you can on research which is directly related to your research topic and research which is indirectly related to it and research which may be related to it.

2.4.1. Has the Work Already Been Done?

Obviously, if this is the case then you need to consider changing your research topic or its focus. In most business-related research, it is very rare that a specific set of research questions or a specific hypothesis has already been addressed in your specific topic area. Dealing with this question is something that needs to start immediately after you have identified a possible research topic.

2.4.2. Who are the Experts in the Field?

You can establish a 'road map' for your literature review—by following up references used in books or journals or academic working papers or even in electronic websites. For example, in the field of agricultural value chain analysis, it would be very difficult to avoid the work of Kaplinsky and Morris (2000); Kaplinsky (2002); Kaplinsky and Readman (2000); Fasse, et al. (2009); etc. because these authors have published widely on this topic and proposed an important methodological and/or theoretical model of using value chain analysis in agribusiness.

2.4.3. What are the Main Theoretical Perspectives?

Whatever the research topic that you have identified, you need to construct a conceptual framework within which you will study the topic. This is critical to the successful implementation of the Research Cycle we have seen earlier. The key point here is that we need a theory in order to inform us what kind of data we require in order to answer the research questions we have already set ourselves—in other words, following the modern deductivist methodology of research.

Here it is important to raise and answer the following question. Where does one find this theory? The answer to this question is easy—you will find it in the literature related to your research topic. You will also find critiques of theory there and alternative theories of the same social behavior. It is critical that you are aware of all theories pertaining to your research topic, their strengths and their weaknesses.

In fact, it is often the case that the theoretical knowledge of a particular topic reveals gaps in our understanding of that topic—this often enables you to identify more important research questions.

2.4.4. What are the Common Research Methods in the Topic?

In reading the published academic literature on or closely related to your research topic, it is very important to try to identify the common characteristics of how the research was carried out. There are a number of aspects of this that need to be clearly understood:

i.   Is the published research in this topic mainly of a qualitative or a quantitative nature?

ii. If qualitative, what is its most common basis?

iii.   If quantitative, what is its most common basis?

iv.   Is the published research usually a mix of qualitative and quantitative methods?

v.   Are the qualitative methods mainly of the case study type, ethnographic, content analysis, grounded theory or some other generally recognized qualitative research method?

It is your judgment as to what appears to be the most common basis for research in this topic. If you find that the handful of papers are dominated either by mathematical or statistical analysis, then you need to identify the nature of these. In business research, quantitative methods tend to be dominated by statistical analysis. You need to be clear on the most common approach taken here - is it simple descriptive statistics, non-parametric methods, parametric methods, multivariate methods or another generally accepted statistical approach?

The answers to questions (i) and (ii) above will inform you as to how you should be formulating your own research questions as per the Research Cycle we have seen earlier. You also need to consider if the published research derives its data from secondary sources mainly or primary sources—this will also inform you as to how and where you should be seeking your own data. Also consider what type of data is most commonly used in the topic: cross-sectional, time-series, or categorical, for example. And, their typical sources.

2.4.5.   What are the Main Problems in Researching the Topic?

There may be many problems and several common problems in researching your research topic. One of the most common problems is data.

- Does it exist for example?

- If it does, can you get access to it?

- Is it in a format which is easily manipulated?

- Is it trustworthy?

- How old is it?

- Have the variables in the data been measured correctly and consistently?

All these questions are important.

- Is the topic one for which primary data is essential?

- If so, can it be collected in a reasonable time and at low cost?

- Can it be collected at all if the topic is personally, socially or politically sensitive? All these questions are important.

Another problem which can arise is the absence of a clear theoretical framework in the published research. This may be a topic which has little or very weak theoretical underpinning and understanding—if so then how can you test a hypothesis or attempt to answer your research questions? Finally, the topic may be one in which there is serious disagreement over how to research it at all—in other words, there is a real concern surrounding the value and appropriateness of any of the research methods used to investigate the topic. If this is the case, you should seriously consider if this is a topic suitable for a thesis.

2.4.6. Are there Any Major Controversies in this Topic Area?

The controversies may be of a methodological, theoretical or empirical nature. They may arise due to mishandling theory, data methodology, or choosing improper methods for empirical investigation. It is one of the skills of literature reviewing to determine what the controversies actually are. This is also a very fruitful source for deriving your own research questions since the gaps in your understanding of the topic will be fairly clear from the debates and controversies you find in the literature.

2.4.7. Is the Topic Open to Hypothesis Testing?

Not all research questions can be put in the format of a hypothesis. A hypothesis needs to be clear, unambiguous, focused and testable using an accepted statistical method. Notably, it should be constructed based on theory and/or available empirical evidences. If the research topic is mainly investigated using qualitative methods, then it may be very difficult to generate testable hypotheses. However, a good piece of research does not need to contain testable hypotheses—it could contain a set of focused research questions (but not too many) or a set of clear propositions (derived from theory).

2.4.8. Is the Topic a Trivial One?

A good indication of a research topic which is considered trivial is when you can find little or no trace of it in the literature. Of course, this could be

because no one has ever thought about it, but it is usually because they have and immediately dismissed it as of no interest to anyone else, of no value to society and with no potential to be developed further.

However, research should be concerning itself with problems which are more significant and with the potential for the results to be generalizable to at least a group, an area, a sector of industry, or any other aggregation.

Learning Activity 3.1.
1. How does literature relate to research?

2. How up to date should references be?

Section 3: What Should the Literature Review Do?

Apart from providing the answers to the earlier questions, the review should also achieve the following:

- It should enable you to sharpen and focus your initial research questions or even suggest new research questions;

- It should provide you with a wide and deep knowledge of the theoretical, empirical and methodological issues within your chosen research topic;

- It should provide a 'bridge' between your research questions and your research findings;

- It should enable you to speak with authority on your research topic and the wider subject area;

- It should enable you to compare your research methods, theoretical framework and findings with work already done; and

- It should enable you to set the scope and range of your research topic.

Quite clearly, the literature review is the pivotal element of a research project. It connects your planned work to previous work, it connects your specific topic to the wider subject area, and it connects your specific findings to the findings of others. It is very much an inclusive activity in the sense that, if undertaken properly, you become a part of the academic community who can speak and write with confidence and authority on a specific research problem.

3.1. Linking to your Research Questions

Most research projects begin with no more than initial ideas—these are very often unfocused and based mainly on personal interest. This is quite normal, however, and the literature review will enable you to do a number of things in relation to any initial research questions you may have.

- It will allow you to discard ideas which are considered trivial in the literature;

- It will enable you to discard any questions which the literature shows are extremely difficult to deal with;

- It will allow you to frame your research questions in the context of the main theories present in the literature;

- It will enable you to identify research questions which potentially can fill a gap in knowledge identified in the literature; and

- The literature review thus helps you to narrow the focus of your research and to be much more precise in framing the research questions or hypotheses which interest you.

Generally speaking, the lack of a literature specifically related to research methods teaching in agribusiness and value chains, and the potential limits of the literature on this topic suggests some quite broad, but exploratory, research questions.

3.2. Linking to Your Research Methods

The literature review will help you identify how you should be designing your research project in order to answer the research questions you have posed. An understanding of what works well and what does not work well in terms of method is crucial to identifying an efficient and effective research method of your own. It may not seem like it but the literature review will actually save your time - because it enables you to avoid mistakes and to avoid reinventing the wheel!

It will also enable you to identify the 'Limits of Validity' of any findings because you will have understood what a particular method can achieve and what it cannot achieve compared with alternative methods.

3.3. Linking to Your Theoretical Framework

This is arguably the most important part of any research project and the most important function of the literature review. Data comes and goes, the relationship between variables changes, society changes and therefore the primary function of academic research is to continually move theory forward - because in the end, it is all that we really have in terms of our 'knowledge' of the world.

The key element here is that there must be a theoretical framework in order to allow you to interpret your results and to identify what has been achieved and what has not been achieved. This will also enable you to question whether the weaknesses in your own research are of a theoretical nature, methodological or related to the data you have used.

3.4. Linking to Your Research Findings

You need to be in a position to be able to compare your findings with the findings in previous research. Obviously, you can only do this if you are aware of the findings in the literature. The theoretical framework allows you to interpret the findings while previous research allows you to compare these with the work of others. In addition, you should be evaluating your findings in the context of the research questions you have identified and subsequently sharpened in the light of your understanding of the literature.

You should also be identifying findings which you know to be consistent with the literature, as well as those which are inconsistent with the literature. In addition, you need to be able to explain why one or more of your findings are not what you expected (given you have a priori reasoning) and to identify the source of this—it may be data weakness, sampling problems, theoretical weakness, or it could well be that one of your specific research questions was not framed correctly or was, in fact, irrelevant.

Learning Activity 3.2.
1. Any research, inductive or deductive, which you undertake for academic purposes, will always require a review of relevant literature, and that will be a critical review, not just a description of what others have said. Comment.

2. What are the seminal articles or books? Give examples that are pertinent to agribusiness and value chain management.

Section 4: Types of Literature Review

There are different types of literature review that can be undertaken, depending on the purpose of the research. The main types of literature review are:

- An Evaluative Review;

- An Exploratory Review; and

- An Instrumental Review.

These are not mutually exclusive and will often be mixed together. However, in the case of academic research, it is the second type of literature review which is the most common.

4.1. Evaluative Review

This type of literature review focuses on providing a discussion of the literature in terms of its coverage and contribution to knowledge in a particular area. An apt example of this type of review is meta-analysis which provides a comprehensive commentary on a very large number of research projects focused on a specific topic.

It is often used to directly compare research findings from these projects when the findings are directly comparable - for example, in measuring reliability coefficients, regression coefficients, and also artificial constructs defined in the same way but applied in different projects. The field of Econometrics is often typified by literature reviews of this type.

4.2. Exploratory Review

This is a literature review which is seeking to find out what actually exists in the academic literature in terms of theory, empirical evidence and research methods as they pertain to a specific research topic and its related wider subject area. It is also used to sharpen, focus and identify research questions that remain unanswered in the specific topic. The key to conducting a review of this type is to remain focused on the field of study and not allow yourself to be taken into other directions just because they may be interesting.

It is not as important here to provide a comprehensive review of the literature (as in meta-analysis) but it is much more important to focus on the specific area of the research topic. The review should be seen as being

informative to the researcher and providing him/her with clearer ideas on the common theories, methods and types of data analysis conducted on this topic. It is also critical in this type of review that the literature is properly cited and a proper bibliography is presented.

4.3. Instrumental Review

This is where the literature is used exclusively as a source of information on how to conduct some research on a highly specific research problem. It is not designed to identify the state of current knowledge in an area but to identify the best way to carry out a research project without reinventing the wheel and without incurring unnecessary and avoidable costs.

4.4. Some General Points in Literature Reviewing

Reviewing academic literature is not the same as just reading it! You need to think about the ideas, the re- search methods, how the data was collected, and how the findings have been interpreted. This is what we mean by Critical Reading!!

Here are some questions which you should keep in mind when studying (not just reading) academic literature. For any given piece of work:
- Is there a theoretical framework?

- If so, what is it and how does it fit into this topic?

- Does the work provide links to other work in the topic?

- Is there an empirical aspect to the work?

- If so, what is its basis?

- Does the work relate to a specific social group?

- Does it relate to a particular place?

- How applicable might it be outside the latter two?

- How old is the work?

- Is it still valid?

In addition to asking these questions, you also need to summarize the literature review. This should be done in the following terms: a) what does the previous research tell us about this topic? b) What does it not tell us? and c) What are the key weaknesses in terms of theory, methods and data?

This is the 'end' of your literature review and you now have a platform from which to launch your own research, interpret the findings and evaluate what you have achieved in comparison with the literature.

Learning Activity 3.3.
1. What does critical literature analysis mean?

2. Should one include his/her views in a literature review?

3. What are the different referencing styles that are available to you? Present their similarities and differences in referencing (in-text and bibliography).

Section 5: Evolvement of Literature on Value Chains

Accoding to Faße *et al.* (2009), in the last years, many descriptive handbooks for different aspects on value chain analysis have been published. A brief overview is the following. The handbook written by Kaplinsky and Morris (2002) summarized mainly theoretical and conceptual aspects based on Gereffi's global commodity chain suggesting some descriptive indicators. Roduner (2004) summarized value chain concepts of relevance to development cooperation. A manual published by McCormick and Schmitz (2001) gives a practical orientation of data collection for value chain analysis by suggesting how to prepare questionnaires and how to conduct interviews using the example of homeworkers in the garment industry. Schmitz (2005) published a handbook with major attention to value chain analysis for policy-makers and practitioners. Stamm (2004) emphasized the relevance of value chain analysis for development policy according to challenges for trade policy to assess the economic relationships. The German Technical Agency (GTZ) (2007) and the Foreign Investment Advisory Service (FIAS 2007) together with the World Bank provide methodologies for value chain promotion in developing projects. The target groups are public agencies and practitioners whose the participatory value chain approach gains more and more importance. Mayoux (2003) and Bernet *et al.* (2006) elaborated the importance of participatory value chain analysis similar to the GTZ value chain approach (GTZ 2004, GTZ 2007).

Besides these descriptive manuals, McCormick and Schmitz (2001) as well as Kaplinsky and Morris (2002) emphasize the analytical focus of value chain analysis. The Food and Agricultural Organization of the United Nations (FAO) (2005) developed several stepwise modules to conduct financial and economic value chain analysis. These modules are some of the few available handbooks, which offer a quantitative analytical approach.

Looking into peer-reviewed scientific databases, the number of publications using any term related to "value chain" in the title, abstract or key words, increased from 140 publications in 1995 to 3,550 in 2007. Today, the number is expected to be much higher than what we had had in 2007.

Finally, a good review should demonstrate familiarity with the topic, show the path of prior research and how it is linked to the current project. To do this effectively the review should be written in a critical and reflective style. One should not simply accept something because it is written; one should judge it by showing where it is good or where it is poor. Being critical does not mean simply picking holes in an argument, and praise should be given to good ideas and well-developed arguments.

Section 6: Obtaining Literature Sources

There are many sources of literature including journals, books, reports, abstracts, and electronic websites, among others. Searching for the appropriate literature can be very time consuming, and you need to be very specific when using library search engines, Internet search engines and other databases. Once an appropriate article is obtained, there are various ways of reading it for research purposes.

In doing the reading for the review, one must consider the credibility of the article. Articles published in referred journals tend to be the most reliable. Articles obtained from the World Wide Web (www) have to be treated with a great deal of caution, although there is good material on the Web. If you plan to use the Internet as a major source of research material, the most reliable sites are those of academic departments in universities.

Other sources of reliable material include government departments. However, there is no real substitute for spending a considerable amount of time in libraries, playing detective, and tracing articles cited as references to articles you have read. Dear Students! You will benefit a lot if you could read topics on searching the literature and assessing the quality of literature from the research methods book authored by Adams *et al.* (2007).

Questions for self-review:
1. What is a literature review?

2. What is the need for literature review?

3. How shall one carry out a literature review?

Discussion Questions:

1. Discuss how literature review is useful in selection of the underpinning theory.

2. 'Selecting and defining a problem cannot be done in a vacuum'. Discuss the implications of this statement.

3. Literature review is a bridge between the introductory and methodology chapters. Discuss in depth.

References and further reading:

Faße, Anja *et al. (*2009). Value Chain Analysis Methodologies in the Context of Environment and Trade Research, Discussion Paper No. 429.

Gordon Rugg and Marian Petre (2007). A Gentle Guide to Research Methods, Open University Press McGraw-Hill Education, Berkshire.

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Chapter Four: Formulating Research Problem, objectives, Questions and Working Hypotheses: The Beginning

Introduction

Chapter 2 presented research problem, objectives, questions and hypotheses briefly. Chapter 3 has outlined how these issues are interconnected with literature review and how to build them on literature foundation. Despite these, a separate chapter is devoted to research problem, objectives, questions and related issues given their practical importance in thesis research undertakings.

Research objectives are formulated to direct implementation of research. Objectives directly emanate from the problem statement of the identified researchable issues. The objectives reflect the cause-effect identified in the problem tree and therefore inform the formulation of hypothesis and research questions for the study. Clarity in objectives enhances clarity of hypothesis and research questions, subsequently the conceptual model and data collection needed to address the research issue of concern. The objectives define the limits of the research and describe the expected outputs when the objectives are achieved. The objectives define the needed data and form the links the problem statement with data collection procedure in the research design.

Learning Objectives

Upon completion of this topic, the learner should be able to:
- Distinguish research question from research hypothesis,

- Write well understood research (SMART) objectives,

- Define and describe the difference between general and specific objectives

- Write well understood research questions and multiple working hypotheses, and

- Critique objectives, research questions and hypotheses in research proposals and reports.

Section 1: Picking a Research Project

The first step in choosing a research project is to understand what makes "good" research. Characteristics of good research are: Feasible, Interesting Novel, Ethical and Relevant. These characteristics are discussed as follows.

1.1. **Feasible:** a) *Number of subjects* - Are there ample subjects from which to draw a sample? If so, Will you be able to enroll subjects in the time frame of the study? b) *Technical expertise* - A research team with the skills necessary for designing the study, recruiting subjects, measuring the variables, and managing and analyzing the data. C) *Cost* - both time and money. Estimate the cost of each component of the study (keep in mind most studies will exceed the initial amounts projected). d) *Scope of the project* - Is it manageable? Don't try to accomplish too much. Focus on the most important goals.

1.2. **Interesting:** The study should interest not only the investigator but be of interest to their peers.

1.3. **Novel:** Good research contributes new information. Novelty of a proposed study can be determined with a thorough literature review.

1.4. **Ethical:** A good research question must meet the ethical standards of the scientific community. The acceptable benefit/risk ratio varies with the topic being studied. All studies require review and approval by the institutional review board (IRB).

1.5. **Relevant:** Good research contributes new information that will advance scientific knowledge. The study may lay the foundation for further research in an area or be expanded to a related area.

The implication is that the research topic for study must be carefully selected. The task is a difficult one, although it may not appear to be so. To this end, the following advices useful in picking a research topic are provided based on the above listed characteristics:

I.   Anticipate the results before doing the first study. First and foremost, think of the results you might obtain.

II.   Pick an area on the basis of interest of the outcome. Pick something that is not only of interest to you but to a large part of the scientific community.

III.   Look for an under occupied niche that has potential. There are often important aspects in a field that are not being studied.

IV.   Go to talks and read papers outside your area of interest. Good ideas come from listening to talks and reading papers outside your area of interest.

V.   Build on a theme. Seminal or important discoveries create the need for further research.

VI.   Find a balance between low-risk and high-risk projects. Higher-risk, higher-interest projects allow you to make seminal observations.

VII.   Be prepared to pursue a project to any depth necessary. To be recognized for important research accomplishments often requires a researcher to acquire new skills, call in a consultant, whatever it takes to complete the project.

VIII.   Differentiate yourself. Make an effort for being recognized as an expert in some area.

IX.   Do not forget that it is more difficult to design well-controlled and informative studies. All procedures needed for an optimal design cannot always be performed in a given population. The studies usually take longer time and are more complicated.

X.   Focus, Focus, Focus. Do not forget the need to focus and zoom-in. Trying to make an impact in three or more different areas is extremely difficult. If choosing possible topics is the first step in your research, then developing one into a set of research questions, propositions, possibly a hypothesis, with a clear statement of purpose and objectives are the next steps. By developing these you will be defining what your research will be about, why it is needed and what kind of research it will be.

To justify your research topic, in an attempt to claim that a question deserves the concerted attention of others as well as yourself, the social institution of science exacts the obligation that you justify the claim. Thus, the Background and Justification section should cover the following key points. What is known about the topic? Why is the research question important? What answers will your study provide? And what will this study add to the scientific knowledge.

Learning Activity 4.1.
1. What are the attributes and criteria of a good research topic?

Section 2: Defining Research Problem

This is an area of conflict, concern, or controversy (a gap between what is wanted and what is observed). To develop and articulate a clear problem statement, all available literature concerning the problem must necessarily be surveyed and examined before a definition of the research problem is given. So one should find out what data and other materials, if any, are available for operational purposes; know what data are available that often serves to narrow the problem itself as well as the technique that might be used. Then one should determine if there are certain gaps in the theories, or whether the existing theories are applicable to the problem under study are inconsistent with each other, or whether the findings of the different empirical studies do not follow a pattern consistent with the theoretical expectations and so on.

Critical reading of the literature and experience survey (discussions with people with rich experience) enlightens the researcher and enables to sharpen and/or rephrase the research problem. These allow also to rephrase the research problem into a working proposition, rephrase the problem into analytical or operational terms and puts the research problem in as specific terms as possible so that it may become operationally viable and may help in the development of working hypotheses. Statement of the problem should include (a) a clear statement that the problem/knowledge gap exists, (b) evidence that supports the existence of the problem, (c) evidence of an existing trend that has led to the problem, (d) probable causes related to the problem, and (e) a specific and feasible statement.

Though it has been dealt with briefly in Chapter 3, it is crucial to reiterate the role of theory in problem formulation. Theory plays a dual role in research. On the one hand, new theories solve research problems by accounting for unexplained phenomena and by superseding questionable older theories. On the other hand, existing theory guides researchers in formulating research problems. In determining whether and in what respects a phenomenon or a theory is problematic, researchers consider the context of accumulated theoretical as well as empirical knowledge. And only those phenomena and theories that appear to be problematic when viewed in that context are then studied. Ideally, at least, formulating problems in this manner ensures the orderly advance of knowledge because new research is aimed at solving problems left unsolved in past work rather than being aimed at either totally new or theoretically irrelevant problems. The guiding role of theory in problem formulation is obvious in verificational studies and it is equally important in exploratory research. To a large degree, preexisting theories define both the territory

to be explored in the search for problems, and the nature of the new facts one hopes to discover.

Of course, opinions differ about how explicit the theoretical background of exploratory research should be. Some recommend spelling it out in nearly as much detail as in verificational research, stating exactly what existing theory leads you to expect and why. Others object to granting existing theory such a directive role and prefer instead to work with general theoretical orientations that sensitize the investigator to important but less precise categories of data. Closure in either the definition of concepts or the statement of hypotheses is avoided in favor of more open "sensitizing concepts" and the "suspension of expectations." In the first view, new problems and hypotheses emerge from the confrontation between old theories and new data, much as in verification. In the second view, new problems and hypotheses emerge from the confrontation between the data and a theoretically oriented and sensitized investigator.

Learning Activity 4.2.
1.   How do you determine whether a problem should be researched, or not?

2.   How do you justify the importance of your research problem?

3.   Where do you find a problem or phenomenon to study?

4.   Your research topic needs to be: feasible; and worthwhile. Comment.

Section 3: Research Questions

Research questions are questions you intend to employ systematic research to investigate; they are what is to be investigated. They should embody the purpose and type of research necessary to unravel the intellectual puzzle they set for investigation. General questions are okay as the starting point, but will usually need refining to make them more precise, clear and focused. Big questions are usually too big to be answered. This is because they either lack precision, needing to be broken down into smaller, more manageable questions, or are too vague, needing precision to make the concepts measurable. Hence, questions need to be the right size in terms of allowing a research design to investigate the problems they pose.

The process of developing these details increases the probability of asking the right questions, and therefore, collecting the appropriate data. No amount of time spent, hard work, or elegant statistical methods will

overcome the damage caused by a poorly framed question. Because research questions determine what, where, when and how data are collected, these questions represent an important link between the conceptual and logistic aspects of planning a research project. An enlightening *a priori* exercise entails listing all possible answers to specific research questions (this list should not be influenced by whatever biases you may bring to the research). From the list of possible answers, rank those that appear the most probable answers or outcomes. By definition, the list of ranked answers should be shorter than the list of possible answers. The list and rankings should be kept with the research plan and then examined for possible surprises when the project is completed.

Finally, your questions need to be developed by looking to see what specific objectives will be needed to actualize each question and how each concept is to be defined to identify its major variables. Because, no research questions or poorly formulated research questions will lead to poor research. If you do not specify clear research questions there is a great risk that your research will be unfocussed and that you will be unsure about what your research is about and what you are collecting data for. It does not matter how well you design a questionnaire and/or interview schedule or how skilled an interviewer you are; you must be clear about your research questions. Research questions are crucial because they will:

- Guide the literature search;

- Guide you in deciding what data you need to collect;

- Guide your analysis of your data;

- Guide your writing-up of your reports; and

- Stop you from going off in unnecessary direction and tangents.

Learning Activity 4.3.
1. What are the differences between the central research question and sub-questions?

2. Which one should come first? Research questions or research objectives? Why?

Section 4: Research Objectives

The objectives of a research project are the tasks required to actualize adequately the main elements of the research questions. There is sometimes, as we have said, some variation over what some people call

aims and objectives. Objectives tend to be defined as the tasks you will need to do, in the rough order, to complete your research. Most research projects will need a search and review of the literature, construction and testing of data collection instruments, analysis of the data and a research report. Taking these as the major parts usually require, one way of casting your objectives is to look at your research questions and identify what tasks need to be done in terms of the thesis structure in order to answer them.

To elaborate the issue a bit further, research objectives are often considered as achievements a researcher can point out to show success made in implementing the research project. Objectives describe the endpoints that a researcher will be accountable for. The characteristics of well stated statements of objectives are:

- Logical consequence of the background and problem statement, are achievable with data to be collected from surveys, observations and experiments.

- Have active verbs such as:

    o Determining...

    o Measuring how much...

    o Identifying...

    o Establishing...

    o Evaluating...

    o Assessing...

- Are not statement of the methods:

    o To carry out a survey...

    o To compare treatments...

Because, the methods are developed to meet the objectives, not the other way around.
- Declare the relationships to be investigated, identifying independent and dependent variables.

- Make sense to an informed reader without additional information.

The objectives of a research project summarize what is to be achieved by the study. It should be closely related to the statement of the problem. General objectives state what is expected to be achieved by the study in general terms. Specific objectives are a breakdown of the general objectives. They systematically address the various aspects of the problem and they should specify: what will you do in the study, where you will do it, and why will you do it.

To make the issue clear, it becomes imperative to raise and answer the following question in relation to research objectives. Why should research objectives be developed? The formulation of objectives will help to: focus the study activities, avoid collection of data that are not strictly necessary for understanding and solving the problem you have identified and organize the study in clearly defined parts or phases.

It should be noted also that properly formulated, specific objectives will:

- Facilitate the development of your research methodology,
- Help to orient data collection,
- Facilitate data analysis, and
- Facilitate interpretation and utilization of results.

Finally, the following are pertinent criteria for writing research objectives: a) *Interconnectivity* - Taken together as a set, the research objectives should illustrate the steps in the research process from its start to its conclusion, without leaving any gaps. b) *Answerability* - The intended outcome of the research objective should be achievable. Where this relates to data, the nature of the data required will be clear or at least implied. c) *Measurability* - The intended product of the research objective will be evident when it has been achieved. d) *Transparency* - The meaning of the research objective should be clear and unambiguous. e) *Specificity* - The purpose of the research objective should be clear and easily understood, as are the actions required to fulfill it. And, f) *Relevancy* - The research objectives should be linked to the research question and wider research project should be clear.

Learning Activity 4.4.
1. Research questions express 'what' your research is about. Research objectives express 'how' you intend to structure the research process to answer your question. **True/False**. What is your reason for answering true or false?

Section 5: Multiple Working Hypotheses

Hypotheses give direction to the investigation in terms of where to look, what to look at, what to test and as such have a deductive structure. Hypotheses should be statement expressing the relation between two or more variables, and should carry clear implications for testing the stated relations. Also, a well-grounded hypothesis indicates that the researcher has sufficient knowledge in the area to undertake the investigation, and the hypothesis gives direction to the collection and interpretation of data. To Kerlinger (1968) "hypothesis is the most powerful tool man has invented to achieve dependable knowledge". It is a powerful tool for the advancement of knowledge because it serves as the working instrument or the tentacles of theory and a means for seeking solution to human problems. They are tentative, intelligent guesses posited for the purpose of directing one's thinking and action towards the solution of a problem (Selamat 2008). Hypotheses are derivable from theory and they serve as means through which theories are validated, revised or invalidated through research (Glassman 2007). Once stated, they guide the rest of the study especially in terms of the literature to be reviewed, research design and methodology, data analysis procedure, arrangement of research sections, discussions of research findings, etc.

The method of the working hypothesis is a marked improvement upon the method of the ruling theory; but it has its defects - defects which are perhaps best expressed by the ease with which the hypothesis becomes a controlling idea. To guard against this, the method of multiple working hypotheses is urged. It differs from the former method in the multiple character of its genetic conceptions and of its tentative interpretations. It is directed against the radical defect of the two other methods; namely, the partiality of intellectual parentage. The effort is to bring up into view every rational explanation of new phenomena, and to develop every tenable hypothesis respecting their cause and history. The investigator thus becomes the parent of a family of hypotheses.

The investigator at the outset puts himself/herself in cordial sympathy and its parental relations (of adoption, if not of authorship) with every hypothesis that is at all applicable to the case under investigation. Having thus neutralized the partialities of his emotional nature, he proceeds with a certain natural and enforced erectness of mental attitude to the investigation, knowing well that some of his/her intellectual children will die before maturity, yet feeling that several of them may survive the results of final investigation, since it is often the outcome of inquiry that several causes are found to be involved instead of a single one. In following a

single hypothesis, the mind is presumably led to a single explanatory conception.

Working hypotheses can be directional or non-directional. And yet, to be considered as usable hypotheses they must have explanatory power, must state the expected relationship between the variables, must be testable, should be consistent with the existing body of knowledge (theories and empirical evidences) and should be stated as simply and concisely as possible.

While research hypotheses are never expressed in the question form, research questions are convertible to research hypotheses. Hypothesis generally always indicates a possible influence on the problem variable by another variable – the independent variable. Underlying the establishment of influence is the determination of the relationship among variables. As a means of contributing a solution to the problem, such influence or relationship, if significant, points to the fact that if the independent variable is manipulated, there could be desirable changes on the problem variable, leading to a solution of the problem under consideration. A speculation is a scientific hypothesis if and only if it is testable. That is, it must be amenable to being confirmed or disconfirmed through the collection and analyzing of empirical data.

The convergence or consensus among several empirical evidence must be that which determines the tenability of the statement. A research hypothesis statement necessarily involves or implies the fact that the observed difference or relationship is over and above that which could be accountable for by chance or random error; hence the word 'significant' is always used. A difference or a relationship can be observed, but if such difference or relationship is not above and beyond that which random error could bring about then it is not significant.

Finally, the logic of quantitative research does not encourage the idea of accepting, but of retaining the working hypothesis, because failure to reject the working hypothesis still has some probability that it might be incorrect. So instead of being accepted, such a speculation is retained because further evidence might come to show it false and hence rejected. This is especially so as we did not study the entire population but studied a sample from it. It is therefore not logical to accept that for which there is some likelihood that it might be incorrect as the truth but to retain it as the truth so far pending further evidence. Descriptive studies make do with research questions only, but inferential studies might involve both research questions and hypotheses. The problem variable, or some aspect of it,

which is the dependent variable for the study is often directly or indirectly implied in each research question/hypothesis.

Section 6: Assumptions, Limitations and Delimitations

6.1. Assumptions

Assumptions in your study are things that are somewhat out of your control, in relation to your research problem. For example, if you are conducting a survey, you need to assume that people will answer truthfully. If you are choosing a sample, you need to assume that this sample is representative of the population you wish to make inferences to. Leedy and Ormrod (2010) posited, "Assumptions are so basic that, without them, the research problem itself could not exist".

You cannot just state that these are the assumptions you are making. Instead, you must justify that each assumption is "probably" true, otherwise the study cannot progress. To assume, for example, that participants will answer honestly, you can explain how anonymity and confidentiality will be preserved and that the participants are volunteers who may withdraw from the study at any time and with no ramifications. To assure the reader that a survey will get to the heart of the research problem and enable the researcher to answer the research questions, a pilot study/initial inquiry is often performed.

6.2. Limitations

Limitations are potential weaknesses in your study and are out of your control. We find limitations in almost everything we do. If you are using a sample of convenience, as opposed to a random sample, then the results of your study cannot be generally applied to a larger population, only suggested.

If you are looking at one aspect, say achievement tests, the information is only as good as the test itself. Another limitation is time. A study conducted over a certain interval of time is a snapshot dependent on conditions occurring during that time. You must explain how you intend to deal with the limitations you are aware of so as not to affect the outcome of the study. In addition, indicating the type of difficulties that may be encountered in the present study and the possible analytical shortcomings are also important.

Simply speaking, it refers to what assumptions have you made, or what have you taken for granted about the nature of the behavior you are

investigating, about the conditions under which the behavior occurs and about your methods and measurements (Isaac and Michael 1990). Unlike hypotheses, assumptions are not testable but are statements about observations and experiences related to the study that are taken for granted or are assumed to be true. They are statements that help to remove/reduce doubts on the validity of the study and are accepted in faith, or taken to be true without proof or verification. The question is what are you taking for granted in the conduct of your study?

6.3. The delimitations

Delimitations are those characteristics that limit the scope and define the boundaries of your study. The delimitations are in your control. Delimiting factors include the choice of objectives, the research questions, variables of interest, theoretical perspectives that you adopted (as opposed to what could have been adopted), and the population you choose to investigate.

Your first delimitation was the choice of problem itself; implying there are other related problems that could have been chosen but were rejected or screened off from view. Your purpose statement explains the intent that clearly sets out the intended accomplishments, and also includes implicit or explicit understanding of what the study will not cover.

The delimitations section of your study will explicate the criteria of participants to enroll in your study, the geographic region covered in your study, and the profession or organizations involved. You can also give a philosophical framework to limit your study. You will delineate special characteristics of your sample and the population that it comes from. The selected methodology and variables in your study also set a boundary on what your findings can ascertain.

When writing your research proposal and thesis, it is important to convince your reader of the potential impact of your study. You need to communicate these possibilities with a sense of enthusiasm and confidence, but without exaggerating the merits of what your research could accomplish. That is why it is so important to explicate the assumptions, limitations, and delimitations of the investigation.

What are your self-imposed limitations in the study? How have you narrowed the scope of the study? Such scope includes geographical and conceptual scope (often presented under definition of terms). State precisely what you did/ what you did not do, or what you intend to do / what you do not intend to do, or define the boundary for your study with regard to the scope of the study. Have you decided to focus only on

selected aspects of the problem, certain areas of interest, a limited range of the subjects, etc.? (Isaac and Michael 1990). You might, through sampling, narrowed the population as in the topic. This will jeopardize external validity of the study. What are those constraints imposed by, and may be unique to, you in carrying out this study?

Note: When you are elaborating on the nature of your study or on the limitations and delimitations of your study, you might wish to consider the following: ***Ontology*** - How you, the researcher, views reality: Objectively? Subjectively? A combination of the two? ***Epistemology*** - The methods you use to derive, elicit, and analyze data. ***Theory*** - What interrelated constructs, definitions, and propositions you use to present a systematic view of the phenomenon under investigation. You need to specify relations among variables with the purpose of describing, explaining, and predicting the phenomenon you are studying.

Questions for self-review:
1. What are the characteristics of good research questions?

2. What is a working hypothesis?

3. What are the similarities and differences between research questions and hypothesis?

4. How are mind mapping, brain storming and initial inquiry important in identifying research topics?

5. What does research worthiness mean to you?

Discussion Questions:
1. Discuss how one can narrow or clarify problem focus. Provide examples.

2. Discuss how a literature review allows to sharpen research problem, questions and hypotheses.

3. Your research objectives allow you to operationalize your research questions. Discuss.

4. Craft a sample problem statement, research questions, objectives and working hypotheses and evaluate them using their assessment criteria.

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Chapter Five: RESEARCH DESIGN

Introduction

In this chapter you will be able to start engaging yourselves in scientific research through understanding what the literature reveals, critiquing the literature, simulating research in the classroom, research exercises, mini-group projects on research design preparation and write-up and presentation of research proposals (learning through application) in partial fulfillment of the research methods course in agribusiness and value chains. In sum, this chapter highlights the interdependence and iterative nature of the research process and enables students to think about the process as a whole and the impacts of design decisions on research outcomes.

Learning Objectives

There is a consensus in the literature that competence in conducting research can only be gained through the research process, that some form of practical experience is essential to the learning of research methods. Hence, the major aim of this chapter is to enable students to develop competence in research design.

At the end of this chapter, you will be able to:
- Understand the meaning and essence of research designs;

- Utilize sampling and measurement techniques scientifically and validly in your research work; and

- Select methods which are appropriate to their agribusiness and value chain practice or research questions.

Section 1: Introduction

The decision on what to study has to be followed quickly by a period of planning for the study, or designing the research to enhance its validity. This chapter introduces the planning stage of the research process – its meaning, purpose, and constituents (such as issues relating to sampling and measurement). In short, this chapter will show the importance of research design in defining a problem and building a researchable project (research strategies and questions).

Section 2: Meaning of Research Design

A research design is the total plan of a given study. It outlines how the study will be executed with the minimum of complications. In other words, research design is to scientific research what a building plan is to building construction. You can build without a plan, but it would be less hazardous and more acceptable to the wider community to have a plan before you begin to erect your building. Essentially, a research design maps out the plan, structure and strategy of scientific investigation.

This helps to ensure that research questions are answered easily and accurately, that research objectives are met in an acceptable manner, and that hypotheses are validly and accurately tested. It literally provides a road map for the researcher keen to answer his/her research questions as validly, accurately, objectively and economically as possible.

The research design outlines:
a) Observations that will be made to answer questions posed by the research as accurately, validly, objectively and economically as possible,

b) How the observations will be made,

c) Analytical and statistical procedures (if required) to be applied on data so collected, and

d) If the goal of research is to test hypotheses, how the test is to be executed.

2.1. Functions of a Research Design

The two most important functions of a research design are: to conceptualize an operational plan to undertake the various procedures and tasks required to complete the study; and to ensure that procedures are adequate to obtain valid, objective and accurate answers to the research questions.

2.2. Determinants of Research Design Choice

Factors that determine the choice of research design include the following:
Purpose of Investigation – Is it: Exploratory? If so, you do not require a sophisticated or complicated design. In a sense, an exploratory study is easiest to conduct, since not much is expected of it. It is the kind of study that covers uncharted territory, a pioneering study of sorts, and the

research community tends not to be too critical of its methods or expected too much of its findings. Descriptive? If so, you equally do not require a very sophisticated or complicated design – although more is expected of your study. This is assumedly a higher – level enterprise compared to exploratory studies. Explanatory? This is the highest and most demanding level of investigation. It requires a sophisticated design.

2.3. Practical Limitations in Research Design

The following are the practical limitations in research design.

- Ethical considerations;

- Data difficulties (access, lack, etc.); and

- Resource constraints (time, money, expertise).

Activity 5.1.
1. Write short notes on: Design of the research project; Motivation in research; Objectives of research; Criteria of good research; Research and scientific method.

2. What are the ethical issues that should be considered at the design stage of research?

Section 3: Purpose of Planning: Enhancing Validity

Good planning helps to maximize the validity of the study under question. In this regard, however, there are two types of validity and both are virtually mutually exclusive. In other words, the two cannot be attained or maximized in a single study. Therefore, the type of design adopted, as well as the type of validity to be enhanced, depends on the type of study being considered.

The two types of validity to be considered in the choice and details of research design at the planning stage are:

- Internal Validity, and

- External Validity.

3.1. Internal Validity

Internal validity is achieved and maximized when a research is designed so that, as much as possible, all variables and conditions other than those

being studied are controlled, and that the way the study is conducted also does not affect what is being studied. By this, it is ensured that what the researcher sets out to measure is actually what he measures.

In short, because such a design isolates only the variables being studied, it is then possible to ascertain clearly whether the manipulation or variation in the independent variable is what makes a difference in the dependent variable or not. A research design that seeks to enhance internal validity enables the researcher to do the following:

- Ensure that variables extraneous to the research environment do not intrude into the research environment;

- Ensure full control of the research environment so that he/she can directly measure the relationships he/she wishes to measure;

- Establish which variable precedes the other in time; and

- Eliminate all alternative explanations for the dependent variable.

Obviously, internal validity can be attained and enhanced only when a study is conducted in a controlled, laboratory-type, researcher-created environment.

3.2. Factors Affecting Attainment of Internal Validity

Certain factors can hinder the attainment of internal validity. These include:

Contemporary History: This arises when events outside the study situation affect the dependent variable.

Maturation: This arises when the passage of time affects subjects and creates changes in them. Such changes (physical, psychological, etc.) during investigation may affect responses.

Testing: This arises when there is a need to measure more than once during the study. The initial measurement may influence subjects' subsequent behavior.

Statistical Regression: This occurs when a subject is selected on the basis of some characteristics that, however, are temporary deviations from the person's normal characteristics.

Mortality: This occurs when bias creeps into research as a result of differential loss of subjects, especially in studies that observe and measure changes in subjects' attributes over time.

Instrumentation: This problem arises when the measuring instrument itself or the manner in which it is administered has an effect on the measurement being carried out.

3.3. External Validity

External validity is achieved when a research is designed so that its findings can be generalized to entire populations and/or other situations or settings. In other words, external validity enhances the probability that a particular study will contribute to the formulation of general laws in the real world – that research will contribute to general theory-building by yielding answers that can be made applicable elsewhere. External validity, therefore, touches on the representativeness of research settings and findings and whether it is possible to generalize from such findings to other situations.

3.4. Factors Affecting External Validity

Factors that can hinder the attainment of external validity include:

Non-representativeness of Sample: External validity is difficult to attain if the sample being studied is not representative of its population. In this instance, the ability to generalize findings from the sample to the population will be limited.

Effect of Study Procedure: This becomes a problem when subjects react to the study procedure and respond in a manner different from what would have been their normal reactions.

Selection Biases: This occurs when subjects are selected on purpose to enable the researcher achieve the result that he/she desires.

Activity 5.2.
1. How do you ensure validity in qualitative analysis?

2. Compare the internal and external validity thoroughly. Which one do you think is more important?

3. Does selection of subjects purposively be considered as breach of research ethics? Why? Elaborate.

3.5. Reliability

Reliability refers to the extent to which your data collection techniques or analysis procedures will yield consistent findings. It can be assessed by posing the following three questions:

a) Will the measures yield the same results on other occasions?

b) Will similar observations be reached by other observers?

c) Is there transparency in how sense was made from the raw data?

3.5.1. Threats to reliability

Threats to reliability that are defined by varied authors are:

a) Subject or participant error;

b) Subject or participant bias;

c) Observer error; and

d) Observer bias.

Section 4: Issues in Planning

To take care of the above listed and other problems at the planning stage, certain background issues have to be fully examined and provided for. These are:

a) Sampling (if required),

b) Measurement, including multi-item measurement procedures (indexing and scaling) (if required).

4.1. Sampling

In the social sciences, sampling has become the norm for at least four reasons: Population is often too large for us to study; Population is often unknown; Cost of studying population may be too prohibitive; and It is no longer necessary to study entire populations because we are now able to draw smaller samples from which valid inferences can be drawn for the population.

4.2. The two pillars of sampling

Sampling as a scientific procedure stands on two pillars. These are:

- The principle of randomization, which enables us to draw samples representative of the population; and

- Statistics, which enable us to make valid inferences about the sample and from the sample to its population.

4.2.1. Randomization

Randomization is at the center of scientific (also called probabilistic) sampling in the social sciences. While research can be conducted on samples drawn up without elements of randomization, such research runs the risk of lacking validity and viability. Modern notions of research design, sampling and quantitative data analysis are largely inconceivable without the principle of randomization. The assumption is that randomization ensures that the attributes of the population, which are themselves randomly and normally distributed, are adequately and fairly reflected in samples that are drawn up randomly.

Randomization in sampling helps the researcher to:

a) Eliminate systematic bias (arising from deliberate human manipulation) from the sampling process;

b) Ensure generalizability of research findings by enhancing representativeness of samples; and

c) Predict outcomes and measure the level of random error (arising from scientific sampling and differentials in population and sample attributes from sample to sample).

Randomization is based on two laws. These are:

i. The Law of Normal Distribution: The law states that in a chance situation (such as one involving randomization) there are many possible outcomes n(n-1)/2;

ii. Certain outcomes have a greater chance or probability of happening than others;

iii. Individual outcomes cannot be predicted or determined in advance;

iv.   However, over several trials, the outcome of such chance events becomes predictable because such outcomes tend to follow a normal bell-shape distribution; and that

v.   Outcomes of chance events may differ from trial to trial but such a difference is due to random error, not systematic bias. In the long run, such random errors (population means minus sample mean) add up to zero.

4.2.2.   The Law of Large Numbers

Simply put, the Law of Large Numbers states that the larger the size of a sample drawn from a population, the higher the probability that the mean of the sample will be close to the population mean. In other words, the larger the sample, the closer the true value of the population is approached.

4.3. Statistics

Statistics helps us to:

- Reduce large quantities of data to manageable and understandable form, and

- Compare obtained results with chance expectations and to check whether obtained results differ from chance expectations enough to show that something other than chance is at work.

If observation fits the chance model, it is said that observed relations are not statistically significant. If not, the relations are adjudged to be significant and arrive at reliable inferences about a sample and from the sample to its population.

4.4. Basic Methods of Sampling

There are two broad types of sampling methods. These are:

a) Probabilistic (or Scientific) Sampling Methods; and

b) Non-Probabilistic (Non-Scientific) Sampling Methods.

4.4.1. Probabilistic (or Scientific) Sampling Methods

These are sampling methods in which the researcher is required to utilize the principle of randomization (or chance procedure) in at least one of the stages of the sample process. There are four basic types, namely:

4.4.1.1. Simple Random Sampling: In this method, the entire process of sampling is guided by chance procedures. It is the most scientific of sampling methods and is the model on which scientific sampling is based. However, it is not commonly used in the social sciences and the humanities. This is because it can lead to unrepresentative samples in circumstances in which diversities in the population have to be meaningfully reflected in the sample being drawn up. We must always remember, therefore, that scientific sampling is not an end in itself. It is only a means to the end of drawing up a representative sample from a given population. Where there is a clash between means and end, the end has to prevail. In any case, as is clear below, other scientific methods of sample can be utilized in the social sciences and humanities to address this problem.

The procedure for simple random sampling is as follows:

   a) First, secure a list of the entire population in which every subject is listed only once. The list is the sampling frame.

   b) Second, number every subject in the list.

   c) Third, use a mechanical device (balloting, dice, table of random numbers) to select the subjects that will constitute the sample.

4.4.1.2. Systematic (Quasi-Random) Sampling: This is often confused with the simple random method. It is, however, more systematic – as the name suggests. The procedure is as follows:

   a) First, secure a list of the entire population in which every subject is listed only once;

   b) Second, number every subject in the list;

   c) Third, determine the size of the sample you want to draw from the population.

   d) Fourth calculate the sampling interval, which is the result of dividing the population size by the proposed sample size.

e) Fifth, randomly (using a mechanical device) draw from the sampling frame (i.e. the population list) the first member of your sample. This first member must be drawn from the section of the population not above (but could be equal to) the number that corresponds to the sampling interval.

f) Sixth, beginning with the number signifying the first selected case as indicated above, go down the population list, systematically adding the sampling interval to selected cases until the required number of cases to fill the sample size has been attained.

The advantage of systematic random sampling is that it is easier to use that simple random sampling in situations where the sampling frame (i.e. the list of the entire population) is very long (for instance, a telephone directory). The major weakness of the method, which it shares with simple random sampling, is that it requires a list of the population.

4.4.1.3. Stratified Random Sampling: Stratified random sampling is so called because it requires that the population be divided into strata before sampling takes place within each stratum. Sampling fraction for each stratum could either be equal (if, in the study under consideration, the major interest lies in comparing strata) or unequal (if the major interest of the study is to make findings that are generalizable or applicable to the population. The procedure is as listed below:

a) First, compile a list of the population in which every subject is listed only once;

b) Second, divide all subjects into groups or strata; these strata must be defined in such a manner that no subject appears in more than one stratum; and

c) Third, take either a simple random or a systematic sample from within each stratum proportional or disproportional to the strata's strength/ value in the population.

As indicated above, decision on proportional reflection of strata of the population in the sample depends on the goal of the study under consideration.

4.4.1.4. Cluster (Multi-Stage) Sampling: Cluster sampling is the successive random sampling of units and submits of the population. Cluster sampling on its own part involves dividing the population into large

numbers of groups called clusters and then successively sampling such clusters from very large to the smallest of clusters before finally sampling subjects. The procedure is as follows:

a) First, define the population;

b) Second, identify all possible clusters in the population from the largest to the smallest;

c) Third, successively sample clusters from the very large groups to the large groups to subgroups to sub-sub groups etc. until you get to the stage of individual subjects; and

d) Four, randomly select the subjects.

This is a very useful method when dealing with a large population or when a list at the macro levels of sampling will be difficult, if not impossible, to compile.

4.4.1.5. Sequential (Multiphase) Sampling: This is a sampling scheme where the researcher is allowed to draw sample on more than one occasions. It may be economically more convenient to collect information by a sample and then use this information as a basis for selecting a sub-sample for further study. This procedure is called double sampling, multiphase sampling or sequential sampling. This is a technique frequently used to draw samples in industries for ensuring the quality of their products.

4.4.2.   Non-Probabilistic Sampling Methods

These are non-scientific methods of sampling. They do not apply the principle of randomization in their procedures. The basic ones include the following:

4.4.2.1. Quota Sampling: This is a method of setting quotas and then meeting such quotas, with little or no attention paid to how the quotas are met or what goes into such quotas.

4.4.2.2. Judgment Sampling: A cross-section of the sample selected by the researcher conforms to some criteria. For example, for election prediction purposes samples are made from those who have previous experience of making election predictions. Judgment sampling is appropriate at the initial stage of research. When one wishes to select a biased group for screening purposes, this sampling method is also a good

choice. For example, companies often try out new product ideas on their employees.

4.4.2.3. Snowball (Network or Chain) Sampling: This is a special type of non-probability sampling where respondents are difficult to identify (who to ask for and what criteria they should have in terms of possessions: rich, poor, homeless, etc.), and are best located through referral networks. Perhaps, it can only be used when the target sample members are involved in some kind of network with others who share the characteristic of interest.

A small number of the samples initially selected by the researcher are then asked to nominate a group who would be prepared to be interviewed for the research; these in turn nominate others, and so forth. Reduced sample sizes and costs are a clear advantage in snowball sampling. However, bias is likely to enter into the study because a person who is known to someone has a higher probability of being similar to the first person. Variations on snowball sampling have been used to study people engaged in illegal activities such as drug cultures, teenage gang activities, power elite, community relations, and other applications where respondents are difficult to identify and contact. It is, therefore, useful when the potential subjects of the research are likely to be skeptical of the researcher's intentions (Arber 2001).

4.4.2.4. Accidental Sampling/ convenience sampling/grab: When a sample is adopted for a study just because the sample happens to be available at the appropriate time and place, then the study is said to have used accidental sampling method.

4.4.2.5. Purposive Sampling: This is the deliberate selection of a sample on the basis of the objectives of research. In other words, it is sampling done on purpose.

4.3. Design Effect

The estimation of sampling errors for stratified and multistage samples is more complex than for simple random samples. For the same sample size, a stratified random sample provides less standard error than for a simple random sample; whereas the standard error for a clustered sample is observed to be greater than for a simple random sample. The relationship between the standard error of a complex sample design and that of a simple random sample of the same size is called the 'design effect'. The design effect, therefore, measures the effect of the sample design on the precision of population estimates.

4.4. Sample Size Determination

Determining sample size varies for various types of research designs and there are several approaches in practice. For example, one can specify the desired width of a confidence interval and to determine the sample size that achieves that goal; a Bayesian approach can be used where we optimize some utility function - perhaps one that involves both precision of estimation and cost.

4.4.1. Sample accuracy: refers to how close a random sample's statistic (e.g. mean, variance, proportion) is to the population's value it represents (mean, variance, proportion). To this end, it is crucial to understand the following important point. Sample size is not related to representativeness, *per se*, - you could sample 20,000 persons walking by a street corner and the results would still not represent the city; however, an n of 100 could be "right on." Sample size, however, is related to accuracy. How close the sample statistic is to the actual population parameter (e.g. sample mean vs. population mean) is a function of sample size.

4.4.2. Sample Size Axioms

To properly understand how to determine sample size, it helps to understand the following axioms.

- The only perfectly accurate sample is a census;

- A probability sample will always have some inaccuracy (sample error);

- The larger a probability sample is, the more accurate it is (less sample error); and

- Probability sample accuracy (error) can be calculated with a simple formula, and expressed as a $\pm$ % value.

You can take any finding in the survey, replicate the survey with the same probability, sample plan and size, and you will be "very likely" to find the same result within the $\pm$ range of the original findings. In almost all cases, the accuracy (sample error) of a probability sample is independent of the size of the population. A probability sample can be a very tiny percentage of the population size and still be very accurate (have little sample error). The size of the probability sample depends on the client's desired accuracy (acceptable sample error) balanced against the cost of data collection for that sample size. There is only one method of determining sample size that

allows the researcher to predetermine the accuracy of the sample results. And that is the confidence interval method of determining sample size.

Confidence interval is a range whose endpoints define a certain percentage of the responses to a question. And a Central limit theorem is a theory that holds that values taken from repeated samples of a survey within a population would look like a normal curve. The mean of all sample means is the mean of the population. The confidence interval approach applies the concepts of accuracy, variability, and confidence interval to create a "correct" sample size.

Two types of error: 1) Non-sampling error: pertains to all sources of error other than sample selection method and sample size. 2) Sampling error: involves sample selection and sample size.

Variability: refers to how similar or dissimilar responses are to a given question. The more variability in the population being studied, the larger the sample size needed to achieve stated accuracy level.

The Central Limit Theorem allows us to use the logic of the Normal Curve Distribution. Since 95% of samples drawn from a population will fall within $\pm$ 1.96 x Sample error (this logic is based upon our understanding of the normal curve) we can make the following statement: If we conducted our study over and over, e.g., 1,000 times, we would expect our result to fall within a known range ($\pm$ 1.96 standard deviations of the mean). Based upon this, there are 95 chances in 100 that the true value of the universe statistic (proportion, share, mean) falls within this range! We also know that, given the amount of variability in the population, the sample size affects the size of the confidence interval; as *n* goes down the interval widens (more "sloppy").

So, the following conclusion can be reached from what we have learned thus far. There is a *relationship among*: the level of confidence we desire that our results be repeated within some known range if we were to conduct the study again, and the variability (in responses) in the population and the amount of acceptable sample error (desired accuracy) we wish to have and the size of the sample.

4.4.3. Sample Size Formula

The formula requires that we (a) specify the amount of confidence we wish to have, (b) estimate the variance in the population, and (c) specify the level of desired accuracy we want. When we specify the above, the formula

tells us what sample size we need to use – n. Formulae for determining sample size are available in standard statistics text books.

Learning Activity 4.3.
1. How does research design affect data collected? And vice versa.

2. Why is it important to think through the data likely to be produced from your research at an early stage?

4.5. Measurement

This is the process of empirically observing, codifying and estimating the extent of presence of concepts related to the phenomena under investigation. Measurement involves three basic steps at the planning and execution stages. These include:

a) Devising measurement strategies;

b) Establishing the accuracy of measurements; and

c) Establishing the precision of measurements.

4.5.1. Devising Measurement Strategies

At this first stage, the researcher operationally defines his/her concepts. In other words, this involves setting up operational definitions for the concepts/variables under investigation. Decisions are taken here on the kinds of empirical observations that need to be made so that the attributes or behavior under investigation can be measured.

4.5.2. Accuracy of Measurements

Two key questions that have to be addressed at this stage of the planning process are: To what extent are the measurement strategies being developed for the study reliable? To what extent are such strategies valid? NB. A valid measure is one that measures what it is supposed to measure by enhancing the correspondence between itself and the concept if seeks to measure.

4.5.3. Precision of Measurements

It is important that the appropriate level of precision be chosen in measuring concepts. The level of precision determines the amount of information that can be collected on a given variable (e.g., measuring

heights of children). Precision enhances our capacity to be more complete and informative about the outcome of our study.

4.5.4. Levels of measurement

There are four levels of measurement conventionally agreed to by the research community, following a classification developed by Stevens in 1946. These are (in ascending order of precision):

- The Nominal level of measurement;

- The Ordinal level of measurement;

- The Interval level of measurement; and

- The Ratio level of measurement.

4.5.4.1. The Nominal Level

This involves the classification of observations into a set of categories that have no direction to them. Discrete/categorical variables (e.g. sex, religion) can be measured validly only at this level. It is the lowest level in Stevens' typology. To test relationships arising from such data, appropriate statistical tools of analysis include the Chi-Square (x^2) tests and their derivatives.

4.5.4.2. The Ordinal Level

This level of measurement involves classification of data into a set of categories that have direction to them. Thus, the ordinal level is attained when categories are rank-ordered according to some criterion (e.g. classification of social classes into upper, middle and lower classes or military and security officers into senior, middle level of junior officers according to the criterion of status). Appropriate statistical tools for testing relationships include Spearman Rank Order, Median test and Mann-Whitney tests, among others.

4.5.4.3. Interval Level

Measurement at this level is the process of assigning real numbers to observations and its intervals are equal. Such measurement not only orders categories but also indicates distances between them. It has the property of defining the distances between categories in terms of fixed and equal units.

NB 1. In social science research as well as in the quantitative aspects of the humanities, it is difficult to find interval-level measures.

NB 2. The most appropriate statistical tool for gauging central tendencies in data collected at this level is the mean. Appropriate inferential tools include the Pearson tests, regression analysis, ANOVA and t-Test, among others.

4.5.4.4. Ratio Level

In terms of precision, this is the highest level of measurement. It assigns real numbers to observations, has equal intervals of measurement, and has absolute (true) zero point. Examples of variables whose values can be measured at this level are arms, population, conflict and distance. Essentially, measurement at this level has all the properties of interval level measurement outlined above plus the property that is zero point is inherently defined by the measurement scheme. This property of a fixed and given zero point means that ratio comparisons can be made along with distance comparisons (as, for instance, when we note that a war casualty of 100,000 is twice as heavy as one of 50,000).

All statistical tools requiring that variables be measured at interval level are also appropriate for variables measured at the ratio level. It should also be noted that only continuous variables can be measured at this level of precision.

4.5.5. Methods of Measurement

4.5.5.1. Single-item Measures

While some variables can be measured with a single item on our measuring instrument, some variables are difficult to measure with a single item. Age (in years), sex (male, female, other), religion (Muslim, Christian, traditionalist, other), marital status (single, married, divorced, other) and height in inches, miles, etc.) are variables that can be measured with a single item. However, such variables with multiple dimensions or aspects as freedom, democracy, performance, stability, power, and tolerance require multi-item measures. For these variables, direct indicators or single questions/entries on our measuring instruments (e.g. the questionnaire) will not be adequate. This is where scaling comes in.

4.5.5.2. Multi-item Measures - Indexing and Scaling

Indexing and Scaling are a more complex process of measurement. It is the process of assigning series of ordered items by using a multiplicity of operational indicators. They help to:

a) Provide a means of ascertaining whether and/or how different aspects of a phenomenon hang together;

b) Reduce data to a more manageable size;

c) Measure in empirically justifiable, objective and readily interpretable manner;

d) Overcome the problem of simple measures which may be difficult to interpret; and

e) Ensure universality of the meaning of complex concepts and in the use of scales to measure such concepts. In general, yield more accurate and adequate data.

4.5.5.2.1. Multi-Item Index

An index is a method by which scores on individual items are accumulated in order to form a composite measure of a complex variable. Steps toward the construction of an index include the following:

- First, identify a number of items germane to the measurement of the variable in question;

- Second, assign a range of possible scores for the items; determine the score for each item for each observation; and combine the scores for each observation across all of the items.

The resulting summary is the representative measurement of the phenomenon.

4.5.5.2.2. Scales

These are also multi-item measures as indicated above. However, they are improvements on indexes that are arbitrary in that they allow for both selection of items and the scoring of individual items to depend largely on the judgment of the researcher. Scales, on the other hand, generally involve procedures that are less dependent on the researcher. For more

details on basic scales, including Likert Scale, Guttman Scale, Thurstone Scale and Osgood's Semantic Differential, please go through pp. 84 – 89 of Johnson and Joslyn (1991).

Questions for self-review:
1. If you used a mixed method approach, what reasons would you give to justify this choice?

2. What kind of minimum size would you need in a sample used for qualitative research?

3. What is the purpose of using index numbers?

4. How may the formulation of an initial substantive theory help in the development of a research proposal? Why is it important that your research can be related to a relevant theory base, and when during the project does the theoretical framework need to be identified?

Discussion Questions
1. How large should the sample be?

2. How do you consider non-response and/or responses that fail to produce useable data, in a sampling design?

3. Why do not academics consider purposive sampling more often?

4. Why do you need to know the differences between nominal, ordinal, interval and ratio levels of measurement?

5. Make a detailed review of sample size determination formula and discuss thoroughly with your class mates.

References and further reading:

Gordon Rugg and Marian Petre (2007). A Gentle Guide to Research Methods, Open University Press McGraw-Hill Education, Berkshire.

John Adams, Hafiz T.A. Khan, Robert Raeside and David White (2007). Research Methods for Graduate Business and Social Science Students, Sage Publications Ltd, London.

Mark Saunders, Philip Lewis and Adrian Thornhill (2009). Research Methods for Business Students, 5th edition, Pearson Education Limited, Edinburgh Gate.

Chapter Six: METHODS OF DATA COLLECTION

Introduction

Having formulated the research problem, developed a study design, constructed a research instrument and selected a sample, you then collect the data from which you will draw inferences and conclusions for your study. Depending upon your plans, you might commence interviews, mail out a questionnaire, conduct experiments and/or make observations. To this effect, this chapter introduces methods available to collect data pertinent to your agribusiness and value chain research.

Learning Objectives

Data Collection is a very important aspect of research design and the ability to achieve the research aims and answer the research questions depends on the effectiveness of data collection. Hence, careful consideration and planning of data collection is required. In view of these points, the major aim of this chapter is to enable students to develop competence in use of appropriate data collection instruments as deemed necessary.

At the end of this chapter, you will be able to:

- Learn a variety of data collection methods and data sources that can be used in your research and that allows you to triangulate data;

- Think through the entire research process from the data collection point-of-view so that you can strengthen your study overall;

- Describe and evaluate the main approaches to collecting data;

- Weigh the pros and cons of different methods so that you can decide upon the best data collection method for your particular study;

- Decide which collection method will work best for a given research objective; and

- Design, prepare and use appropriate data collection instruments.

Section 1: Data Collection Strategies

It is worth noting from a very outset that there is no one best way of data collection. Despite this, decision depends on:

- What you need to know: *numbers or stories;*

- Where the data reside: *environment, files, people;*

- Resources and time available;

- Complexity of the data to be collected;

- Frequency of data collection; and

- Intended forms of data analysis.

1.1. Data collection choice

What you must ask yourself:

a) Will the data answer my research question?

b) To answer that: You must first decide what your research question is,

c) Then you need to decide what data/variables are needed to scientifically answer the question,

d) If that data exist in secondary form, then use them to the extent you can, keeping in mind limitations,

e) But if it does not, and you are able to find primary collection, then it is the method of choice.

1.2. Collection of Primary Data

The primary data are those which are collected afresh and for the first time, and thus happen to be original in character. We collect primary data during the course of doing experiments in an experimental research but in case we do research of exploratory type and perform surveys , whether sample surveys or census surveys, then we can obtain primary data either through observation or through direct communication with respondents in one form or another or through personal interviews. This means that there are several methods of collecting primary data, particularly in surveys and

exploratory research. Important ones are: (i) observation method, (ii) interview method, (iii) through questionnaires, and (iv) through schedules.

Learning Activity 6.1.
1. What are the differences between questionnaires and schedules?

1.3. Collection of Secondary Data

Secondary data means data that are already available, that is, they refer to the data which have already been collected and analyzed by someone else. When the researcher utilizes secondary data, then he/she has to look into various sources from where he/she can obtain them. Secondary data may either be published data or unpublished data. Usually published data are available in: (a) various publications of the federal or local governments, (b) various publications of foreign governments or of international bodies and their subsidiary organizations, (c) technical and trade journals, (d) books, magazines and newspapers, (e) reports and publications of various associations connected with business and industry such as banks, stock exchanges, etc., (f) reports prepared by research scholars, universities, economists, etc. in different fields, and (g) public records and statistics, historical documents and other sources of published information.

The sources of unpublished data are many; they may be found in diaries, letters, unpublished biographies and autobiographies and also may be available with scholars and research workers, trade associations, labor bureaus, and other public/private individuals and organizations.

Researcher must be very careful in using secondary data. He/she must make a minute scrutiny because it is just possible that the secondary data may be unsuitable or may be inadequate in the context of the problem which the researcher wants to study.

Learning Activity 6.2.
1. Give examples of different situations in value chain research where you might use secondary data as part of your research.

Section 2: Rules for Collecting Data

The following are the rules one to follow in collecting research data. These are: 1) Use multiple data collection methods; 2) Use available data, but need to know - how the measures were defined, how the data were collected and cleaned, the extent of missing data, and how accuracy of the data was ensured. If you must collect original data: be sensitive to burden on others; pre-test, pre-test, pre-test; establish procedures and follow

them (protocol); maintain accurate records of definitions and coding; verify accuracy of coding, data input.

2.1. Threats to validity and reliability

The following are common threats to validity and reliability originating from less control over confounding variables in the data collection process.

1. Observer bias (can be combated using informant verification),

2. Subject error (subjects not truly representative of the norm),

3. Time error (behaviour at time data collected must also be typical), and

4. Observer error (subject behaves differently because they are being observed).

Section 3: Selection and Use of Data Collection Methods

All methods of collection require rigorous and systematic design and execution that includes: thorough planning, well considered development, effective piloting, weighed modification, deliberate implementation and execution, and appropriate management and analysis.

Methods available here include: experimentation, document analysis, and field methods. This is expected to enable you to: (a) identify basic methods of data collection, (b) make decisions on data collection methods appropriate for specified research topic, and (c) identify and construct measuring instruments appropriate for specified data collection methods.

3.1. Experimentation

In this method of data collection, a researcher sets up a controlled, quasi-artificial, laboratory research situation in which he/she then generates data by observing the relationship between two (or more) variables by deliberately manipulating one variable to see whether this produces a change in the other.

It must be noted that in the social sciences and the humanities, a pure experiment in which the researcher has total control of the research setting, is actually an ideal. Nonetheless, the ingredients of an experiment include the following:

a) A list of variables, including at least an independent variable (called the experimental variable) and at least a dependent variable;

b) At least one experimental or study group (to be exposed to the independent variable) and at least one control group (that will not be exposed to the independent variable). The assignment of subjects from the population and into the groups are expected to be done randomly and, from time to time, in combination with precision matching (in which in addition to randomization, the researcher matches pairs of subjects that are as similar as possible on variables or characteristics being controlled for and assigns one to the experimental group and the other to the control group); and

c) An appropriate research design. The researcher has to select an experimental research design and adapt it to his/her needs. Studies that seek to establish causality (X causes Y) are embarking on a very ambitious enterprise. This is because the logic of causality not only insists that x is a necessary condition for y, it also insists that x is a sufficient condition for y (in other words, that x not only causes y, but that whenever there is x, there will be y).

Three crucial types of research evidence that are required to establish causation beyond reasonable doubt are:

(a) *Evidence of concomitant variation* between dependent and independent variables that suggests either that the two are associated or they are not associated. In other words, such evidence indicates the extent to which the variables concomitantly vary (whether change in x leads to change in y). If the two variables are not associated, there can be no talk of covariance – whether the two co-vary;

(b) *Evidence of time-order*, that such an association is temporally continuous, and that the presumed effect (dependent variable) did not occur before the presumed cause (independent variable); and

(c) *Evidence of elimination of alternative explanations*, to the effect that other factors that could be construed as possible determining conditions of the dependent variable (such as enduring characteristics of subjects, extraneous events other than exposure to experimental stimulus in the form of the independent variable, maturation/developmental changes, influence of measurement procedures at the levels of instrumentation or pretest) are eliminated from the research setting.

The basic measuring instrument for experimentation is the recording schedule. It takes the form of either an interview schedule or a questionnaire. Issues relating to its construction will be taken up later along with those relating to questionnaire construction.

Learning Activity 6.3.
1. Experimental method of research is not suitable in agribusiness and value chain research. Enumerate the problems associated with introduction of this research design in agribusiness and value chain research.

3.2. Document Analysis

This is the method by which we generate data from records and documents (print and electronic, audio and visual, published and broadcast). For the purpose of this series of lectures, two basic types of document analysis are identified below.

3.2.1. Historical Methods/Library/Archival Search

The basic purpose of this method is to enable the researcher to reconstruct the past systematically and objectively through the collection, evaluation, verification and synthesizing of recorded evidence in order to establish facts and reach defensible conclusions as required in relation to research questions, objectives and hypotheses.

Its characteristics are as follows:

- It depends on data observed by others and, for this reason, the researcher has to test the data for authenticity, accuracy and significance,

- It is rigorous, systematic and exhaustive, and

- It is a critical method.

3.2.2. Content Analysis

Content Analysis involves the objective, systematic, often quantitative use of manifest communication material and documents to generate data. The method enables the researcher to distill from manifest content elements of latent content, influencing factors and intent of the material in question.

3.2.2.1. Types of Content Analysis

There are two broad types, namely,

(i)   Analysis of "What" Categories – focusing on substance, and

(ii)   Analysis of "How" Categories – focusing on form of content.

3.2.2.1.1. "What" Categories"

These include examination of subject matter, direction, authority and target as presented hereunder.

a) **Subject matter:** Such content analysis answers the most elementary question: what is the communication or content about? Is it about war or about peace? Is it about strategy or tactics? Is it about quality of personnel, or quality of materials?

b) **Direction:** This focuses on the orientation of content, referring to the pro and con treatment of the subject matter. Does the content condemn war or commend it? Does it support peace or oppose it? Is it favorable toward adopted strategy (or tactic) or is its content unfavorable, or neutral? Is its position positive in assessing quality of personnel (or materials), or is it negative, neutral, or not clear? Does it approve or disapprove, commend or condemn?

c) **Authority:** This type of analysis focuses on the source of the content; in other words, the person, group, institution, country, subject, etc., or in whose name the content is made.

d) **Target:** This focuses on the audience or object to which the content is directed.

3.2.2.1.2. "How" Categories

Content analyses in this category include those that focus on: a) Form or Type: This has to do with ordinary distinctions among forms in which content is presented. For instance, a study of books on the Ethiopian Civil War (Brothers at War) has to answer the question of what type of book? Fiction or non-fiction? A study of security concerns in radio broadcasts that could express these concerns: news, entertainment, interviews and commentaries).

3.2.2.2. Stages in Content Analysis

The following ones are stages that are commonly used in content analysis.

- Identify and operationally define your concepts;

- Conduct sampling for title of publication/material and for time/period;

- Establish the Unit of Analysis;

- Establish the Content Unit;

- Identify and operationally define your concepts and variables;

- Construct appropriate measuring instrument called Coding Schedule; and

- Test for Coder Reliability.

3.2.3. Statement Analysis:

This is done more in the humanities than in the social sciences. It refers to the grammatical or syntactical (sentence – building) form in which the content is made or its structural component – how much is fact, preference etc.

3.3. Field Methods

Field methods are defined in terms of where much of the data collection associated with their application takes place – literally in the field (and not in libraries or laboratories). In essence, field methods involve the collection of data in the field. It involves the study of human institutions, characteristics or behavior as they occur in their natural settings.

3.3.1. Types of Field Methods include four basic types:

3.3.1.1. Observation Method

- Direct observation;

- Indirect observation;

- Participant observation;

- Non-participant observation;

- Controlled observation; and

- Uncontrolled observation.

3.3.1.1.1. Direct Observation

All good research includes some element of observation. Much can be learned by observing what people actually do, how they do it, and the setting in which they do it. Observation involves all of the senses: sight, hearing, taste, touch, and smell. The careful observer will consciously study specific aspects of the reality that appear relevant to the research project.

3.3.1.1.2. Indirect Observation

Indirect functional assessment methods use behavior interviews or surveys to gather information about the person exhibiting the behavior from themselves others who know this person well. The main advantage of indirect methods is they are easy and cheap to conduct and do not take much time. The main disadvantage of indirect methods is that the people involved are relying on their memories, thus some information may be lost or inaccurate

3.3.1.1.3. Participant Observation

Participant observation is one type of data collection method typically done in the qualitative research paradigm. It is a widely used methodology in many disciplines, particularly cultural anthropology and Ethnology, less so in sociology, communication studies, human geography and social psychology. Its aim is to gain a close and intimate familiarity with a given group of individuals (such as a religious, occupational, sub cultural group, or a particular community) and their practices through an intensive involvement with people in their cultural environment, usually over an extended period of time.

3.3.1.1.4. Non-Participant Observation

Nonparticipant observation is a data collection method used extensively in case study research in which the researcher enters a social system to observe events, activities, and interactions with the aim of gaining a direct understanding of a phenomenon in its natural context. As a nonparticipant, the observer does not participate directly in the activities being observed. Nonparticipant observation has a long history in the social and behavioral sciences. It is distinguished from participant observation by the observer's level and kind of involvement in the research setting, the nonparticipant

observer adopting a more distant and separate role. At its most extreme, the nonparticipant observer has no contact whatsoever with the researched, but watches and records events through one-way mirrors or with cameras. Nonparticipant observation may be overt or covert.

3.3.1.1.5. Controlled Observation

Controlled observation is a type of observational study where the conditions are contrived by the researcher. This type of observation may be carried out in a laboratory type situation and because variables are manipulated is said to be high in control. The weakness of the method is that it will be low in ecological validity compared to naturalistic observation. If participants are aware they are being studied they behave differently. In sum, it refers to experimental methods.

3.3.1.1.6. Uncontrolled Observation/ Naturalistic observation

Uncontrolled/ Naturalistic observation is a type of observational study where participants' spontaneous behavior is recorded in their own environment. Interference is kept to a minimum and therefore such studies are said to have high ecological validity.

However, because variables are not manipulated they are said to lack control. This lack of control makes replication difficult and there are also risks of observer bias and ethical issues of invasion of privacy. Simply speaking, it refers to quasi-experimental methods.

Learning Activity 6.4.
1. Examine the merits and limitations of the observation method in collecting primary data. Illustrate your answer with suitable examples from value chain research.

3.3.1.2. The Interview Method

- Loosely structured interview;

- Highly structured interview, often with interview schedule;

- Open interviews;

- Closed interviews;

- Face-to-face interviews;

- Telephone interviews;

- Oral interview;

- Internet interviews;

- Focus Group Discussion (FGD);

- Panel Studies; and

- Elite Interview.

Learning Activity 6.5.
1. What are the key areas of competence that you need to develop in order to conduct an interview successfully?

Remarks

Highly structured interviews are often confused with the Questionnaire. The basic difference is that, in interviews, the measuring instrument, called the interview schedule, is filled by the researcher or his/her field assistant, whereas the questionnaire is filled by respondents (research subjects). This basic difference has implications for the construction of measuring instruments, since the questionnaire has to contain more instructions on how it is to be filled than the interview schedule.

3.3.1.3. The Questionnaire

- Group Questionnaire;

- Privately Filled Face-to-Face Questionnaire;

- Mail Questionnaire; and

- Electronic Questionnaire.

3.3.1.4. Combined methods

This is a combination of any of the preceding methods. Researchers often use several methods in a single study. The main reason for using multiple methods is that most studies, even fairly small and well-focused ones, require a considerable amount of information. Some is background information that is needed to put the study into its proper context. This may include data on the country's economy, the history of the industry, or something about the ethnic makeup of the population. Then there is the information needed to address the particular questions of the study at hand. Here the research questions guide the choice of method. Questions

aimed at qualitative or intangible realities, such as perceptions, feelings, or ideas require a different method from those whose answers are more easily measurable. When, as is often the case, the study has both types of questions, multiple methods are called for.

Section 4: General Principles Guiding Instrument Construction

Each method of data collection has its own instrument for measuring/recording such data. Experiments require the use of recording schedules that have much in common with interview schedules. For field methods, the instrument varies from field notebooks (for observations and certain interviews, including loosely structured, open, oral and elite interviews and FGDs) to interview schedules for highly structured interviews and the questionnaire for the questionnaire method.

For those instruments that require elaborate construction as the recording schedule, the coding schedule, the interview schedule and the questionnaire, the general principles underlying such construction are itemized below.

a) Define the research problem;

b) From (a), generate required variables;

c) From each variable, exhaustively generate categories to cover range of possible values. In case(s) where it is felt that this cannot be exhaustive, create an open space in which to indicate appropriate value.

d) Items listed in the instrument should be appropriate.

e) Items aimed at people should be as simple as possible. So, be clear and unambiguous. Use simple language. Avoid vogue words.

f) Items should be short and easy to follow, especially if they are aimed at people.

g) Avoid negative biased or leading items, especially if the instrument is aimed at people.

h) Avoid double-barrel items/ an informal fallacy.

i) Avoid hypothetical items in dealing with people.

j) Avoid personalized and embarrassing items when dealing with people.

4.1. Instrument Design

Most instruments that are targeted at people (recording schedules, interview schedules and questionnaires) are often in three parts whereas the coding schedule often comprises only one part (essentially the list of variables and their possible values). This is made up of (a) **a short introductory note** containing:

- Self-introduction by researcher/assistant;

- Purpose of study (make this general, not too specific);

- Statement pleading the respondent fills the instrument himself/herself if a questionnaire;

- Assurance of anonymity to ensure sincerity, and

- Guideline on how the instrument is to be returned to researcher/ assistant if a questionnaire.

(b) **Main Body:** The length of this section will depend on the goal of the study. The general rule, however, is that the section should not carry redundant items. This is especially so for instruments to be administered on people, in order not to complicate response rate problems.

(c) **Closing Section:** For instruments administered on people, show gratitude and, for questionnaires, remind respondents about what next to do in terms of getting the instrument back to the researcher or his/her representative.

4.2. Range of Items

In constructing the instrument, it is important to make wise use of the range of items available. These include the following:

4.2.1. Filter Items

These help to eliminate subjects as required.

4.2.2. General versus specific items

In terms of structure, it is usually preferred that general items be listed before specific ones.

4.2.3. Biographical Items

These items seek to collect data on demographic attributes of subjects. When the subjects are human beings, the question arises: do you list demographic items first – or last? There are two suggestions here. One is that, because people often get touchy when you start by asking them demographic questions, and also because items that have direct bearing on the research should be asked first, demographic items should be deferred to the very end. Another suggestion is that demographic items should be listed first because they often provide independent variables, but even more so in studies whose main goal is to study demographic issues.
Matrix Items: A matrix item is a combination of items with the same set of answers. This helps to save space.

4.2.4. Free-Answer Items

These are items with open-ended responses.

4.2.5. Multiple-Type Items

These are close-ended items with several options listed as responses to them.

4.2.6. Dichotomous items

These are items with only two possible responses.
Factual Items: These are items that seek to measure the knowledge level of subjects. They are often problematic.

4.2.7. Opinion Items

These are items that tap at the domain of opinion. They are also problematic, because they need to simultaneously be extensive (be many-sided) and intensive as well as sensitive to nuances.

Questions for self-review:
1. Describe the different steps involved in a research process.

2. What are the differences between questionnaire and interview schedule?

3. What does experimentation mean to you in agribusiness and value chain research? Give concrete examples?

Discussion Questions:
1. Discuss the similarities and differences between research validity and reliability thoroughly.

2. How does data used in the analysis affect validity and reliability of research results? Discuss.

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Chapter Seven: RESEARCH IN VALUE CHAINS

Introduction

Dear Students, this chapter attempts to cover the broad terrain of methods of enquiry used in researching value chains. Making use of the work of Kaplinsky and Morrison (2000) it endeavors to comprehensively cover as many aspects of value chain analysis as possible so as to allow researchers in agribusiness and value chain management to dip in and utilize what is relevant and where it is appropriate; given a diverse set of methodologies.

Learning Objectives

The major aim of this chapter is to enable you to understand that value chain is at most providing a framework for the generation of data and provision of an analytical structure. To this end, you will be exposed to descriptive and analytical tools available in carrying out research that are particularly useful for examining value chains.

At the end of this chapter, you will be able to:

- Understand why a value chain analysis is important;

- Know the point of entry for value chain analysis;

- Understand importance of mapping value chains in researching value chains;

- State importance of product segmentation in value chain studies;

- Analyse production efficiency of different actors in value chain analysis;

- Understand importance of power relationships and upgrading considerations in value chain research; and

- Undertake gender disaggregated research in value chain.

Section 1: What Is a Value Chain And Value Chain Research?

Kaplinsky and Morris (2002) define a value chain as the full range of activities which are required to bring a product or service from conception, through the different phases of production (involving a combination of physical transformation and the input of various producer services), delivery to final consumers, and final disposal after use. In Kaplinsky and

Morris approach, value chain analysis seeks to characterize how chain activities are performed and to understand how value is created and shared among chain participants.

Value chain research goes beyond the simple mapping of value chains in sectors: it needs to understand the nature of relationships between market players; it needs to understand the reasons for constraints that are preventing value chains from achieving the desired outcomes; it needs to identify alternative opportunities for income and employment creation. Based then on the findings of the value chain research, strategies can be formulated that that will eventually lead to value chain development.

1.1. Why is value chain analysis important?

There are three main sets of reasons why value chain analysis is important in this era of rapid globalization. They are:

a) With the growing division of labor and the global dispersion of the production of components, systemic competitiveness has become increasingly important;

b) Efficiency in production is only a necessary condition for successfully penetrating global markets; and

c) Entry into global markets which allows for sustained income growth – that is, making the best of globalization - requires an understanding of dynamic factors within the whole value chain.

1.2. The point of entry for value chain analysis

Which chain – or chains – is/are the subject of enquiry very much depends on the point of entry for the research inquiry. The point of entry will define which links and which activities in the chain are to be the subject of special enquiry. For example, if the focal point of the enquiry is in the design and branding activities in the chain, then the point of entry might be on design houses, or the branding function in key global marketing companies. This will require the research to go backwards into a number of value chains which feed into a common brand name (for example, the different suppliers to Nestles).

At the other end of the scale, a concern with small and medium sized firms, which feed into a number of value chains, might require the research to focus on final markets, buyers and their buyers in a number of sectors, and on a variety of input providers.

Once the point of entry is defined, one of the problems which arises is that the theory of value chains suggests simplicity and an easy clarity of focus. However, the real world can be much messier as the following Figure suggests, and the researcher will sometimes have to make arbitrary decisions on what to map in charting a path through complex value chains.
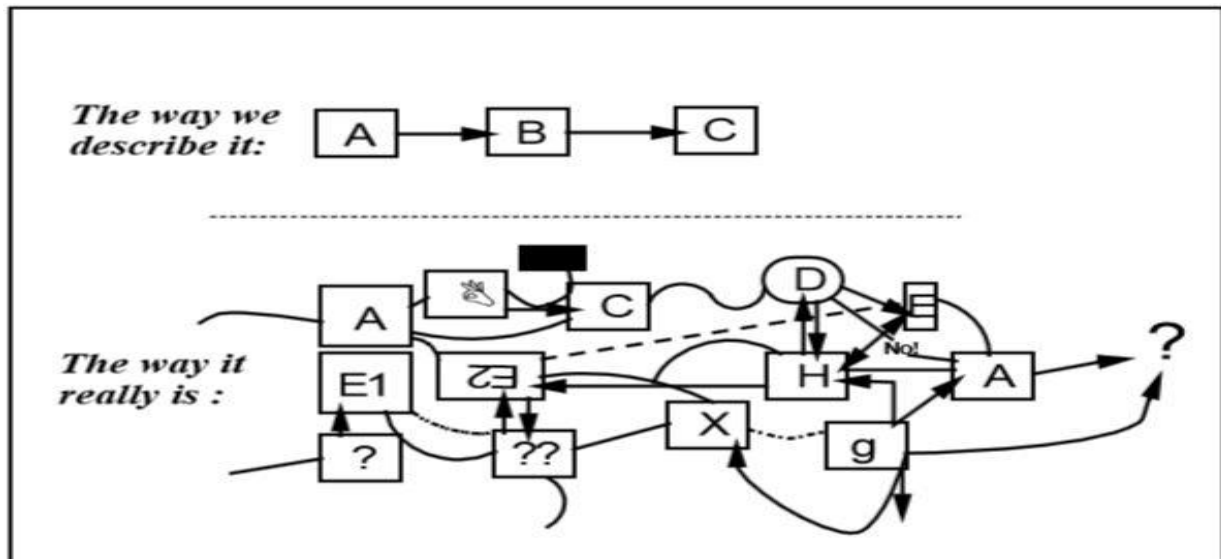
1.3. Mapping value chains

Having identified, the value chain in question, the task is then to put numbers and values to the variables under investigation. Here, which variables are chosen will reflect the primary questions being addressed in the research – for example, as we shall see below, a gender focus may suggest that a specific gender-lens be utilized to collect issue-specific data which identify the role played by women throughout the chain.

But, leaving aside these specific interests, it is likely that all value chain analysis will gain from constructing a "tree" of input-output relationships which include most of the following primary general accounting identities:

- gross output values;

- net output values (that is, gross output, minus input costs);

- the physical flow of commodities along the chain;

- the flow of services, consultants and skills along the chain;

- employment, where relevant distinguishing between permanent (on payroll) and temporary (off payroll) staff, gender, ethnicity;

- destination of sales - for example to wholesalers and retailers; concentration of sales amongst major buyers; number of buyers; and

- Imports and exports, and to which region.

In collecting these data it will generally be important to generate data over time, showing the trajectory of change as well as the position in any one point in time. Generally, the preceding few years might provide an adequate dynamic picture, but this depends on the research question being pursued.

Learning Activity 7.1.

1. What is a value chain map and why is it useful?

2. Plot a value chain of one or more sectors, distinguishing between value chains, value links and activities.

3. Chart different types of activities and links in a value chain, distinguishing between those which involve physical transformation, and those which reflect service inputs.

Section 2: Research Related To Product Segments and Critical Success Factors In Final Markets

2.1. Product Segmentation

One of the distinctive features about contemporary production systems is that they tend to be "market-pulled", as opposed to the "supplier-push" nature of protected and low-competition value chains in previous decades. This puts a primacy on the characteristics of final product markets in every chain, and generally represents a high-order priority in all value chain studies.

At the very least this will require a mapping of market size and market growth. But, although to some extent this depends on the focal point of the research, it will almost always be important to decompose the final market in the value chain into different market segments. Prior to the 1970s in the industrialized countries, and until the demise of import substituting industrialization in developing countries, markets were relatively homogeneous.

The key challenge facing the producer was to provide adequate volumes into supply-constrained markets. Before supply capabilities began to exceed market demand, and where competition was rife, the "winning" selling point was generally price. But in the last quarter of the 20th century, as supply capabilities generally began to exceed effective demand, markets became much more demanding as competitive pressures increased.

Contemporary global markets comprise a number of key characteristics which will need to be analyzed to understand value chain dynamics. The critical components are that: They are segmented. For example, in foodstuffs they comprise low income processed foods, convenience foods, organic foods, exotics, ethnic products and so on. Each of these markets will have its own distinctive market characteristics, and together with market size and growth, these will need to be documented.

These market characteristics are referred to as Critical Success Factors (CSFs). Generally, in low income final markets, price will be a relatively important CSF, but it will not be unique. Customers will also require quality, differentiation and branding. In higher income final markets these non-price CSFs will generally be relatively more important, with innovation, customization and quality dominating. In intermediate markets (for example for components), firms may feed into a variety of chains serving the needs of different final market segments.

So, for example, when they feed auto components into cars for high income markets, they will be required to produce in small volumes, to make small deliveries and to reach high levels of quality. By comparison, assemblers selling into the budget, mass-market may be more concerned with price, and may prefer larger volumes of relatively standardized components.

Not only are markets increasingly segmented, with each segment having distinctive combinations of CSFs, but they are also increasingly volatile. They change rapidly. For example, even in mass markets in the global clothing industry, the number of seasons has grown from two (winter, summer) to four (winter, spring, summer, autumn) and now to eight (early and late summer, and so on).

The Critical Success Factors in each market can be readily grouped into those factors which are "order qualifying" (that is, producers need to achieve these in order to participate in these markets), and those which are

"order winning" (that is, these are the critical factors which lead particular firms to succeed, perhaps by selling at a price premium).

Different perceptions of market requirements: America, Europe and Japan

EUROPE	USA	JAPAN
Customer fulfilment	Customer fulfilment	Introducing new products
Introducing new products	Introducing new products	Transforming physical materials
Product support	Product support	Procurement
Transforming physical materials	Procurement	Product support
Procurement	Transforming physical materials	Customer fulfilment

Then the key question would be the following. How can these different market characteristics be researched?

Primary research on market characteristics

Market characteristics	Data Sources	Key respondents
Market segmentation	Industry consultancy reports; interviews with retailers and major final producers in the chain; industry associations	Consultants; buyers in retailers; sales managers in producers
Critical Success Factors	Undertake CSF analysis (see below)	Buyers in retailers; sales managers in producers
Order-qualifying and order-winning characteristics	Undertake CSF analysis (see below)	Buyers in retailers; sales managers in producers
Market volatility	Industry consultancy reports; interviews with retailers and major final producers in the chain; industry associations	Consultants; buyers in retailers; sales managers in producers

For primary research, a useful tool for conducting analysis of CSFs and order- qualifying and order-winning characteristics is through the use of scored responses on a 1-10 or 1-7 scale. The first step is to undertake a limited number of pilot interviews to get a feel for the CSFs in a particular market or market segment. These will vary by sector. For example, perishability may be an issue in food products, but not in electronics or banking services.

Thereafter, key respondents should be asked how important each of these CSFs are in each of the key market segments, using a scale of 1 (not important) to 7 or 10 (extremely important). Experience suggests that each of these scaling points needs to be described briefly, otherwise respondents seldom utilize the bottom of the range.

The same CSFs should be utilized in each segment of a sector market to facilitate comparison between segments, but respondents should also be offered an "other category" to write-in CSFs not provided to them. A list of CSFs specific to the automobile components and clothing sectors in the South African final market is provided below.

Assessing the relative importance of CSFs in the auto components and clothing sector in South Africa

Industry specific CSFs		1	2	3	4	5	6	7
Auto components	Clothing sector	Not Important		Moderately important		Fairly important		Critically important
Quality	Quality							
Price	Price							
Delivery reliability	Delivery reliability							
Conformance to specification								
Packaging								
Flexibility	Flexibility							
Innovation	Innovation							
Financial stability	Financial stability							
	Responsive-ness							
Other:								

It is then possible to plot these responses on to a radar chart (easily done in Microsoft Excel), which provides a picture of these preferences, and is particularly useful in that it makes it clear that modern markets are characterized by multiple CSFs. For example, in many markets it may not be a matter of price or quality, but price and quality.

Moreover, if both are scored high, there may be little trade-off between CSFs - that is, buyers may not be prepared to pay more for higher quality but may require both. Figure on the next slide provides an example of the pattern of CSFs in different segments of the clothing sector in South Africa, the upmarket AB and the down market CD sectors.

CSFs in upmarket and downmarket clothing sectors in South Africa

Fig 1
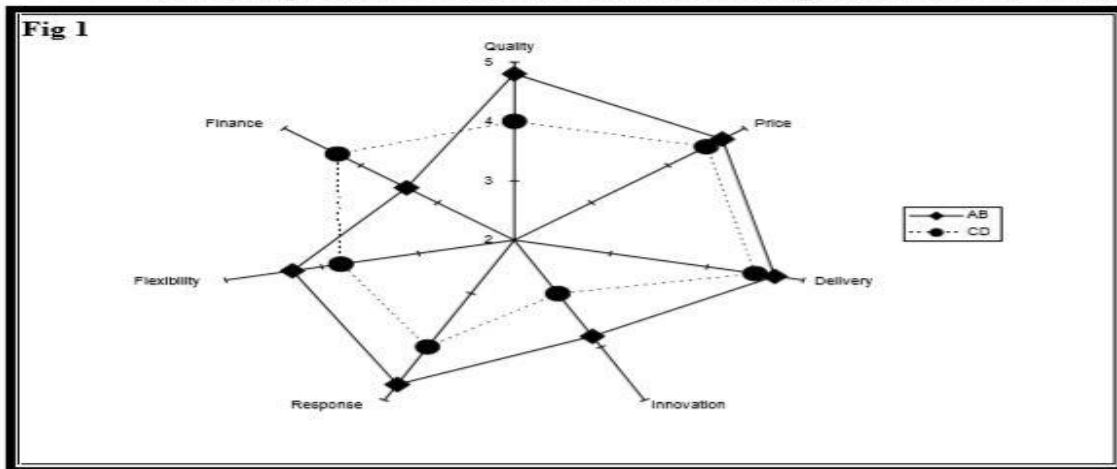
Source: Industrial Restructuring Project 2000

One of the key problems which emerges in collecting data involving qualitative perceptions of key informants is the issue of triangulation, that is, the means of verifying data which have been collected. (This is true of all data collection, not just on CSFs). Therefore, wherever possible, it is desirable to cross-check data.

An example of how this cross-checking methodology can be used can be drawn from this analysis of market characteristics. Here the same questions can be provided to both the suppliers and the buyers in a market transaction. This serves a dual function both of triangulating data and of assessing the capacity of producers to "hear" their final markets effectively, a precondition for value chain systemic efficiency (see below).

In the case of the auto components study of CSFs shown in Figure given below for example, the same data was sought from both buyers and sellers. It can be seen from this analysis that the suppliers tended to underestimate how demanding their customers CSFs really were, focusing on only a narrow range of criteria, namely quality, price, delivery reliability and conformance to standards.

Perceptions of CSFs in South African auto components sector: Supplier and buyer perceptions.
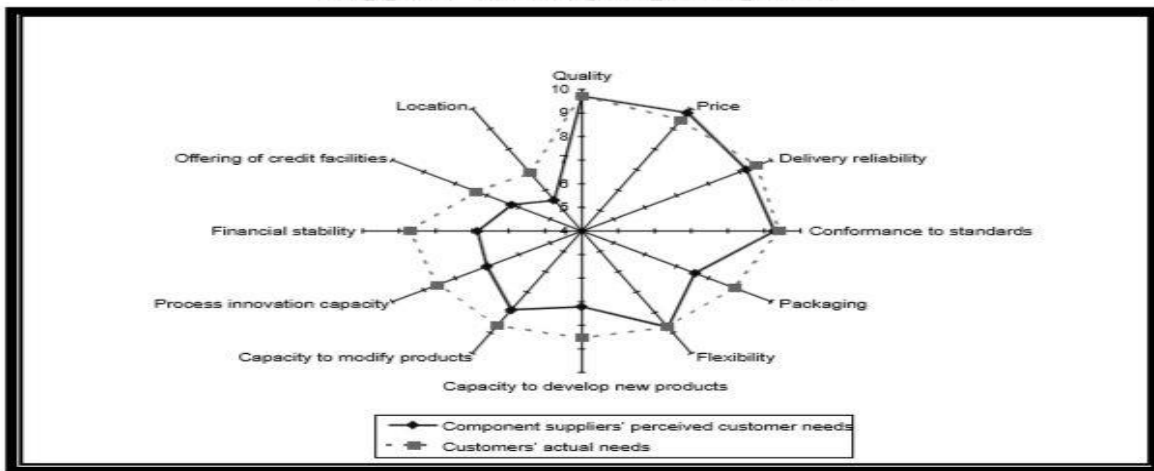
Source: Barnes, 2000

Section 3: Research on How Producers Access Final Markets

One of the powers of value chain analysis is that it goes beyond firm-level analysis. That is, a narrow focus on the competitiveness of individual producers, or indeed even a chain of producers, may not explain their success in global markets. This is because each of these producers needs a point of entry into global markets that is they need to be connected.

The point is that different forms of connecting intermediaries will affect the terms of entry into global markets and the capacity of individual producers to upgrade. In terms of orders of importance, therefore, knowledge of the ways in which disparate producers are connected into different final markets is of particular importance to value chain analysis; this links, as we shall see below, to the ability to characterize value chains as being either "buyer-driven" or "producer driven".

From the perspective of value chain analysis, the key issues to research are: The identification of the key buyers in a particular chain. In some cases these buyers might be at or close to final markets, particularly in those non-durable consumer goods industries which Gereffi characterizes as "buyer-driven" sectors, such as clothing, food, toys and footwear. In other sectors, the major buying decisions may be made by the systems assemblers, for example the auto assemblers reaching agreements with first-tier global suppliers. But in other cases, markets may be more fragmented, such as in service sectors such as tourism.

The dynamics of the buying function. In many chains, the buying function is becoming increasingly concentrated. Having identified the key buyers, with an eye to the dynamics of the buying function, the next step is to

chart the CSFs which these buyers exercise. In most cases these CSFs are defined by the market segments in which they operate, but often buyers in the same segments will nuance their requirements in particular ways. Linked to this, buyers will often have strategic judgments about specific sources of supply. They may favor particular regions – Africa, for example, may be seen as unreliable, or buyers may find it uncomfortable to travel to these regions.

Supply chain management techniques have helped to upgrade systemic competitiveness. They are often linked to the durability of relationships between buyers and suppliers, which in turn is linked to the number of suppliers with whom buyers cooperate. The development of long-term and high-trust relationships generally require a smaller number of suppliers, so the number of, and the degree of concentration of key suppliers, are important data-sets.

Related to this is the issue of supply chain upgrading (that is, executive functions in value chain governance). In some cases buyers might limit their efforts to rationalizing their supply base and working to improve trust-relations over time. But in other cases, where supplier capability may be inadequate, buyers may provide inputs to assist their suppliers to upgrade their efficiency. They may do this directly, or through utilizing 'buying agents' in the country in question.

Analysing how producers are connected to final market

Issues in buying	Method of data collection	Data required
Identification of key buyers	Analysis of key market segments; ask suppliers for names of major buyers	Concentration ratios in market segments[a]; names of key buying firms/individuals
Dynamics of the buying function	Analysis of key market segments; discussions with key buyers	Changing distribution of sales through different marketing channels
CSFs of different buyers	Interviews with key respondents	Use 1–7 CSF methodology discussed above; time trend of competitiveness of suppliers
Strategic judgements on sources of supply	Interviews with key respondents	Judgements of which supply sources are likely to be winners, and why this might be the case
Supply chain management policies	Interviews with key respondents, both amongst buyers and suppliers (to triangulate results)	Overview of strategic policy; number and concentration of suppliers; length of relationship with key suppliers; use of open-book costing[b]; frequency and depth of communication between buyers and suppliers; frequency and nature of visits to and by suppliers, and who makes visits
Supply chain upgrading policies	Interviews with key respondents, both amongst buyers and suppliers (to triangulate results)	Specific steps taken to upgrade (or prevent upgrading) by suppliers; size and budget of supply chain management function in buyers; frequency and nature of visits to and by suppliers, and who makes visits

Section 4: Benchmarking Production Efficiency

Having charted the dynamic nature of final markets, and the ways in which producers are inserted into these markets, it is then necessary to analyze the productive efficiency of different parties in the value chain. This is referred to as "benchmarking". The essential features of benchmarking are: How to link benchmarking to wider issues? Benchmarking is seldom important in its own right, it needs to be set against the challenges which confront the firm. Most often, these challenges are defined by the ability of the firm to meet the CSFs which it or its chain confronts in its final markets.

The key drivers which a chain may face are: Cost competitiveness; Quality; Lead times to satisfy customer orders; The capacity to make minor and frequent changes (through continuous improvement); The capacity to make more fundamental changes to products and processes; and Meeting each of these market drivers requires operational practices, and will be reflected in performance outcomes; both these performance outcomes and practices can be benchmarked, against internal operations over time, and against competitors.

The link between CSFs in the market to what is benchmarked in terms of practices and performance

Market drivers	Operational performance measures	Linked organisational practices
1. Cost control	Inventory use (raw materials, work in progress, finished goods)	Single unit flow, quality at source, cellular production, production pulling (kanbans)
2. Quality	Customer return rates, internal reject, rework and scrap rates, return rates to suppliers	Quality control structures, statistical process control, quality circles, team working, multi-skilling
3. Lead times (value chain flexibility)	Time from customer order to delivery, delivery frequency of suppliers and supplier delivery reliability, delivery frequency to customers and delivery reliability	Business process engineering, cellular structures in order processing and dispatch, value chain relationships and supply chain management
4. Flexibility (Internal operational flexibility)	Manufacturing throughput time, machine changeover times, batch and lot sizes, inventory levels, production flow	Production scheduling, JIT, single minute exchange of dies, multi tasking and multi skilling, cellular production in manufacturing
5. Capacity to change (Human resource development)	Literacy and numeracy levels, employee development and training, suggestion schemes, labour and management turnover rates, absenteeism rates, output per employee	Continuous improvement (kaizen), work organisation, worker development and commitment programmes, industrial relations
6. Innovation capacity	R&D expenditure (process and product), contribution of new products to total sales	Concurrent engineering, R&D

Source: Barnes, 1999; Industrial Restructuring Project: Policy Brief no 5, 2000

4.1. Whom to benchmark against?

The analytical challenge is to document relative productive efficiency, but relative to whom? Here there are a number of options, comparing a firm or a chain against:

- Its own historic performance;

- The performance of firms doing very similar things (for example, fresh fruit with vegetable packers); this close-comparison is especially useful, but may often be difficult to achieve;

- The performance of firms in the same sector, but not making the same products (for example, brake-hoses and filter-manufacturing in auto components); and

- Performance of firms in other sectors, but with similar processes (for example, comparing quality processes in banking and insurance services).

In general, benchmarking is best undertaken with firms producing like-for-like products and services, but this may often not be possible.

4.2. What to benchmark?

Two sets of benchmarked data are important: Which activities to benchmark? In general, benchmarking has been applied to activities involving the physical transformation of inputs, for example operations on the shop-floor in industry, growing practices on the farm in agriculture, and down the mine in the resource sector. It will also be desirable to benchmark comparative processes in design, marketing and office activities (such as order-processing).

A distinction should be drawn between practices and performance. For example, quality circles and continuous improvement schemes are practices, which can be readily compared between firms (number, content and duration of meetings), whereas the percentage of scrap in production, the products returned by consumers, and number of suggestions recorded are performance outcomes.

4.3. How to organize benchmarking?

Depending on the depth of analysis, the best way to benchmark is to visit each of the comparative firms/farms, and to collect a mix of quantitative and qualitative data.

Learning Activity 7.2.
1. How does value chain analysis help to explain the ways in which individual firms, or linked groups of firms, can participate more effectively in global markets?

Section 5: Governance of Value Chains as Research Component

Before opening-up the concept of governance, it is necessary to begin with two general points: The power which any party may have in the chain may paradoxically be reflected in two seemingly contradictory attributes. The first is obvious and arises from the power to force other parties to take particular actions, for example to limit themselves to assembly rather than to involve themselves in design. But, secondly, it may also reflect the capacity to be deaf to the demands of others that is to refuse the demand to confine activities to assembly alone.

The extent of chain power may be related in complicated ways to the relative size of a particular firm in the chain. In general, the larger the firm, the more influential its role. Which of these indicators is important will be contingent on the characteristics of a particular chain and the question being pursued. But it will also be important to distinguish the territory of enquiry that is whether the relevant size is indicated by the firm's share of global, national or local activities. See the following Table.

How to identify the key governor in the chain

Indicators	Strengths and weaknesses	Source of data
Share of chain sales	Not a strong indicator as may only be a reseller of bought-in materials and may lack influence	Balance sheets
Share of chain value added	A better indicator for measuring size since it reflects the share of the chain's activities	Firm-level interviews
Share of chain profits	May be a good reflection of chain power, but may also arise from monopoly control over scarce raw materials (e.g. platinum) and may have little influence over downstream processing	Balance sheets, but it is likely that this data will only be available for publically-owned companies
Rate of profit	A poor indicator since minor players in the chain may be relatively profitable but have little influence	Balance sheets, but it is likely that this data will only be available for publically-owned companies
Share of chain buying power	A good indicator of power, particularly if there are asymmetries, that is its dependence on its suppliers is less than their dependence on the lead firm	Firm-level interviews
Control over a key technology (e.g. drive- train in autos) and holder of distinctive competence	A good indicator in producer-driven chains such as autos since this defines the distinctive competence of a chain (BMW's image as a quality, refined car) while the smaller firms 'fill in the gaps' in the chain.	Firm level interviews
Holder of chain "market identity" (e.g. brandname)	May be critical in markets where brand image is very important	Firm-level interviews; studies of market share of brands in final markets

5.1. Governance of Value Chains: An overview

One of the distinctive features of value chain analysis is its focus on governance, highlighting both power relations in the chain and the institutions which mold and wield this power. We also argued that this function of governance was best understood through the lens of civic governance, with its analysis of:

a) Different functions associated with the "regime of rule-making and rule-keeping" - that is, making the rules ("legislative governance"), implementing the rules ("executive governance") and enforcing the rules ("judicial governance"),

b) The positive and negative sanctions which are used to enforce these rules,

c) The legitimacy of the power of the rule-makers, and

d) The extent of governance of the rule-makers, that is, its reach.

Associated with this is the issue of boundaries that is whether the rules are a product of relations between different parties in the chain, or whether external parties are also involved. Since these issues of governance are both central to, and relatively distinctive to value chain analysis, the methodological issues are particularly important to resolve.

Section 6: Value Chains Research and Upgrading

By spanning the relationship between firms, as well as identifying the issue of functional upgrading, value chain analysis takes the discussion of upgrading beyond the standard perspectives of core competence and dynamic capabilities. The four forms of upgrading are with regard to:

- Improvements in process, either within a firm, or as a result of a series of linked actions in the relationships between firms;

- Improvements in product, either within a firm, or as a result of a series of linked actions in the relationships between firms;

- Changing functional positions, by adjusting activities undertaken within a particular link, or moving to activities taking place in other links; and

- Moving out of the value chain, into a new value chain.

6.1. How are these different forms of upgrading to be researched?

In undertaking this research it is important to keep the distinction made in the discussion of benchmarking in mind that is the necessity to analyze and record both upgrading practices and the performance outcomes of these practices.

Section 7: Gender Disaggregated Research in Value Chain

If average sustained incomes have the virtue of incorporating returns to all factors, and not just to capital, then they have the disadvantage of hiding disparities between different groups who obtain returns from production. A distributional focus to value chain analysis will place particular emphasis on this decomposition of earnings. Which form of decomposition is used will depend on the distributional lens which is used. But some of the main foci are: A functional distribution of income, separating out returns to capital (profits) and labor (wages), bearing in mind the importance of recognizing informal economy producers utilizing their own limited capital as well as outsourced informal workers.

In general, the only data which is likely to be freely available is that which reflects the functional distribution of returns within the formal economy. The other categories – informal economy, gender and ethnicity – almost always require primary research, and in some cases may involve the collection of particularly sensitive data since these divides almost always reflect power relations in the place of work, and the holders of the key information may be particularly reluctant to provide the data.

Value chain analysis potentially offers a new and powerful insight into these distributional decompositions, particularly with regard to gender issues. This particular approach to distribution has not been adopted so far. The methodology would entail mapping the (gender) distribution of incomes throughout the chain.

Section 8: Distributional Issues in Value Chain Research

One of the distinctive features of value chain research in development studies is its concern with distributional issues. In this sense, the discussion, the research domain and the methodology utilized differs to a considerable extent from those used in value chain analysis in business studies, where the focus is on competitiveness alone. This is not to deny any overlap between the two discourses, but rather to highlight the fact that development studies concerns are distinctive and much wider than those in other disciplines, both because of its social agenda and also (albeit to a lesser extent) because of its inter-disciplinary focus.

Distribution has both power and income components. The former concerns the balance of leverage which different parties have in determining the distribution of who does what in the chain and the returns which accrue to different parties. Since earlier discussions on governance and upgrading have focused on institutional issues and governance, in the discussion

which follows, we will largely concern ourselves with the distribution of income. In pursuing this distributional research agenda, it is necessary to work through the following components of value chain analysis:

1. What are the different forms of rents and barriers to entry which are the underlying determinants of the distribution of the returns from global production chains?

2. The unit of account that is which currency is utilized to measure income,

3. In what circumstances value added and turnover data illuminate the analysis?

4. How is profitability to be measured, and are profits an appropriate measure of distributional outcomes?

5. The locational dimensions of global value chain distribution - global, national and local,

6. Decomposing income streams - class, income groups, gender and ethnicity

7. How a knowledge focus can be incorporated into the analysis, opening up the distribution between skills?

8. How do SMEs fit into global value chain?

Questions for self-review:

1. What is the difference between value chains, value streams, value systems and global commodity chains?

2. Describe how value chain research differs from and compliments other forms of social and economic analysis.

Discussion Questions:

1. How might the way in which producers connect to final markets affect their capacity to change their mix of activities, or the links which they perform in the value chain?

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Chapter Eight: ANALYSIS OF DATA IN VALUE CHAIN RESEARCH

Introduction

Dear Students, recently many disciplines are forced to rethink their analytical frameworks by a focus on value chains. This is a fascinating development, indeed. In this vein, for instance, Wood (1999) argues that economics not only provides an accounting framework in which value chains can be mapped, but also forces the enquiry to focus on the economic determinants of location, notably on cost structures. To this effect, following the work of Faße (2009), this chapter attempts to give an overview of different methodologies related to value chain analysis.

Learning Objectives

The major aim of this chapter is to enable you grasp how the concepts of value chain analysis are applicable across a wide range of products in the primary sector and therefore have great potential to help in developing rural enterprises and the rural economy. In addition, there is an ongoing recognition that value chain approaches and analyses need to be combined with more analytical methods to go beyond case-specific conclusions and ensure comparability across sites and applications. Hence, this chapter introduces rigorous techniques of value chain modeling.

At the end of this chapter, you will be able to:

- Understand importance of value chain mapping;

- Choose and use methods of data analyses that allows you to address your research objectives and questions;

- Conduct value chain analysis for different purposes and in different contexts.

Section 1: Introduction to Data Processing and Analysis

The data, after collection has to be processed and analyzed in accordance with the outline laid down for the purpose at the time of developing the research plan. This is essential for a scientific study and for ensuring that we have all relevant data making contemplated comparison and analysis.

Technically speaking processing implies editing, coding, classification, and tabulation of collected data so that they are amenable to analysis. The term

analysis refers to the computation of certain measures along with searching for patterns of relationship that exit among data group.

1.1. Processing operations

We can now proceed with the explanation of all the processing operations. Editing- editing of data is a process of examining the collected raw material (especially in surveys) to detect errors and omissions and to correct these when possible. As a matter of fact, editing involves a careful scrutiny of the completed questionnaires and or schedules. Editing may be in the form of field editing or central editing.

1.1.1. Field editing

Field editing consists of the review of the reporting forms by the investigator for completing what the letter has written in abbreviated and or in illegible form at the time of recording the respondents' responses.

1.1.2. Central editing

Central editing should take place when all forms or schedules have been completed and returned to the office. This type of editing implies that all form should get a through editing by a single editor in a small study and by a team of editors in case of large of inquiry.

1.1.3. Coding

Coding refers to the process of assigning numerals or other symbols to answers so that responses can be put into a limited number of categories or classes. Coding is necessary for efficient analysis and through it the several replies may be reduced to a small number of classes which contain the critical information required for analysis.

1.1.4. Classification

Most research studies result in a large volume of raw data which must be reduced into homogeneous group if we are to get meaning full relationships. The classification arranged on the basis of common characteristics. Classification of two types: (a) Classification according to attributes; and (b) Classification according to class intervals.

1.1.5. Tabulation

When a mass of data has been assembled. It becomes necessary for the researcher to arrange the same in some kind of concise and logical order

.this procedure is referred to as tabulation thus tabulation is the process of summarizing raw data and displaying the same in compact form (i.e. in the form of statistical tables) in a broader sense, tabulation is an orderly arrangement of data in columns and row. Tabulation is essentially because of the following reasons: a) It facilitates the process of comparison, and b) It provides a basis for various statistical computation.

1.1.5.1.   Principles of tabulation

Every table should be given a distinct number to facilitate easy reference. The column headings and the row headings of the table should be clear and brief. The columns may be numbered to facilitate reference. Total of row should normally be placed in the extreme right column and that of columns should be placed at the bottom.

1.2. Some problems in data processing

We can take up the following two problems of processing the data for analysis purpose. (a) The problem concerning "don't know" (or DK) responses: while processing the data the researcher often comes across some responses that are difficult to handle. One category of such responses may be 'Don't know response or simply DK response. When the DK response group is small it is of little significance but when it is relatively big it becomes a matter of major concern in which the case the question arise. (b) Use of percentage – percentages are often used in data presentation for they simply numbers, reducing all of them to a 0 to 100 range.

1.3. Types of analysis

As stated earlier, by analysis we mean the computation of certain indices or measures along with searching for patterns of relationship that exist among the data groups. Analysis may, therefore be categorized as descriptive analysis and inferential analysis.

1.3.1.   Descriptive analysis

Descriptive analysis is largely the study of distribution of one variable. This study provides us with profiles of companies, work groups, persons and other subjects on any of a multiple of characteristics such as size, composition, efficiency, preferences. Descriptive analysis include impact pathway analysis, value chain mapping, participatory evaluation, and developmental evaluation.

1.3.2. Inferential analysis

Inferential analysis is concerned with the various tests of significance for testing hypothesis in order to determine with what validity data can be said to indicate some conclusion or conclusions. It is also concerned with the estimation of population values.

1.3.3. Case study method

A case study offers an opportunity to study a particular subject, e.g. one organization, in depth, or a group of people, and usually involves gathering and analyzing information; information that may be both qualitative and quantitative. Case studies can be used to formulate theories, or be: Descriptive (e.g. where current practice is described in detail); Illustrative (e.g. where the case studies illustrate new practices adopted by an organization); Experimental (e.g. where difficulties in adopting new practices or procedures are examined); and Explanatory (e.g. where theories are used as a basis for understanding and explaining practices or procedures).

Learning Activity 8.1.

1. Research is much concerned with proper fact finding, analysis and evaluation. Do you agree with this statement? Give reasons in support of your answer.
2. Do you think that case study is applicable to agribusiness and value chain research? Give examples.

Section 2: Mapping the value chain

The first step of a value chain analysis is the so-called mapping which is a descriptive analysis in nature. In order to do so, the boundaries to other chains need to be defined. The main idea is initially to identify the actors and then to 'map' the traced product flows within the chain including input supply, production, processing, and marketing activities.

The objective is to give an illustrative representation of the identified chain actors and the related product flows. A mapped value chain includes the actors, their relationships, and economic activities at each stage with the related physical and monetary flows. There are two different kinds of approaches used for mapping.

2.1. Functional and Institutional Analysis

The mapping is denoted as a functional and institutional analysis which starts with constructing a 'preliminary map' of a particular chain to provide an overview of all chain actors (institutional analysis) and the type of interaction between them (functional analysis). The results can be presented either in a table or in a flow chart, which is called the 'preliminary map' of the chain.

The FAO methodology includes three essential aspects for developing a preliminary map: The principal functions of each stage are:

- The agents carrying out these functions

- The principal products in the chain and their various forms into which they are transformed along the entire chain.

Once the flow chart has been drawn, these flows are quantified, both in physical and monetary terms. The procedure allows assessing the relative importance of the different stages or segments of the chain. Kaplinsky and Morris (2002) suggest similar procedures for implementing value chain analysis. Their concept consists of two steps in order to map the value chain of interest. The first step includes drawing an 'initial map', which shows the chain boundaries including the main actors, activities, connections and some initial indicators of size and importance.

The second step consists of elaborating the refined map by quantifying key variables such as value-added, and by identifying strategic and non-strategic activities. This refined map can be understood as a framework for showing chain statistics.

2.2. Social Network Analysis

Another approach for mapping value chains is the social network analysis (SNA) originated in social sciences. Similar to the FAO concept, it serves as a tool for mapping and analyzing relationships and flows between people, groups, and organizations. The initial flow chart of the chain consists of various nodes and links arranged in form of a matrix.

The nodes represent the actors while the links describe the relationships and flows between the nodes. SNA is used when the value chain is more characterized by a network than a single vertical chain. Clottey *et al.* (2007) used SNA to map the small livestock production system in Northern Ghana for a value network analysis. The objective was to analyze the

introduction of animal health care services in the region. Thus, the value-creating linkages were mapped. Afterwards, SNA was employed to determine the pathways of value exchanges and individual relationships among the small farmers and enterprises.

As a result, the authors found out that the input supply is weakly linked with the upstream livestock chain activities. In addition, the knowledge flow among farmers and actors from research and development (R&D) needed to be improved to strengthen the entire livestock production chain.

Learning Activity 8.2.

1. What are the key distinctions between value chain mapping and value chain research?

2. Construct a value chain map for Ethiopian coffee export.

Section 3: Accounting of flows

Since value chains are characterized by input-output structures (McCormick and Schmitz, 2001; Wood, 2001), many studies aim to account for important stages of the value chain according to the study purpose. There are different 'accounting' methods for value chain analysis, which measure input-output flows for a certain product.

Inputs and outputs can include material or energy flows with their - if possible and requested - related monetary evaluation. In the literature, two different levels of accounting are found.

(a) Product level: Measuring input-output flows based on a defined functional unit of a commodity without being site-specific,

(b) Regional level: Describing input-output flows within a defined economy, e.g. country-specific.

These two levels of analysis can either take an economic focus, an environmental focus, or a combination of both. In the case of combined methods, the origin can be found most often in either the economic or the environmental field of research: green accounting is derived from the economic input-output analysis extended by environmental accounts whereas life cycle costing is derived from life cycle assessment.

Common accounting methods for value chain analysis

Level	1) Economic Focus	2) Environmental & Economic Focus	3) Environmental Focus
a) Product Level	– Financial and Economic Analysis	– Life Cycle Assessment (LCA) incl. Life Cycle costing (LCC)	– Material Flow Accounting – Ecological Backpack – Material Intensity per Service Unit – Ecological Footprint
b) Regional Level	– Input-Output-Analysis – Social Accounting Matrix	– Green Social Accounting Matrix – Satellite Accounts – Input-Output-Life-Cycle Assessment	– Material Flow Accounting – Material Requirements – Substance Accounting – Energy Accountings

Source: Adapted from Finnveden / Moberg (2005)

3.1. Financial and Economic Value Chain Analysis

Financial analysis is undertaken from the perspective of individual agents. The aim is to determine their financial costs and benefits. In contrast, economic analysis is undertaken from the perspective of the society or the overall economic system (national economy, sector, or chain), considering shadow prices and opportunity costs in its calculation.

Both analyses are conducted for a defined period, usually one year. For financial and economic commodity chain analysis, different indicators are calculated based on the concept of value added to derive findings according to the chain performance and impact on agents and the government.

3.2. Input-Output Analysis

As an ex-post consideration, IOA allows tracing monetary flows of all goods and services between sectors and industries within an economy directly and especially indirectly. Thus, IOA has become an important tool in value chain analysis. The underlying concept is that each sector's product is viewed both as a product for final consumption and as an intermediary input for further production activity in other sectors. Therefore, the demand in IOA is differentiated in intermediate, final and total demand.

The first refers to inter-industry trading of intermediates to process final goods. These final processed products are sold to households, governments, exporters, or used for investments (final demand). The total demand results from the final demand and the intermediate demand (Hecht, 2007).

3.3. Social Accounting Matrix

The social accounting matrix (SAM) takes the interrelationships of income and transfer flows between the different institutional units (households, companies, government) into consideration. A SAM is defined as a "presentation of the system of national accounts in a matrix format, which elaborates on the linkages between supply and use tables and institutional sector accounts".

The matrix describes the interaction between production, income, consumption, and capital accumulation. It is more applicable for value chain analysis because it includes households and the government administration as a part of the chain. Thus, it provides a conceptual basis for examining both growth and distributional issues within a single analytical framework in an economy.

3.4. Life Cycle Assessment

In order to assess the environmental impact of a value chain, especially for hazardous products or unsustainable production methods, the framework of life cycle assessment (LCA) has been developed. LCA, often denoted as "cradle to grave" analysis, represents an accounting framework assessing environmental impacts attributable to the value chain of a defined product.

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It analyses the links between the use of natural inputs (resources) and the related environmental outputs (emissions and waste) of all value chain activities (cultivation, production, processing, transportation, consumption, and final disposal).

Due to its application to the product level, LCA is not necessarily related to a certain region. The purpose is to build impact indicators, which identify and quantify possible environmental impacts, e.g. the global warming potential of one unit of production. On this basis, recommendations can be made which products should be promoted or improved concerning e.g. production efficiency.

3.5. Input-Output-Life-Cycle Assessment

Many of the shortcomings of an LCA based value chain analysis can be overcome when combining IOA or SAM with an LCA, denoted as hybrid LCA approach or (Environmental) Input-output-life-cycle assessment ((E)I/O-LCA) (Lenzen, 2001). I/O- LCA is a specialized subset of the growing field of "Integrated Environmental and Economic Accounting", a field of methods combining economic input-output data and with environmental and resource data from LCA (Rebitzer et al., 2004). Two principal approaches of I/O-LCA simplifications are: (a) tiered hybrid analysis and (b) mixed units hybrid analysis.

In a *tiered hybrid analysis*, two different steps are performed. First, direct requirements and some important lower-order upstream requirements of the functional unit are examined in a detailed LCA analysis. Second, remaining higher-order requirements (e.g. for materials extraction or manufacturing) are covered by IOA (Lenzen, 2001).

Another possibility is augmenting input-output tables and social accounting matrices with sectoral physical data. This data can simply be added in a separate matrix row and columns, respectively. Since the traditional tables and matrices are in monetary terms, this procedure is called a *mixed-units hybrid analysis* (Lenzen, 2001).

3.6. Material Flow and Energy Accounting

Material flow accounting (MFA) is another family of methods for physical accounting (Finnveden and Moberg, 2005). MFA accounts for physical units of inputs and outputs e.g. substances, raw materials, waste, and emissions to air, water, or soil, which are involved in the production, processing, consumption, and recycling of materials.

The purpose is to build volume indicators assessing the environmental resource extraction (input side) or the emission of waste (output side). These indicators are often applied to environmental impact assessment of value chain activities even in LCA studies.

3.6.1. Energy Accounting

The purpose is to build volume indicators assessing the environmental resource extraction (input side) or the emission of waste (output side). These indicators are often applied to environmental impact assessment of value chain activities even in LCA studies.

Another important aspect of material accounting gaining more importance in value chain analysis is measuring the energy flows along the product chain denoted as energy accounting. It is often used as an evaluation technique for different types of products or processing techniques evaluating how much energy is used as a chain-input. (Finnveden and Moberg, 2005). There are two important types of energy measures: (a) exergy and (b) emergy analysis. The concept of exergy analysis is based on the first and second law of thermodynamics (Szargut et al., 1988). Exergy, described as quality of energy, measures the ability of a source to produce a unit of work.

The objective of emergy analysis is to quantify the energy value of both direct energy and material resources. This implies that all required inputs of material, information, and labor are aggregated using emergy equivalents - expressed in the equivalent solar energy - resulting in the accumulated energy associated with a product (Castellini et al., 2006).

Emergy accounting has been developed in the last three decades as a tool for environmental policy. Based on the analysis several indicators can be developed, e.g. 'transformity', which measures how much emergy is taken to generate one unit of output, regardless of whether or not the input is renewable.

Section 4: Value Chain Modeling

Globalization trends have significantly increased the scale and complexity of firms experiencing internal and external uncertainties. Internal uncertainties refer to the field of research and project development due to technological risks; external uncertainties cover price uncertainties, exchange rate fluctuations, as well as demand variations.

In a fast moving economic environment, it is necessary to have tools to evaluate potential outcomes of changes, and to capture complex surroundings in a simplified model. Value chain modeling is a meaningful instrument to analyze multifaceted questions. Definitely, the basis of any model is a consistent data framework representing the benchmark situation for the system of interest.

Each model starts by explaining these initial conditions. In the next step, specific scenarios define expected changes that might destabilize the operation of the current system; finally, the model explains adaptation strategies to these shocks to reach a new efficient equilibrium point. We will see some standard methods of value chain modeling in the following section.

4.1. Equilibrium Model

The primary assumption of an equilibrium model is rationality. Until today, the Walras model is considered the fundamental theory to explain the functioning of independent markets where flexible prices determine the allocation of scarce resources, and rational producers and consumers maximize profits and utility respectively (Takayama, 1985). Here, two major groups of models are distinguished: general equilibrium models, and partial equilibrium models. In contrast to partial equilibrium models that focus on particular sectors of interest, general equilibrium models represent the complete economy determining all transactions endogenously.

4.1.1. Equilibrium Model – CGE

Computable general equilibrium (CGE) models are based on the socio-economic structure of the social accounting matrix (SAM). They represent a mathematical model of an entire economic system that can be closed or related to external agents via trade. The benchmark situation describes an equilibrium point of the system where all accounts are balanced and all markets are cleared.

The standard CGE explains all the payments and receipts displayed in the SAM by mathematical statements. Following the notation of the SAM, the CGE is also characterized by its flexible multi-product, multi-sector, multi-institution disaggregation. Basically, CGE models have been developed to explain the economic performance of countries.

Existing applications also cover regions or single villages, and the structure can also be applied to represent a single household. The standard model is specified in real terms; it is supposed that agents base their multiple decisions on relative prices. However, while the SAM-multiplier model is completely demand-driven, and adjustments are always linear in this model, the behavior of agents might be specified quite differently within the CGE model (Böhringer and Löschel, 2006).

The CGE may contain more sophisticated functional forms and non-linear Engel curves that are more consistent with empirical evidence. A further advantageous feature of the CGE is the switch between different activities due to technical progress, and the change of the cost structure. This feature is supported by a special solving procedure, the so-called "mixed complementarity program" (MCP). It notably facilitates modeling of the value chain, where fluctuations and innovations are meaningful and require permanent reorganizations of the chain (Nicholson and Bishop, 2004).

Winter et al. (2008) applied a CGE model at the village level to analyze the impacts of an innovative energy value chain on land use systems and degraded forests in Kenya. A value chain for different wood substitutes such as Jatropha curcas was implemented to analyze the impact of its cultivation on the consumption of natural resources, and on income distribution and food security within the village level.

Combined with a game theoretical approach, simulations illustrate potential benefits of cooperative forest and community land management compared to a situation of unregulated resource competition among stakeholders in the Kakamega District of Western Kenya.

4.1.2. Equilibrium Model – Partial Equilibrium

Partial equilibrium models represent a comparative static framework with the focus on a sector. They calculate the effects of policy changes in one good, while ignoring the effects on other goods, based on the assumption that the good being examined is too small to have a significant impact on the rest of the economy.

Thus, these models do not include all production and consumption accounts in an economy, nor do they attempt to capture all of the economy's markets and prices. The approach allows the researchers to trace the impact of changes in one market or one value chain on other markets or value chains, but it only captures such changes in the markets included in the model. Partial equilibrium models are best suited to analyze sector reforms that are less likely to have large impacts on macroeconomic aggregates.

Nielsen (2008) developed a partial equilibrium framework to identify welfare effects of fish trade liberalization in presence of complex but realistic management schemes, e.g. regulated open access and regulated restricted access. The results showed that the welfare effect of trade liberalization in an exporter country is negative under open access and positive under regulated restricted access.

Lundmark (2007) applied a partial equilibrium model of the forest cluster assessing the impact of changing market conditions for the sawmill industry. The focus of the study was to analyze the interdependencies between the different sectors that are dependent from the product "wood". The results confirmed that due to dependencies between the sectors, changing market conditions in one sector could have profound effects on other sectors. The analysis indicated that both production and consumption patterns are sensitive to changes in the demand for sawn wood products.

4.2. Value Chain Optimization and Simulation

The value chain model shows how intermediate and final goods flow through design, manufacturing and distribution activities. While single companies usually are responsible for the success of their own scope of production, the whole chain is responsible for successful product delivery and customer satisfaction.

Existing methods for an in-depth analysis for value chain performance can be classified into two main categories: (a) methods for solution evaluation and (b) methods for solution generations (Chwif *et al.,* 2002).

The first category refers to the evaluation of possible configurations of a value chain design in a "What-If" scenario, which includes simulation and spreadsheet techniques. The second category aims to generate the best configuration for a given objective, which includes classical optimization methods sometimes in combination with a simulation (also denoted as simulation-optimization).

4.2.1. Simulation

Simulation technique is a dynamic-stochastic tool, which considers dynamic behavior of the chain and accounts for variability, which is an advantage for the goodness of the consequent results.

4.2.2. Optimization

With regard to the second category, chain optimization is applied to generate the best configuration for a given objective. Questions on optimization are usually related to minimize costs (transportation or production costs) or maximize internal production efficiency and profit to increase competitiveness. Traditionally, these problems are solved using linear programming, e.g. simplex algorithm, dynamic programming, or a mixed integer linear programming (de Mol et al., 1997).

De Mol et al. (1997) developed a model for both simulation and optimization of logistics in the case of biomass fuel collection. The main goal of the study was to simulate and optimize (minimize) the logistical costs, because logistics costs are major cost component. First, the simulation model has been developed to calculate the costs of biomass logistics for one year depending on different scenarios. Then the optimization model was aimed at giving the annual flows of biomass with minimal costs.

Singer and Donoso (2008) applied the optimization approach for the sawmill industry to the question whether companies in the natural resources industry (e.g. mining, timber, farming and fishery) should focus on the upstream or on the downstream value chain. The main aim of the study was to maximize production efficiency.

4.3. Game Theoretic Analysis

Since in most value chains governance plays an important role, the analysis of the coordination of information and the allocation of profit between actors became a focus of interest. To study these research questions, equilibrium models are augmented by game theory.

Game theory can be defined as the "study of mathematical models of conflict and cooperation between intelligent rational decision makers" (Thun 2005). Thus, game theory models situations where players make decisions to maximize their own utility, while taking into account that other players are doing the same.

Consequently, the decisions made by one player have an impact on each other's utilities. Game theory can be distinguished into two concepts: a) the cooperative and b) non-cooperative approach. Both differ in theoretical content and methodology.

4.3.1. Non-cooperative game theory

The non-cooperative game theory, including the concept of Nash's equilibrium, is strategy-oriented, i.e. it is applied to study what one actor may expect other players to do and the basic details of how they get there.

4.3.2. Cooperative game theory

Whereas the non-cooperative theory focuses on detailed descriptions of what happens, the cooperative game theory focuses on a different scope (Nagarajan and Sosic 2006). It directly looks at the set of possible outcomes and analyzes what players can achieve, what coalitions will they form, how the coalitions divide the outcome, and whether the outcomes are stable or not.

The key assumption of cooperative game theory is that players can negotiate effectively (Thun, 2005). Radhakrishnan and Srinidhi (2005) focused on the analysis of information exchange in a value chain. The authors argued that information exchange improves resource coordination.

Their non-cooperative model consists of a bilateral monopoly with a manufacturer and a retailer, where retailers get private demand information, which has potential for improving the manufacturer's resource decisions. The underlying assumption is that it is always beneficial for the value chain to implement information exchange.

The results showed that the manufacturer benefits both by improved resource coordination and by reduced payment for information rent, while the retailer is not motivated to adopt information exchange only by a resource-based costing and pricing system.

Nagarajan and Sosic (2006) studied applications on cooperative game theory models. Their emphasis was placed on two aspects of cooperative games: profit allocation and its stability. The authors described the construction of the set of feasible outcomes in commonly seen supply chain models, and uses cooperative bargaining models to find allocations of the profit-fractions between value chain partners.

4.4. Econometrics

After analyzing input-output structures of value chains and its territorial allocation, the question arises, which factors might determine the allocation of value chain activities among countries (on macro level) and companies or farmers (on micro level), respectively. In the literature, two major areas of applications are available: (a) the concept of barriers to trade on macro level and (b) the concept of barriers to entry on a micro level. Despite this Econometric value chain analysis is widespread in the field of impact assessment of value chains. It can be applied to analyze the effects of standards (e.g. food, social, and environmental) as well as transaction costs on the income of households (micro level) or on trade volumes of countries (macro level) and much beyond.

4.4.1. Gravity Model

The gravity model is one possible way to get quantitative information on determinants of trade flows in value chains. In most cases, it is applied to evaluate the impact of bilateral or multilateral trade agreements on the amount of trade flows. Other scopes of application are the determinants of foreign direct investment, tourism and migration flows (Martinez- Zarzoso, 2003).

The linkage between the gravity model and value chain analysis can be illustrated by the fact that the majority of tradable commodities are not

processed or consumed completely in the country of production for several reasons. Many products are traded globally between countries involved in the same value chain. Thus, it is necessary to have the gravity model as an analytical instrument to assess the constraints of trade between countries. The gravity equation describes amount of trade between two countries as directly related to the size of the two countries involved and inversely related to the geographical distance between them. The basic theoretical model of the gravity model on trade between two countries is provided in the course material.

The first gravity model of international trade was developed by Tinbergen (1962) and Pöyhönen (1963). Later, several authors namely Anderson (1979), Bergstrand13 (1985, 1989), Deardorff, (1995), Feenstra et al. (2001), Evenett and Keller (2002) and Bröcker (1989) developed a theoretical and microeconomic foundation of the gravity model. The last important paper providing a theoretical justification is published by Anderson and Wincoop (2003). The econometric form of the basic gravity equation is given in the course material.

4.4.2. Treatment Effect Model

The increase of world trade is hypothesized to help to overcome underdevelopment and poverty in less developed countries. Thus, the question arises, whether it is possible to link and integrate poor farmers or population sections into international trade and which costs farmers have to bear (Maltsoglou and Tanyeri-Abur 2005).

Schipmann (2006) argued that an integration into international food chains offer additional benefits, for instance higher income, income diversification, or value chain upgrading possibilities. However, barriers to entry are often assumed higher for international value chains compared to domestic chains and could at worst neutralize eventual benefits.

Barriers normally include e.g. initial qualifications of the producer, product quality and quantity specifications, ability of frequent supply, production costs, transaction costs (distance to the purchaser and markets, access to inputs and credits) and standards, whereas the last two attract a lot of attention in the framework of impact assessment in development economics. In this section, the focus is on the impact of standards and transaction costs on the intensity of chain participation and on the income. In order to measure the effects, a treatment effect model can be applied.

The treatment effect model is applied when the effect of a specific treatment, e.g. certification schemes or transaction costs, needs to be

measured on a response, e.g. participation in a value chain on the household income. Econometricians contribute different econometric models in order to solve this scientific question such as sample selection models, instrumental variables, structural equations, propensity score matching, or switching regression models from labor economics (Lee 2005).

The large number of different methods is derived from different problems during the estimation procedure, e.g. self-selection problem and endogeneity. However, it is not an aim of this paper to go into the details of regression estimation problems. Various studies have been conducted to compare the characteristics of different value chains with regard to potential benefits for farmers, especially smallholders. Asfaw (2007) studied the impact of stricter food-safety standards imposed by high-income countries on the competitiveness of producers in developing countries.

The author hypothesized that actors are impeded from entering or even remaining in international high-value food markets. The results showed that smallholders as compared to large-scale farmers face difficulties in complying with standards due to a range of constraints. Access to information, capital, services and availability of labor are major factors influencing the ability of small-scale producers to adopt. However, standards do not eliminate smallholder farmers as a whole from export markets but they discriminate within the group of smallholder producers (Asfaw, 2007).

Self–Review Questions:
1. Why is value chain analysis important? Elaborate.

2. List the possible areas of applications of optimization techniques along the agricultural value chains.

3. How would you differentiate between a deductive and an inductive analytical approach – in view of value chain research?

Discussion Questions
1. Discuss with your colleagues how quantitative analytical techniques have become important in value chain research as opposed to the dominant qualitative methods used over the last many years.

2. How may the formulation of an initial substantive theory, if any, help in the development of an agricultural value chain research proposal?

Why is it important that your research can be related to a relevant theory base (please identify the relevant theories), and when during the project does the theoretical framework need to be identified? Discuss thoroughly.

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Chapter Nine: INTERPRETATION AND REPORT WRITING

Introduction

Dear Students, it is a fundamental principle of research that we must publicize what we find in some way, and that way usually involves writing reports. Hence, this chapter attempts to cover issues related to interpretation of research results, mechanics of writing research reports, critical assessment of your own reports and finally you will get acquainted with frequently occurring weaknesses in research report writing.

Learning Objectives

At the end of this chapter, you will be able to:

- Interpret research results;

- Produce a clearly structured research report;

- Assess your research report on your own; and

- Identify and pinpoint key weaknesses frequently occurring in academic reports.

Section 1: Interpreting Research Results

1.1. Introduction

After collecting and analyzing the data, the researcher has to accomplish the task of drawing inferences followed by report writing. This has to be done very carefully, otherwise misleading conclusions may be drawn and the whole purpose of doing research may get vitiated. It is only through interpretation that the researcher can expose relations and processes that underlie his findings. In case of hypotheses testing studies, if hypotheses are tested and upheld several times, the researcher may arrive at generalizations. But in case the researcher had no hypothesis to start with, he would try to explain his findings on the basis of some theory. This may at times result in new questions, leading to further researches. All this analytical information and consequential inference(s) may well be communicated, preferably through research report, to the consumers of research results who may be either an individual or a group of individuals or some public/private organization.

1.2. Meaning of Interpretation

Interpretation refers to the task of drawing inferences from the collected facts after an analytical and/or experimental study. In fact, it is a search for broader meaning of research findings. The task of interpretation has two major aspects such as:

(i)   The effort to establish continuity in research through linking the results of a given study with those of another, and

(ii)   The establishment of some explanatory concepts.

In one sense, interpretation is concerned with relationships within the collected data, partially overlapping analysis. Interpretation also extends beyond the data of the study to include the results of other research, theory and hypotheses. Thus, interpretation is the device through which the factors that seem to explain what has been observed by researcher in the course of the study can be better understood and it also provides a theoretical conception which can serve as a guide for further researches.

1.3. Why do We Interpret Research Results

Interpretation is essential for the simple reason that the usefulness and utility of research findings lie in proper interpretation. It is being considered a basic component of research process because of the following reasons:

a) It is through interpretation that the researcher can well understand the abstract principle that works beneath his findings. Through this he can link up his findings with those of other studies, having the same abstract principle, and thereby can predict about the concrete world of events. Fresh inquiries can test these predictions later on. This way the continuity in research can be maintained.

b) Interpretation leads to the establishment of explanatory concepts that can serve as a guide for future research studies; it opens new avenues of intellectual adventure and stimulates the quest for more knowledge.

c) Researcher can better appreciate only through interpretation why his findings are what they are and can make others to understand the real significance of his research findings.

d) The interpretation of the findings of exploratory research study often results into hypotheses for experimental research and as such

interpretation is involved in the transition from exploratory to experimental research. Since an exploratory study does not have a hypothesis to start with, the findings of such a study have to be interpreted on a *post-factum* basis in which case the interpretation is technically described as '*post factum*' interpretation.

1.4. Technique of Interpretation

The task of interpretation is not an easy job, rather it requires a great skill and dexterity on the part of researcher. Interpretation is an art that one learns through practice and experience. The researcher may, at times, seek the guidance from experts for accomplishing the task of interpretation.

The technique of interpretation often involves the following steps:

i. Researcher must give reasonable explanations of the relations which he has found and he must interpret the lines of relationship in terms of the underlying processes and must try to find out the thread of uniformity that lies under the surface layer of his diversified research findings. In fact, this is the technique of how generalization should be done and concepts be formulated.

ii. Extraneous information, if collected during the study, must be considered while interpreting the final results of research study, for it may prove to be a key factor in understanding the problem under consideration.

iii. It is advisable, before embarking upon final interpretation, to consult someone having insight into the study and who is frank and honest and will not hesitate to point out omissions and errors in logical argumentation. Such a consultation will result in correct interpretation and, thus, will enhance the utility of research results.

iv. Researcher must accomplish the task of interpretation only after considering all relevant factors affecting the problem to avoid false generalization. He must be in no hurry while interpreting results, for quite often the conclusions, which appear to be all right at the beginning, may not at all be accurate.

1.5. Precautions in Interpretation

One should always remember that even if the data are properly collected and analyzed, wrong interpretation would lead to inaccurate conclusions. It is, therefore, absolutely essential that the task of interpretation be accomplished with patience in an impartial manner and also in correct perspective. Researcher must pay attention to the following points for correct interpretation:

i.   At the outset, researcher must invariably satisfy himself/herself that (a) the data are appropriate, trustworthy and adequate for drawing inferences; (b) the data reflect good homogeneity; and that (c) proper analysis has been done through statistical methods.

ii. The researcher must remain cautious about the errors that can possibly arise in the process of interpreting results. Errors can arise due to false generalization and/or due to wrong interpretation of statistical measures, such as the application of findings beyond the range of observations, identification of correlation with causation and the like. Another major pitfall is the tendency to affirm that definite relationships exist on the basis of confirmation of particular hypotheses. In fact, the positive test results accepting the hypothesis must be interpreted as "being in accord" with the hypothesis, rather than as "confirming the validity of the hypothesis". The researcher must remain vigilant about all such things so that false generalization may not take place. He/she should be well equipped with and must know the correct use of statistical measures for drawing inferences concerning his/her study.

iii. He/she must always keep in view that the task of interpretation is very much intertwined with analysis and cannot be distinctly separated. As such he/she must take the task of interpretation as a special aspect of analysis and accordingly must take all those precautions that one usually observes while going through the process of analysis viz., precautions concerning the reliability of data, computational checks, validation and comparison of results.

iv. He/she must never lose sight of the fact that his task is not only to make sensitive observations of relevant occurrences, but also to identify and disengage the factors that are initially hidden to the eye. This will enable him/her to do his/her job of interpretation on proper lines. Broad generalization should be avoided as most research is not amenable to it because the coverage may be restricted to a

particular time, a particular area and particular conditions. Such restrictions, if any, must invariably be specified and the results must be framed within their limits.

v. The researcher must remember that ideally in the course of a research study, there should be constant interaction between initial hypothesis, empirical observation and theoretical conceptions. It is exactly in this area of interaction between theoretical orientation and empirical observation that opportunities for originality and creativity lie. He/she must pay special attention to this aspect while engaged in the task of interpretation.

1.6. Issues Worth Noting in Interpretation

Interpretation takes the results of analysis, makes inferences pertinent to the research relations studied, and draws conclusions about these relations. Interpretation of research results should put emphasis on the following pertinent and interrelated points. These are: Adequacy of Research Design, Methodology, Measurement and Analysis; Negative and Inconclusive Results; Un-hypothesized Relations and Unanticipated Findings; and Proof, Probability, and Interpretation.

a) **Adequacy of Research Design, Methodology, Measurement, and Analysis:** Most important, the design, methods of observation, measurement, and statistical analysis must all be appropriate to the research problem.

b) **Negative and Inconclusive Results:** When results are positive, when the data support the hypotheses, one interprets the data along the lines of the theory and the reasoning behind the hypotheses. If we can repeat the feat, then the evidence of adequacy is even more convincing. If we can be fairly sure that the methodology, the measurement, and the analysis are adequate, then negative results can be definite contributions to scientific advancement.

c) **Un-hypothesized Relations and Unanticipated Findings:** The unpredicted relation may be an important key to a deeper understanding of the theory. For example, positive reinforcement strengthens response tendencies. Unpredicted and unexpected findings must be treated with more suspicion than predicted and expected findings. Before being accepted, they should be

substantiated in independent research in which they are specially predicted and tested.

d) **Proof, Probability, and Interpretation:** Let us flatly assert that nothing can be "proved" scientifically. All one can do is to bring evidence to bear that such-and such a proposition is true. Proof is a deductive matter. Experimental methods of inquiry are not methods of proof, they are controlled methods of bringing evidence to bear on the probable truth or falsity of relational propositions.

Learning Activity 9.1.

1. Interpretation is a fundamental component of research process", Explain, Why so?

Section 2: Writing the Research Report

2.1. Significance of Report Writing

Research report is considered a major component of the research study for the research task remains incomplete till the report has been presented and/or written. As a matter of fact even the most brilliant hypothesis, highly well designed and conducted research study, and the most striking generalizations and findings are of little value unless they are effectively communicated to others. The purpose of research is not well served unless the findings are made known to others. Research results must invariably enter the general store of knowledge. All this explains the significance of writing research report. There are people who do not consider writing of report as an integral part of the research process. But the general opinion is in favor of treating the presentation of research results or the writing of report as part and parcel of the research project. Writing of report is the last step in a research study and requires a set of skills somewhat different from those called for in respect of the earlier stages of research. This task should be accomplished by the researcher with utmost care; he may seek the assistance and guidance of experts for the purpose.

2.2. Tips in Writing Report

In writing the research report:

- Begin writing up the report as soon as you can. Do not leave it until you have finished your data collection before you start writing up. Many sections, can be drafted during or even before data collection.

- Write down ideas as soon as you get them, rather than leaving them to the writing-up stage. Keep a research diary where you can safely note any ideas. Not all of your ideas will be useful, but it is certain that some of them will be! Do not imagine that you will be able to remember these ideas at a later date.

- Be aware of the nature of the report and the intended audience. If it is for a student research project, then ensure you have read and understood the criteria laid down by your institution in terms of content, presentation, length and so on.

- If you are writing for a journal, ensure that your research fits within the scope of that journal's objectives as well as its editorial requirements. If you are producing a report or piece of consultancy, ensure that you are clear about the requirements of your audience.

- You will not be able to write the final report out first time. You will need to rewrite it a number of times before it reaches completion. You should allow for this when planning your research timetable, and not become discouraged when the first draft is not perfect.

- Make sure before you begin writing up that you make backups of your work at every available opportunity. Whatever you do, do not assume that whatever you save on a hard drive will be safe!

- You should keep your backups in a separate location. As a further safety measure, print out what you have written so far at regular intervals.

Section 3: The Stages of Writing a Report

Research reports are the product of slow, painstaking, accurate inductive work. The usual steps involved in writing report are: (a) logical analysis of the subject-matter; (b) preparation of the final outline; (c) preparation of the rough draft; (d) rewriting and polishing; (c) preparation of the final bibliography; and (f) writing the final draft. Though all these steps are self-explanatory, yet a brief mention of each one of these will be appropriate for better understanding. The following are stages of report writing.

a) First clarify the nature of the planned report, and its intended audience. If any examples of past reports are available, read as many as you can – both good and bad!

b) Identify any predetermined requirements, for example maximum word length, formatting, such as double spacing or required referencing style, and so on. Ideally you should familiarise yourself with past projects, etc. so that you have an idea of the final product before you start.

c) Throughout the duration of the research you should be collecting together the information necessary to complete the report, such as your review of literature, analysis of the primary data, list of references and so on.

d) Prepare an outline plan of the report. At the bare minimum, this should be a list of chapter headings. Ideally you should be able to have more detail – include likely subheadings as well. The more detailed your initial outline, the easier you will find the process of writing up the first draft of the report.

e) Write a first draft of the report. You should not anticipate the first draft being your final submission!

f) Evaluate the content of the first draft, either through reading it yourself or, preferably, getting somebody else to read it with a critical eye.

g) Rewrite and re-evaluate the report as appropriate. You may need to do this more than once!

h) Final editing and proof reading. Once you have got this far, the temptation is to skip over the final proof reading and simply submit the project. Do carefully read over to check spelling and grammar.

i) Preparation of the final bibliography.

j) Submission of the final report!

Section 4: Typical Research Report Structure

Anybody, who is reading the research report, must necessarily be conveyed enough about the study so that he can place it in its general

scientific context, judge the adequacy of its methods and thus form an opinion of how seriously the findings are to be taken. For this purpose there is the need of proper layout of the report. The layout of the report means as to what the research report should contain. A comprehensive layout of the research report should comprise (A) preliminary pages; (B) the main text; and (C) the end matter. The structure of research report usually contain the following items and we will deal with them one by one.

- Title Page

- Abstract

- Acknowledgements (optional)

- Contents

- List of Tables

- List of Figures

- Introduction

- Literature Review

- Methodology

- Results

- Discussion

- Conclusions + Recommendations

- Reference List/ Bibliography

- Appendices

4.1. Abstract

- What your research aim was.

- Key background theory.

- What data were collected from whom, and how.

- How it was analysed.

- Key findings.

4.2. Introduction

- WHAT you have done – questions/objectives.

- WHY you have done it – problem statement/justification.

- HOW you have presented the report – structure/ signposting.

4.3. Literature Review

- What do we know?

- What we do not know (research gap).

- How your study fits the research gap.

- What you may expect to find (hypotheses).

- Relate the literature to your study.

- Be critical if appropriate.

4.4. Methodology

- Information needs.

- Research design.

- Research strategy.

- Methods.

- Sample.

- Procedure.

- Analysis.

Is it repeatable to the reader? Have you explained the rationale behind your chosen means of collecting information? Are your research methods the most appropriate given your chosen hypothesis or research question, and your subsidiary questions or objectives? Are you making assumptions? You know what you did in terms of research methods – have you expressed

yourself clearly and given adequate details? Would someone else be able to replicate your study on the basis of the information you have given? Any limitations? Anything you might have done differently?

4.5. Results

There is no one correct way to present your results. Some ways could be:

- Address each of your hypotheses, research questions.

- By independent and dependent variable.

- By research method.

- By participant (qualitative interviews).

- Tables essential for quantitative data.

- Graphs only if they add to understanding.

- Use quotes sparingly for qualitative data.

- Only report relevant results.

4.6. Writing the Discussion

Discuss the implications of your results in light of your research objectives.

- Can be combined with results for a qualitative study.

- Common error could be discussing your own findings without any reference to existing knowledge.

- Your research should build on existing knowledge so refer back to the literature review.

- Do your findings find support in the literature?

- Were your findings predicted by the literature?

- How does your research add to the literature?

- If your findings differed from expectations, then are there any possible explanations why?

- Does the particular theory or model you have used still hold true in light of your research?

- If the theory or model seems flawed, then how can it be refined in light of your research?

4.7. Conclusion and Recommendations

- What the key findings were.

- Should relate to aims/objectives in introduction.

- Include recommendations for policy, future research, etc.

4.8. References/ Bibliography

Must be consistent with text. Follow the guidelines that are available to you.

4.9. Appendices

Must relate to the research, but not be directly related.

4.10. Key Weaknesses – Precautions for Writing Reports

The following are few key weaknesses that are often witnessed in the preparation of research reports.

- Abstract – lacks specific detail.

- Introduction – no justification, poor statement of the problem, questions and objectives unclear.

- Literature review – not related to the research question, no critical awareness, limited sources, limited relevance, and inappropriate theory.

- Methodology – lacking specific detail, justification, limited awareness of reliability, validity, generalizability.

- Results – focus on graphs, limited analysis, lacking relevance.

- Discussion – not revisiting the literature, simply repeating results, lack of awareness of the implications of the findings.

- Conclusions and recommendations– unrelated to results/discussion.

Learning Activity 9.2.
1. Report writing is more an art that hinges upon practice and experience. Do you think so? Comment.
2. Explain the significance of research reports.

4.11. Oral Presentation

At times oral presentation of the results of the study is considered effective, particularly in cases where policy recommendations are indicated by project results. The merit of this approach lies in the fact that it provides an opportunity for give-and-take decisions which generally lead to a better understanding of the findings and their implications. But the main demerit of this sort of presentation is the lack of any permanent record concerning the research details and it may be just possible that the findings may fade away from people's memory even before an action is taken. In order to overcome this difficulty, a written report may be circulated before the oral presentation and referred to frequently during the discussion. Oral presentation is effective when supplemented by various visual devices. Use of slides, wall charts and blackboards is quite helpful in contributing to clarity and in reducing the boredom, if any. Distributing a board outline, with a few important tables and charts concerning the research results, makes the listeners attentive who have a ready outline on which to focus their thinking. This very often happens in academic institutions where the researcher discusses his research findings and policy implications with others either in a seminar or in a group discussion.

Thus, research results can be reported in more than one ways, but the usual practice adopted, in academic institutions particularly, is that of writing the Technical Report and then preparing several research papers to be discussed at various forums in one form or the other. But in practical field and with problems having policy implications, the technique followed is that of writing a popular report. Researches done on governmental account or on behalf of some major public or private organizations are usually presented in the form of technical reports.

Learning Activity 9.3.
1. Explain the technique and importance of oral presentation.

Section 5: Assessing Your Research Report: Setting the Scene

The following are extremely useful in self-checking your research report.

1. Does your abstract give a clear idea of what is in the report? Has it clearly described your objectives, the methodology adopted, and the main conclusions that have emerged?

2. Is your table of contents well-structured and does it give a picture of what is included? Have you included a list of tables and a list of figures if appropriate? In your introduction have you introduced your research adequately?

In relation to focus and justification, the following points are important.

a) Do you have a clear focus? Is your research report rightly defined and contained or does it sometimes lack direct relevance, or stray off the point?

b) Have you got a clearly constructed and suitable research question or hypothesis which leads to a set of clear and related subsidiary questions or objectives?

Use of the literature is obviously another pertinent issue in assessing a research report. Few key questions are:

a) Is your issue or focus underpinned by theory? Is it clear which theory or model you have adopted?

b) How up to date are your references? Have you included the most up to date work in your area?

c) Have you managed to identify and get hold of the work of key writers in your particular area?

d) Have you ensured that you have paid due attention to 'classic' sources? Have you used a variety of sources or are you over-reliant upon certain authors?

e) Have you included or acknowledged competing theories or viewpoints, or simply selected literature that supports your hypothesis?

f) Is it clear to the reader how your research relates to what has been done before, or builds upon existing knowledge? In your literature review do you merely identify and describe, with no real critical edge?

g) Have you been analytical enough? How well have you researched the literature on your topic and on your specific focus? Have you explored all possible sources?

With regards to the methodology, the following are pertinent issues in the assessment process.

a) Do you clearly identify and explain your choice of research design?

b) Are your research methods the most appropriate given your chosen hypothesis or research question, and your subsidiary questions or objectives?

c) Have you made it clear who the subjects are? And to what population these subjects belong? Is it clear how they were selected?

d) Have you explained the rationale behind your chosen means of collecting information? If it is an existing instrument, whose is it? Why did you choose it? Is it clear to the reader why your methods were the most appropriate ones for your research question?

e) Are you making assumptions? You know what you did in terms of research methods, but would the reader? Have you expressed yourself clearly and given adequate details?

f) Would someone else be able to replicate your study on the basis of the information you have given?

g) Have you clearly identified the strengths of your methodology? Are there any limitations to your methodology?

h) Is there anything you might have done differently?

The following are key questions to ask and answer while assessing the results, discussion and conclusions and recommendations that are put forth in the report.

a) Are your findings clearly presented? Have you included tables for your descriptive and inferential analysis of quantitative data?

b) If you have included graphs, charts and so on, are these appropriate? Is the content of each chart clear? Is it clear how each chart relates to your research objectives?

c) How have you analysed your findings? If you have undertaken quantitative analysis, which statistical tests have you used? Are you sure these are the correct tests? Have you interpreted the results correctly?

d) For qualitative analysis, have you demonstrated that you have analysed your data in a systematic manner?

e) In your discussion, do you adequately revisit the literature and relate your findings to the literature, or do you simply discuss what you found?

f) Are your arguments coherent, logical and sound? Are they consistent with the evidence that you have collected?

g) Have your conclusions clearly emerged from the evidence collected and discussed? Have you acknowledged unexpected evidence, or evidence that contradicts your chosen theory or model?

h) Do you return to your research question or hypothesis?

i) Do you evaluate the research? Have you identified the strengths and the limitations of the project?

Finally, one should also assess the general presentation of the report. To this effect, the following are key questions that may be used as a checklist.

a) Is your content well planned and logically structured? Is the work well presented?

b) Have you made appropriate use of supportive materials to enhance presentation, i.e. graphs, tables, illustrations?

c) Have you conducted a thorough read through, to eliminate careless spelling and typographical errors, poor grammar and poor sentence construction?

d) Do you link your various chapters and make use of signposting to help the reader? Do you set out your intentions clearly in your introduction?

e) Have you set out your references and/or bibliography with the required detail and in the recommended format?

f) Have you acknowledged all sources used, and made it clear when it is your views that are being expressed, or the views of others?

g) Have you made appropriate use of appendices? Are there any unnecessary appendices?

h) Have you ensured that your report is as stimulating and as interesting as possible? Have you conveyed your enthusiasm to the reader throughout the project?

Self-Review Questions?
1. Why do we have to write research reports?

2. Write a brief note on the 'task of interpretation' in the context of value chain research methodology.

Discussion Questions

1. Describe the precautions that the researcher should take while interpreting his findings.

2. Interpretation is an art of drawing inferences, depending upon the skill of the researcher". Elucidate the given statement explaining the technique of interpretation.

References and further reading:

John Adams, Hafiz T.A. Khan, Robert Raeside and David White (2007). Research Methods for Graduate Business and Social Science Students, Sage Publications Ltd, London.

Kothari, C.R. (2004). Research Methodology: Methods and Techniques. New Age International Publishers. New Delhi.

Mark Saunders, Philip Lewis and Adrian Thornhill (2009). Research Methods for Business Students, 5th edition, Pearson Education Limited, Edinburgh Gate.

Chapter Ten: ETHICS AND ACCESS IN RESEARCH

Introduction

Dear Students, the major aim of this chapter is to enable you to have grasp of some aspects of moral philosophy, teleology and deontology which have strong links with ethical decision making and research ethics. In addition the chapter presents ethical principles, obligations of researcher and the subject, and need for informed consent in undertaking research with a prime motive to uphold justice, equity and human dignity.

Learning Objectives

At the end of this chapter, you will be able to:

- Understand the nexus between moral philosophy and ethics in research;

- Understand how ethical issues arise in research;

- Know ethical principles guiding research; and

- Propose strategies to ensure ethical issues and access.

Section 1: Introduction to Morale Philosophy

Morale philosophy deals with principles or rules that people use to decide what is right or wrong. It presents guidelines for determining how to settle conflicts in human interests; guides business people in formulating strategies and resolving ethical issues. And, it is important learning that no single moral philosophy is accepted by everyone.

1.1. Moral Philosophy Defined

Moral philosophy can be defined in terms of the following attributes:

a) Economic value orientation: Associated with values that can be quantified by monetary means;

b) Idealism: A moral philosophy that places special value on ideas and ideals as products of the mind; and

c) Realism: The view that an external world exists independent of our perception of it.

1.2.   Moral Philosophy Perspectives

The following are moral philosophy perspectives: Teleology (Egoism, Utilitarianism); Deontology; The Relativist Perspective; Virtue Ethics; and Justice Perspectives (Distributive, Procedural, and Interactional). **Goodness Theories:** The basic concepts of goodness theory are the following. Monists believe that only one thing is intrinsically good, often exemplified by hedonism; Pluralists believe that two or more things are intrinsically good; and Instrumentalists reject the idea that Ends can be separated from the Means that produce them. Ends, purposes, or outcomes are intrinsically good in and of themselves. **Obligation Theories:** As presented earlier, Goodness theories typically focus on the *end result* of actions and the goodness or happiness created by them. In contrary to this, however, obligation theories emphasize the *means* and *motives* by which actions are justified. Its two main components are: Teleology and Deontology.

1.2.1.   Teleology

Considers acts as morally right or acceptable if they produce some desired result such as pleasure, knowledge, career growth, the realization of a self-interest, or utility. Assesses moral worth by looking at the consequences for the individual, called consequentialist.

1.2.1.1.   Categories of Teleology

The following are the categories of Theology. a) *Egoism:* Refers to right or acceptable behavior defined in terms of consequences to the individual and it maximizes personal interests. Enlightened egoists take a long-term perspective and allow for the wellbeing of others. b) *Utilitarianism*: Seeks the greatest good for the greatest number of people. *Rule utilitarians* determine behavior based on principles designed to promote the greatest utility. *Act utilitarians* examine a specific action itself, not rules governing it.

1.2.2.   Deontology

Deontology refers to moral philosophies that focus on the rights of individuals and on the intentions associated with a particular behavior and believe that individuals have certain absolute rights. The categories of deontology are: a) Rule deontologists believe that conformity to general moral principles determines ethicalness, and b) Act deontologists hold that actions are the proper basis on which to judge morality or ethicalness.

1.3. Relativist Perspective

From the relativist perspective, individuals and groups derive definitions of ethical behavior subjectively from experience. Descriptive relativism relates to observing cultures, meta-ethical relativists understand that people naturally see situations from their own perspectives. No objective way of resolving ethical disputes between cultures, and normative relativists assume that one person's opinion is as good as another's.

1.4. Virtue Ethics

What is moral in a given situation is what the situation requires and what a person with a "good" moral character would deem appropriate. Virtue ethics approach can be summarized as: Good corporate ethics programs encourage individual virtue and integrity; these virtues associated with appropriate conduct form a good person; and the ultimate purpose is to serve the public good. The well-being of the community goes together with individual excellence.

1.5. Justice

Involves evaluations of *fairness* or the disposition to deal with *perceived injustices* of others. *Distributive justice:* An evaluation of the results of a business relationship; *Procedural justice:* Based on the processes and activities that produce the outcomes or results; and *Interactional justice*: Based on an evaluation of the communication processes used in business relationships.

Section 2: Moral Philosophy and Ethical Decision Making

Individuals use different moral philosophies depending on whether they are making a personal or making a work-related decision can be explained in two ways:

a) In the business arena, some goals and pressures for success differ from the goals and pressures in a person's life outside of work; and

b) The corporate culture where individuals work.

2.1. Kohlberg's Model of Cognitive Moral Development

The model consists of six stages:

- Punishment and obedience;

- Individual instrumental purpose and exchange;

- Mutual interpersonal expectations, relationships, and conformity;

- Social system and conscience maintenance;

- Prior rights, social contract or utility; and

- Universal ethical principles.

Again, the model can be divided into three levels of ethical concern:

- Concern with immediate interests and with rewards and punishments;

- Concern with "right" as expected by the larger society or some significant reference group; and

- Seeing beyond norms, laws, and the authority of groups or individuals.

2.2. Importance of Kohlberg's Theory

It shows that individuals can change or improve their moral development and it supports management's development of employees' moral principles. The best way to improve employees' business ethics is to provide training for cognitive moral development. It is eminent from the preceding arguments that moral philosophy and Kohlberg's Theory are useful in understanding ethics and ethical decision making – including research ethics.

Section 3: Ethical Principles – What are they?

The following are guides to moral behavior:

Good: honesty, keeping promises, helping others, respective rights of others; and
Bad: lying, stealing, deceiving, and harming others.

Universality of ethical principles: should apply in the same manner in all countries, cultures, communities.
Relativity of ethical principles: vary from country to country, and from community to community. In connection with this Ethical Relativism is defined by: various periods of time in history; a society's traditions; and the special circumstances of the moment and Personal opinion. Simply put,

meaning given to ethics are relative to time, place, circumstance, and the person involved.

3.1. Ethics in Research – Why?

The main motivation of ethics in research is to protect rights and welfare of research participants, and to protect the wider society or community within which the research is being conducted. Mechanisms of Protection of rights and welfare of participants are: Ethical regulations or guidelines; Law enforcement; and upholding universal principles of human rights.

Learning Activity 10.1.
1. What practical activities can you suggest to anticipate and prevent unethical research practice?

Section 4: Research Ethics and why you should act ethically

In the context of research, ethics refers to the appropriateness of your behavior in relation to the rights of those who become the subject of your work, or are affected by it. Cooper and Schindler (2008:34) define ethics as the 'norms or standards of behavior that guide moral choices about our behavior and our relationships with others'.

Research ethics therefore relates to questions about how we formulate and clarify our research topic, design our research and gain access, collect data, process and store our data, analyze data and write up our research findings in a moral and responsible way. As Cooper and Schindler (2008) recognize, the norms of behavior that guide moral choices can in reality allow for a range of ethical positions. Research ethics, therefore, relates to questions about how we formulate and clarify our research topic, design our research and gain access, collect data, process and store our data, analyze data and write up our research findings in a moral and responsible way.

The conduct of your research is likely to be guided by your university's code of ethics or ethical guidelines. A code of ethics will provide you with a statement of principles and procedures for the conduct of your research highlighting what is and what is not considered ethical.

General ethical issues: A number of key ethical issues arise across the stages and duration of a research project. These relate to the:

- privacy of possible and actual participants;

- voluntary nature of participation and the right to withdraw partially or completely from the process;

- consent and possible deception of participants;

- maintenance of the confidentiality of data provided by individuals or identifiable participants and their anonymity;

- reactions of participants to the way in which you seek to collect data, including embarrassment, stress, discomfort, pain and harm;

- effects on participants of the way in which you use, analyze and report your data, in particular the avoidance of embarrassment, stress, discomfort, pain and harm;

- behavior and objectivity of you as researcher.

In doing any research there is an ethical responsibility to do the work honestly and with integrity. If you do not conduct your work in an ethical manner you will fail. This will apply to all stages of the research cycle. Fraud must be avoided in research and this can come in several forms:

- Being selective in sampling;

- Not reporting survey response/participation rates;

- Deliberately biasing the data collection instruments—for example, asking leading questions in surveys;

- Making up data—because you can't be bothered doing the data collection;

- Falsifying results—to make them fit your conclusion;

- Trimming - removing data that does not fit in with your analysis. This may be a legitimate thing to do but you must make it clear what has been done and why;

- Biased or inappropriate analysis; and

- Obscuring the research findings by the reporting style—for example, by not highlighting the results that are important or those that the researcher does not like.

4.1. Ethical issues at specific stages of the research process

Ethical issues are likely to be of importance throughout your research and require ethical integrity from you as a researcher:

a) Formulating and clarifying your research topic
b) Designing your research and gaining access
c) Collecting your data
d) Processing and storing your data
e) Analyzing your data and reporting your findings.

In sum, to avoid many of the problems, research must be carefully planned and one should strive to avoid cutting corners. Research ethics is summed up in the following statement: 'It is unethical to conduct research that is badly planned or poorly executed' (Declaration of Helsinki 1975).

4.2. Plagiarism

This is passing off someone else's work as your own. This is unacceptable and any quotes and illustrations used must be attributed to their source and properly referenced.

In planning research, the ethical consequences to the individual and to society must be considered at all stages of research and made clear. If you are involved with humans as subjects in experiments or as cases in a survey, informed consent must be obtained.

4.3. Obfuscation

Obscuring the research findings by the reporting style - for example, by not highlighting the results that are important or those that the researcher does not like. This would be done by not reporting information that is contradictory to your conclusions, or by hiding information by producing a very verbose report full of very technical/specialized terminology or long paragraphs with long-winded sentences.

Section 5: Ethical Principles Guiding Research

The following are key ethical principles that should be followed in conducting research.

- Respect for human dignity,

- Respect for free and informed consent,

- Respect for vulnerable persons,

- Respect for privacy and confidentiality,

- Respect for justice and inclusiveness,

- Balancing harms and benefits,

- Minimizing harm, and

- Maximizing benefit.

The above points are briefly discussed as follows. Human Dignity is the basis of ethical obligations with two essential components. These are: a) the selection and achievement of morally acceptable ends, and b) the morally acceptable means to those ends. In short, it is to protect the multiple and interdependent interests of the person (bodily, psychological, cultural integrity). Consent refers to the presumption that individuals have capacity and right to make free and informed decisions. In research **informed consent** must be maintained throughout as your research cannot proceed without consent.

5.1. Vulnerable Persons

Ethical obligations towards vulnerable persons refers to those with diminished competence and diminished decision-making capacity. Such individuals are entitled to special protection, special procedures to protect their interests. Specifically, entitlement (based on grounds of human dignity, caring, solidarity, fairness) to special protection against abuse, exploitation, discrimination. Privacy & Confidentiality is fundamental to human dignity. Standards protect the access, control, dissemination of personal information and helps to protect mental and psychological integrity. Harms and Benefits is also critical to ethics of human research. It advocates that foreseeable harms should not outweigh anticipated benefits.

5.2. Justice and Inclusiveness

Refers mainly to fairness and equity. Non-malfeasance: emphasizes duty to avoid, prevent or minimize harm or simply no unnecessary risk of harm. To this end, participation must be essential to achieving scientifically and societally important aims that cannot be realized without the participation of human subjects. Beneficence: is about the duty to benefit others, the duty to maximize net benefits, produce benefits for subjects themselves, other individuals, and produce benefits for society as a whole and for the advancement of knowledge (usually the primary benefit).

5.3. Obligations of the Researcher

One of the key obligations of the researcher is to follow code of ethics, that is, Objectivity, No misrepresentation and preserving anonymity and confidentiality.

5.4. Rights & Obligations of Subject

The following are rights and obligations of individuals participating in research. These are: Right to informed consent, Obligation to be truthful, Right to privacy, Right to confidentiality, Right to no harm, and Right to be informed.

Section 6: Negotiating Access in Research

6.1. Introduction

Without paying careful attention to how you are going to gain access to the data you require and acting ethically, what seem like good ideas for research may flounder and prove impractical or problematic once you attempt to undertake them.

6.2. Why access is an issue?

Access may impact upon your ability to select a representative sample of participants, or secondary data, in order to attempt to answer your research question and meet your objectives in an unbiased way and to produce reliable and valid data. Fieldwork is permeated with the conflict between what is theoretically desirable on the one hand and what is practically possible on the other. It is desirable to ensure representativeness in the sample, uniformity of interview procedures, and adequate data collection across the range of topics to be explored, and so on. But the members of organizations block access to information, constrain the time allowed for interviews, go on holiday, etc.

Where you wish to undertake a longitudinal study using primary data, you will require access to the organization and your research participants on more than one occasion. The difficulty of obtaining access in relation to these more intrusive methods and approaches has been recognized many times in the literature (e.g.: Buchanan *et al.,* 1988; Johnson 1975; Easterby-Smith *et al.,* 2008).

6.3. Issues associated with gaining access

Your ability to obtain both primary and secondary data will depend on you gaining access to an appropriate source, or sources where there is a choice. The appropriateness of a source will, of course, depend on your research question, related objectives and research design. The first level of access is physical access or entry (Gummesson, 2000). The final decision as to whether or not to allow the researcher to undertake the research may depend on a number of reasons, related to:

- a lack of perceived value in relation to the work of the organization, group or the individual;

- The nature of the topic because of its potential sensitivity, or because of concerns about the confidentiality of the information that would be required;

- Perceptions about your credibility and doubts about your competence.

6.3.1. Physical access

To an organization or group will be formally granted through its management. However, it will also be necessary for you to gain acceptance and consent from intended participants within the organization or group in order to gain access to the data that they are able to provide (Robson, 2002).

6.3.2. Cognitive access

Where you achieve this you will have gained access to the precise data that you need your intended participants to share with you in order to be able to address your research question and objectives. Simply obtaining physical access to an organization is likely to be inadequate unless you are also able to negotiate yourself into a position where you can collect data that reveal the reality of what is occurring in relation to your research question and objectives. In sum, where the issue is perceived as being harmful to those whom you would wish to be your research participants - this will not only provide a problem for you in terms of gaining cognitive access but may also suggest ethical concerns as well.

6.4. Strategies to gain access

Here, we will consider a number of strategies that may help you to obtain physical and cognitive access to appropriate data, in other words where you wish to gain **personal entry**. The applicability of these strategies will also

vary in relation to your status as either an internal or an external researcher.

Some strategies to help you to gain access, are:

- ensuring you are familiar with and understand the organization or group before making contact;

- allowing yourself sufficient time;

- using existing and developing new contacts;

- providing a clear account of purpose and type of access required;

- overcoming organizational concerns;

- highlighting possible benefits to the organization;

- using suitable language;

- facilitating replies;

- developing access incrementally;

- establishing credibility;

- being open to serendipitous events.

6.4.1. Ensuring familiarity and understanding

Before attempting to gain physical access it is essential that you familiarize yourself fully with the characteristics of the organization or group.

6.4.2. Allowing yourself sufficient time

Physical access may take weeks or even months to arrange, and in many cases the time invested will not result in access being granted (Buchanan *et al.,* 1988). An approach to an organization or group will result in either a reply or no response at all.

6.4.3. Using existing and developing new contacts

Most researchers suggest that you are more likely to gain access where you are able to use existing contacts (Buchanan et al., 1988; Easterby-Smith et al., 2008; Johnson, 1975). Buchanan et al. (1988:56) say that 'we have been most successful where we have a friend, relative or student working in the organization'. Their knowledge of you means that they should be able to trust your stated intentions and the assurances you give about the use that will be made of any data provided.

6.4.4. Providing a clear account of purpose and type of access required

Providing a clear account of your requirements will allow your intended participants to be aware of what will be required from them (Robson, 2002). Asking for access and cooperation without being specific about your requirements will probably lead to a cautious attitude on their part since the amount of time that could be required might prove to be disruptive. It is also likely to be considered unethical.

6.4.5. Overcoming organizational concerns

Organizational concerns may be placed into one of three categories. First, concerns about the amount of time or resources that will be involved in the request for access. Easterby- Smith et al. (2008) suggest that your request for access is more likely to be accepted if the amounts of time and resources you ask for are kept to a minimum. The second area of concern is related to sensitivity about the topic.

It has been found that organizations are less likely to cooperate where the topic of the research has negative implications. Organizations do not normally wish to present themselves as not performing well in any aspect of their business. As a complementary point to this, Healey (1991) reports earlier work that found that introductory letters containing multiple requests are also less likely to be successful.

The third area of concern is related to the confidentiality of the data that would have to be provided and the anonymity of the organization or individual participants. To overcome this concern, you will need to provide clear assurances about these aspects.

6.4.6. Possible benefits to the organization

Where access is granted in return for supplying a report of your findings it may be important to devise a simple 'contract' to make clear what has been agreed. This should state the broad form of the report and the nature and depth of the analysis that you agree to include in it, and how you intend to deal with issues of confidentiality and anonymity.

6.4.7. Using suitable language

Buchanan et al. (1988:57) suggest using 'learn from your experience' in place of research, 'conversation' instead of interview and 'write an account' rather than publish.

6.4.8. Facilitating replies

Inclusion of a stamped or freepost addressed envelope may facilitate a reply.

6.4.9. Developing access incrementally

Johnson (1975) provides an example of developing access on an incremental basis. He used a three-stage strategy to achieve his desired depth of access. The first stage involved a request to conduct interviews. This was the minimum requirement in order to commence his research.

The next stage involved negotiating access to undertake observation. The final stage is in effect an extension to the second stage and involves gaining permission to tape-record the interactions being observed.

6.4.10. Establishing your credibility

Your credibility and the probability of individuals' participation is likely to be enhanced if the request for participation is made jointly with a senior person from the organization. Where your intended data collection technique may be considered intrusive, you may need to exercise even greater care and take longer to gain acceptance.

Self-Review Questions?
1) Why is moral philosophy important in understanding the research ethics? Elaborate.

2) When should we think about ethics in research?

3) What elements would you include in a consent form for interview based research?

Discussion Questions
1. The researcher affects the research results. Discuss critically.

2. Why is research ethics important at all stages of your research project?

References and further reading:

Gordon Rugg and Marian Petre (2007). A Gentle Guide to Research Methods, Open University Press McGraw-Hill Education, Berkshire.

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