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**A Field Manual
for Subsector
Practitioners**

**Tools for Microenterprise
Programs: Nonfinancial
Assistance Section**

GEMINI

**GROWTH and EQUITY through MICROENTERPRISE INVESTMENTS and INSTITUTIONS
7250 Woodmont Avenue, Suite 200, Bethesda, Maryland 20814**

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A Field Manual for Subsector Practitioners

Tools for Microenterprise Programs:

Nonfinancial Assistance Section

by

**Steven J. Haggblade
Matthew S. Gamsler**

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PREFACE

As the field of microenterprise development becomes more sophisticated, practitioners require greater technical skills to meet increasingly complex challenges. As part of its continuing efforts to meet the needs of microenterprise practitioners, GEMINI is producing a series of technical notes and training materials on topics related to microenterprise development. This technical note looks at subsector analysis.

The GEMINI technical note series is divided into three sections. The microenterprise finance section includes notes on setting interest rates, the expansion of microenterprise finance programs, and other specific topics. The nonfinancial assistance section contains notes on how to carry out subsector analyses and identify cost-effective ways of enhancing the productivity and competitiveness of microenterprises. The microenterprise research section contains notes on survey methodologies designed to increase understanding of the growth and dynamics of the microenterprise sector. Each note can be used on its own; however, those interested in one note within a section will probably be interested in all of the notes produced in that section.

The notes can be used as reference materials and can also serve as the basis for creating customized training materials for individual organizations. Although these "Tools for Microenterprise Programs" are specifically designed for practitioners, they should also prove useful for donors, evaluators, and others interested in microenterprise development.

For a complete listing of other technical notes and training materials available from GEMINI, as well as a list of all GEMINI Technical Reports and Working Papers, please see the last page of this document.

The GEMINI Project is the U.S. Agency for International Development's primary technical resource in the field of micro- and small-scale enterprise development. GEMINI explores the latest in microenterprise development and brings new findings to the field through direct work with A.I.D. missions, U.S.-based private voluntary organizations, and local organizations in developing countries. GEMINI offers technical assistance, training, economic research, and information to A.I.D., implementing organizations, resource institutions, national governments, and other practitioners involved with microenterprise development. The project aims to have a catalytic effect on a broad spectrum of efforts to promote the growth of micro- and small-scale enterprises.

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SECTION ONE

SUBSECTORS AND MSE PROMOTION

WHY SUBSECTORS?

Micro- and small-scale enterprises (MSEs) employ vast numbers of people throughout the Third World. They provide a key source of income for the poor and for women. Yet MSEs struggle to survive in a highly competitive, fast-changing business environment. Some operate in rapidly growing markets while others are squeezed by changes in demand, technology, labor costs, tariffs, input prices, government regulations, and competition from large firms and imports.

Micro- and small-scale enterprises (MSE) employ vast numbers of people in highly competitive, fast-changing business environments in the Third World.

In spite of their resourcefulness and savvy, small firms often lack political influence as well as the vantage point from which to understand the overall competitive system in which they operate. Field agencies can help by serving as advocates, monitoring and influencing change for the benefit of MSEs. But to do so, field agencies need ways of identifying niches where MSEs have a competitive advantage so that these agencies can assist those MSEs with the greatest potential while avoiding investment in areas where they cannot effectively compete. Subsector analysis offers a tool that can facilitate small-firm moves to promising technologies and market niches.

WHAT IS A SUBSECTOR?

Normally, a subsector is delineated by a particular final product and includes all firms engaged in raw material supply, production, and distribution of that product. In some cases, however, the defining characteristic is a key raw material, with the subsector describing the alternative transformations and distribution systems emanating from it. The hides and skins, cotton, and citrus subsectors are examples of this second type. They are common in the literature on agricultural economics marketing, where they are known as commodity subsectors. Many of the

A subsector is the network of firms that supply raw materials, transform them, and distribute finished goods to a particular consumer market.

analytical tools used in subsector analysis come from these early subsector studies on agricultural commodities.

Subsector analysis offers a framework for rapidly evaluating MSE dynamics and the prospects for cost-effective intervention. It does not prejudice the nature of intervention. Subsector analysis can lead to projects involving technology development, input supply, marketing, management assistance, or credit.

Government, donors, and nongovernmental organizations (NGOs) have successfully applied subsector analysis in a wide range of settings. In Indonesia, local NGOs have translated subsector analysis into projects that unblock MSE growth potential in shrimp and rattan furniture production. In Rwanda, the Ministry of Finance initiated a series of subsector studies in a systematic effort to review policy constraints to MSE activity. Subsector analysis done jointly by government and university researchers in Latin America has led to major interventions in marketing infrastructure and regulatory reform in a range of agricultural commodity subsectors.

CHARACTERISTICS OF THE SUBSECTOR APPROACH

Systems Perspective

It is not possible to understand the opportunities and constraints facing small firms by looking at small firms alone. We must also examine the large firms that compete with them, supply inputs, or market small-firm output.

The subsector approach recognizes that small firms operate within a larger production and distribution system. It is not possible to understand the opportunities and constraints facing small firms, or to develop sensible policies to promote small-enterprise growth, by looking at small firms alone. We must also examine the large firms that compete with them, supply inputs, and market small-firm output.

Subsector analysis centers on a schematic map that describes this economic system. The subsector map summarizes the economic relationships between MSEs and other actors in the system. It traces system flows and, within them, the options available to MSEs. The subsector map serves as the focus of discussion and as a basis for displaying key information.

Key Concepts

Subsector analysis relies on four key concepts, which together lead to a systematic search for growth opportunities for large numbers of microenterprises.

1. Vertical Perspective

Most small businesses work in vertical supply chains. They purchase inputs and market output through others, often through larger firms.

2. Competition

Small firms compete among themselves. They also compete with medium and large firms using different technology. By understanding their competitors, we can determine areas in which small firms have an edge, and how they can develop this advantage.

3. Coordination

Coordination describes the linkages among firms active in the subsector. It examines how policies and regulations influence market access and interaction, and how insiders regulate product flows within the system.

4. Leverage

One-on-one assistance to MSEs is expensive and rarely cost-effective. Because firms are small and dispersed, individual contact costs are high. Benefits per firm, even if projects double income, are small in absolute value.

Subsector analysis starts from the premise that interventions most likely to be cost-effective are those that influence large numbers of small firms at a single stroke. This is known as leverage. With the benefit of leverage, small focused project inputs can generate large output, just as

Subsector analysis premises that interventions most likely to be cost-effective are those that influence large numbers of small firms at a single stroke.

a small person using a lever can lift a large mass. Leveraged interventions multiply benefits and reduce per-firm contact costs.

Single Activity

The search for leverage leads to a focus on groups of businesses engaged in the same activity. Firms supplying the same markets, because they face similar opportunities and constraints, can benefit from interventions aimed at unblocking common growth potential.

WHO?

Anyone interested in MSE promotion or dynamics will benefit from familiarity with the tools of subsector analysis.

Subsector analysis does not require technology experts, special certificates, or higher degrees of any kind. It offers a framework for organizing thinking. Common sense is the most important ingredient for successful application.

RESOURCE REQUIREMENTS

Institutional affiliation with a potential implementing agency offers many advantages in analysis and, subsequently, in translating analysis into action.

In practice, the resources applied in subsector analysis have varied widely, from as little as one person-week to several years. The most common operational formula includes a two-person team in the field for four weeks. If the team members live outside the country of study, two local assistants are required as well.

Institutional affiliation with a potential implementing agency offers many advantages in analysis and, subsequently, in translating analysis into action. Resident expertise in local agencies may also allow reduction in the field work. In some cases, agencies have completed their analysis in as little as two calendar weeks, although this is rare. Except in unusual instances, a four-week timetable should suffice.

SECTION TWO

ANALYTICAL PROCEDURES

Establish Initial Understanding

- Step 1. Select subsector for study**
- Step 2. Introduce yourself to the subsector**
- Step 3. Draw preliminary subsector map**
- Step 4. Specify the environment affecting participants**

Refine Your Understanding

- Step 5. Refine the subsector map**
- Step 6. Quantify overlays of particular interest**

Identify Leveraged Interventions

- Step 7. Analyze dynamics**
- Step 8. Identify sources of leverage**
- Step 9. Explore opportunities for leveraged intervention**

This manual describes step-by-step procedures for those who wish to engage in subsector analysis. The manual provides checklists and practical observations from prior experience. It divides subsector analysis into three phases containing a total of nine steps. At each step, it offers examples from two different case studies.

This manual describes step-by-step procedures for those who wish to engage in subsector analysis.

In practice, subsector analysis is an iterative process, in which each individual analyst develops her or his approach to understanding a pro-

duction and distribution system. The order of steps presented here is a general guide, not a rigid prescription. Feel free to experiment! Find the right approach to suit your needs.

For those familiar with subsector analysis, this manual will serve as a reference guide. It chronicles current best-practice technique and summarizes standard conventions and terminology.

For others, less steeped in subsector work, it offers an introductory "how to" manual. Many people familiar with small enterprise or MSE projects will be able to engage in subsector analysis successfully after studying this manual and perhaps some of the subsector case studies listed in the bibliography. You should feel free to experiment with the procedures described.

Try the sorghum beer case study first. Save the more complicated silk study for a second pass.

The two case studies that accompany the description of procedures contrast in many ways. Because the sorghum beer subsector is a much simpler system to understand, novices may wish to concentrate on it the first time through. The more complicated silk case study will make more sense on a second pass.

Those who wish assistance getting started may supplement this manual in three ways: (a) with the written case studies listed in the bibliography; (b) with the forthcoming GEMINI instructional video and workbook; and (c) with specialized training sessions, which can be arranged through GEMINI.

Table 1 provides an overview of the subsector analysis procedures, which are described in the sections to follow.

TABLE 1

AN OVERVIEW OF PROCEDURES FOR SUBSECTOR ANALYSIS

Procedure	Content	Information Sources	Comments
1. Select subsector to be studied	<ul style="list-style-type: none"> • Overview of MSE population • Identify important or interesting activity for study 	<ul style="list-style-type: none"> • Data: surveys of population, labor force, small enterprises • Key informants: donors, NGOs, business groups, government 	<ul style="list-style-type: none"> • Common criteria: size, activity, expanding major change, importance to vulnerable groups, priority of region • Generally selected prior to field work
2. Introduce yourself to the subsector	<ul style="list-style-type: none"> • Identify principal functions, technologies, participants, and product flows 	<ul style="list-style-type: none"> • Subsector participants: key informants often include wholesalers or input suppliers • Knowledgeable observers 	<ul style="list-style-type: none"> • Visit large and small firms • Follow heads from crop interview to the next
3. Draw preliminary subsector map	<ul style="list-style-type: none"> • Schematic summary of participants and alternative channels through which products flow 	<ul style="list-style-type: none"> • Subsector participants • Key informants 	<ul style="list-style-type: none"> • Most important and useful of all steps • Showing sketch focuses informant interviews • Map changes over course of the study as understanding improves
4. Specify environment	<ul style="list-style-type: none"> • Regulations: zoning, licensing, labor, retailing • Policies: tariff, tax preferences • Macroeconomic issues 	<ul style="list-style-type: none"> • Subsector participants • Legal statutes • Government offices • Business associations 	
5. Refine subsector map	<ul style="list-style-type: none"> • Clarify actors and production flows • Streamline map 	<ul style="list-style-type: none"> • Field interviews focused on unclear segments of preliminary map 	
6. Quantify "overlays" of particular interest	<ul style="list-style-type: none"> • Specify overlays of interest: enterprises numbers (N), employment (E), sales value (S), value added (VA) or others • Collect focused data 	<ul style="list-style-type: none"> • Field interviews with subsector participants • Technical personnel in industry, government, NGOs • Trade or industry statistics • Consumption studies 	<ul style="list-style-type: none"> • Selection depends on purpose and budget • Key decision is whether to collect firm budgets • Accuracy of estimates greatly increased by key informants at system nodes
7. Analyze dynamics	<p>Identify:</p> <ul style="list-style-type: none"> • Growing and waning channels • Responsible driving forces and constraints • Best prospects for MSE growth • Intervention required to achieve that potential 		<p>See Worksheet 7</p>
8. Identify sources of leverage	<ul style="list-style-type: none"> • System nodes • Geographic clustering • Policies 		<ul style="list-style-type: none"> • Gearing ratio overlay helpful
9. Explore opportunities for leveraged intervention	<ul style="list-style-type: none"> • Convergence between leverage and opportunities for intervention 	<ul style="list-style-type: none"> • Analyze from Steps 7 and 8 	

Step 1. Select Subsector for Study

- Undertake quantitative overview of MSE population
- Solicit input from key informants
- Select subsector

Objectives

Your objective at this stage is to identify subsectors where intervention will yield the highest payoff. Usually, this boils down to selecting the largest ones and, among them, those with the best growth prospects. Depending on data availability, largest can be defined by number of enterprises, employment, or perhaps income. In some cases, a relatively small subsector undergoing rapid growth may offer the best potential for income expansion or employment generation. In yet other instances, agency priorities will mandate a focus on particular target groups or regions. Small-enterprise programs commonly focus on women, disadvantaged groups, squatter settlements, or impoverished regions.

Procedures

Subsector selection offers one of the most potent ingredients for locating large numbers of firms facing similar constraints and opportunities. This translates into leverage and cost-effective intervention.

To guide subsector selection, you should assemble data that bear on three criteria: size, growth prospects, and target groups.

To guide subsector selection, you should assemble data that bear on three criteria: size, growth prospects, and target groups (Worksheet 1 in Appendix B). Table 2 offers an example from a recent subsector review in Lesotho. As it shows, subsector selection involves clear trade-offs. Although home brewing employs by far the largest contingent and is most important for women, its growth prospects are lower than the prospects for construction, garments, and leather work. As you select

TABLE 2
SUBSECTOR SELECTION CRITERIA IN LESOTHO

Activity	Size	Growth Potential		Target Groups
		Domestic	Export	
	MSE employment (thousands)	Share of additional income spent on these activities*	Export Market or local natural resources?	Women as percentage of total employment
Brewing	34	5.0%	no	96%
Garments	14.5	9.1	yes	90%
Building and construction	12	13.9	no	5%
Weaving	1.8	0.0	yes	92%
Hides, skins, and leather	0.3	4.2	yes	14%

*See Appendix D, Table D-2, for discussion of how to calculate. Note that these shares are sometimes called "marginal propensities to consume" or "marginal budget shares."

Subsector selection involves clear trade-offs. Although home brewing employs by far the largest contingent and is most important for women, its growth prospects are lower than those for construction, garments, and leather work. As you select one or two subsectors for review, you will be forced to make your priorities and preferences explicit.

one or two subsectors for review, you will be forced to make your priorities and preferences explicit.

In assembling the necessary data, it is normally helpful to start with a broad overview of enterprises and employment by type of activity, firm size, and location. Population censuses offer an important starting point because they provide a comprehensive picture of the economic activity of all residents of the country. Frequently, they offer regional

and gender breakdowns as well. National accounts, labor force surveys, licensing lists, Chamber of Commerce files, industry establishment surveys, and specialized informal sector studies furnish useful and more detailed supplementary information.

Where they are available, consumption studies provide further invaluable information on the relative size of different markets as well as growth prospects. In many cases, these studies provide the only sufficiently detailed source for estimating the relative size of different markets. They have been used, for example, to estimate the value of used clothing versus new clothes versus tailoring services in Rwanda, and rural versus urban construction expenditures in Lesotho. Rough estimates of per capita expenditure for individual commodities allow estimates of regional or even subregional market sizes. In the absence of time-series data — and they are almost always absent — consumption data offer one of the few windows into dynamics. See Tables D-1 and D-2 in Appendix D for details on how to do this.

Trade statistics and key informants offer further important input. For MSE products aimed at export markets, trade data measure both the absolute size of total output and trends over time. Key informants — long-time residents, members of trade associations, government promotional agencies, NGO field staff, and others — often offer perspective and judgment you will find valuable in making an initial selection.

In many cases, those data that are available seriously underestimate the role of small enterprises, especially seasonal, part-time, and female-dominated activity. In these cases, you may wish to fill the gap by performing some rapid reconnaissance and quick street counts to project relative sizes. Some investigators adopt more formal procedures, what the standard small enterprise research has called a Phase I sample census. Liedholm and Mead (1987) and Liedholm and Chuta (1976) provide a summary of these procedures.

Examples

Sorghum Beer. The largest nonfarm employer in rural Potswana, sorghum beer accounted for 50 percent of rural manufacturing income in the mid-1970s. Then, as now, women dominate the sorghum beer brewing and retailing industries. Beginning in the early 1980s, they encountered aggressive competition from large-scale factory brewers of sorghum beer.

The factory's request to set up additional large-scale sorghum beer breweries, in previously unserved regions, precipitated a review of the subsector by the Ministry of Commerce and Industry. Prior to the subsector study, officials relied on data from an in-depth rural income distribution survey undertaken by the Ministry of Finance.

Silk. The implementing agency, CARE, selected silk for a subsector review after a more general, three-year pilot small enterprise project revealed the important equity implications and growth potential in silk. Silk is one of the largest employers in northeast Thailand, the poorest region in the country. Women dominate the silkworm rearing and reeling industries in a subsector that is growing rapidly. CARE aims to help low-income traditional producers move into the growing segments of the silk market.

Specialized studies by the International Labour Organization (ILO) and several local universities, combined with published data from the Ministries of Trade, Agriculture, and the Silk Promotion Board furnished data necessary for the selection. CARE also benefited from considerable in-house data collected during its pilot project.

Step 2. Introduce Yourself to the Subsector

- **Participants**
- **Technologies**
- **Product flows**
- **History**

Objectives

Your goal is to describe the supply chains in which MSEs participate and understand the way the overall production and distribution system fits together.

Your goal is to describe the supply chains in which MSEs participate and understand the way the overall production and distribution system fits together. How many functions does the subsector perform? At a minimum, most systems include raw material supply, production, wholesaling, and retailing. Many involve much greater complexity. What alternative technologies and scales of production compete in performing each function? At what stages do small and large firms compete? Do large firms supply inputs or market output for small enterprises? Can you trace out the system of product flows that channel raw materials to producers and through the distribution system to final consumers?

Procedures

When you begin the investigation, there is no substitute for total immersion. Read everything you can about your subsector, its history, structure, size, and technology. Above all, visit participants and observe their operations firsthand. Knock on doors, amble in, and engage in open-ended discussions with representative actors throughout the system. Visit firms of different size, and try to locate businesses operating at different levels in the subsector.

As you proceed, keep an eye open for observers who are well positioned to have an overview of the whole subsector. These key informants can prove extremely valuable in helping you pull together the

disparate evidence accumulated from your smattering of subsector representatives. A tannery operator, for example, may prove unusually well placed to describe the entire system of raw skin preparation, collection, tanning, leatherworking, local distribution, and export. Trade association representatives, government officers, and local NGO staff or researchers frequently have a broader perspective than most individual business operators. Similarly, wholesalers or suppliers of key inputs are often best placed to register changes over time for the system as a whole.

Think of yourself as an investigative journalist. Check your sources. Never take one person's word without double checking. Anomalies abound, and you must be able to separate the special cases from the norm. Follow your leads. One interview may serve as a springboard to the next.

During the interviews, ask four standard questions: (1) Where do you get your raw materials? (2) To whom do you sell your output? (3) What technology do you use, what alternatives exist, and why do you use this one? (4) What major changes have occurred in your line of business since you began? The respondents perceive none of this as threatening. Even without introductions, they are normally pleased to discuss these general features of their business with you.

If you anticipate needing quantitative overlays (see Step 6), it is helpful to think about your data requirements up front. Although your top priority at this stage must be to understand the general system flows, you can often begin collecting a few key numbers without compromising that objective. For example, prices at each stage in the production chain are easy to collect and prove invaluable later in constructing budgets, returns to labor, and income profiles. To help you guide interview discussions, Worksheet 2 in Appendix B provides a set of common questions to consider.

You may find it helpful to take even a rough preliminary sketch of system flows along with you to interviews, especially with key informants. Most of them readily grasp what you are trying to accomplish. The sketch helps guide discussion and focus their input on areas of special interest to you.

Keep a lookout for clues about historical evolution of the subsector. Time-series data and secondary sources offer insights into

During the interviews, ask four standard questions:
(1) Where do you get your raw materials? (2) To whom do you sell your output? (3) What technology do you use, what alternatives exist, and why do you use this one? (4) What major changes have occurred in your line of business since you began?

long-term trends, and frequently stimulate interesting questions and hypotheses about likely future developments.

Examples

Sorghum Beer. The subsector investigator began by interviewing factory brewers, maltsters, beerhall operators, and a handful of home brewers. Two sociologists with long experience in rural Botswana proved to be valuable key informants. Because of the large distances involved in conducting a national study, this step took two weeks.

Silk. In this somewhat unusual case, the subsector review team required no initial field work. During the prior three-year pilot project, CARE staff had acquired a good overview of the system. So the subsector analysts simply spent two intensive days with them, quizzing, probing and working together to sketch the preliminary subsector map. Several recent ILO and local university monographs on silk helped fill in gaps and clarify issues to which the project staff could not speak.

Step 3. Draw a Preliminary Subsector Map

- List the functions
- List participants performing each function
- For each function, identify alternative technologies and quality differences
- Identify final markets
- On a blank piece of paper, list functions down the left side and final markets across the top
- Map participants onto the functions they perform
- Draw arrows to describe product flows among participants
- Define principal channels
- Review subsector boundaries

Concepts

The subsector map summarizes your initial understanding of the subsector structure. Although conceptually simple, the map is a powerful tool for describing what you know about a set of related business activities. It identifies the subsector's principal functions, participants, and channels. In preparing the map, it is useful to review the elements in that order. The functions describe the transformations that take place. The participants indicate who performs them. And the channels describe how products flow among participants, who buys from whom, and how the network hangs together.

The subsector map summarizes your initial understanding of the subsector structure.

Procedures

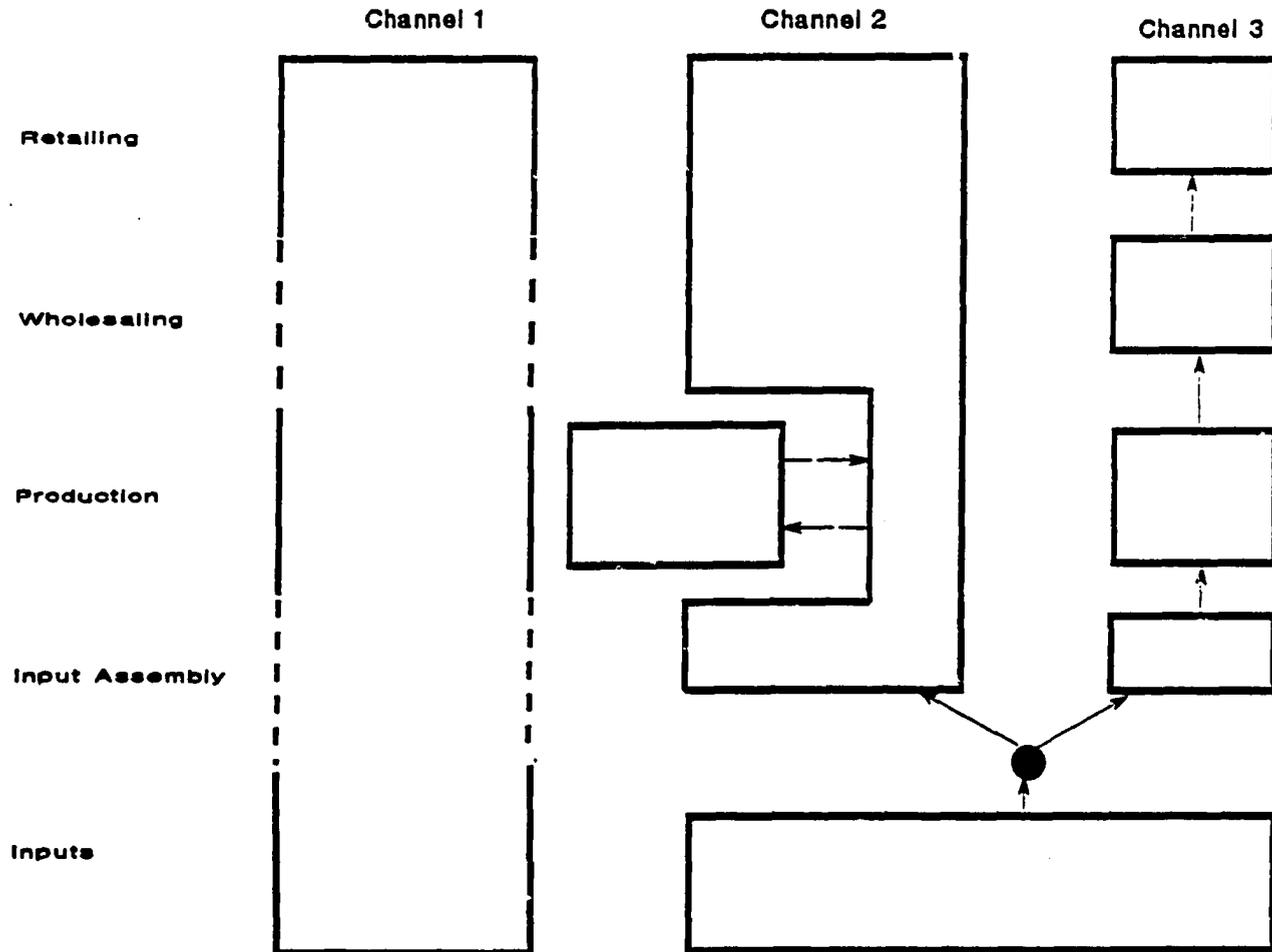
To draw your initial map, follow the procedures listed in Step 3 above. Figure 1, which summarizes subsector mapping conventions, gives you a feel for how your map will look. Worksheet 3.A (see Appendix B) helps summarize information you have collected on system flows. After completing it, Worksheet 3.B (Appendix B) offers a sample grid onto which you can map your findings. Draw in pencil; you will be erasing frequently.

The subsector map evolves along with your understanding of the system. Especially at the outset, each interview adds to the complexity as you discover new participants and channels. Even in the later stages of a subsector study, it is not unusual to uncover one or more important new channels.

Most investigators are anxious to enumerate the full array of subsector participants and interrelations. Presenting all of these complexities in the subsector map often results in a bewildering crisscross of lines connecting participants in all possible permutations. Do not worry if the initial subsector map resembles a hopelessly confusing electrical engineering diagram. At a later stage, you will have the confidence to prune away the special cases and highlight the more general.

As you draw the map, you will inevitably confront the problem of where to draw its boundaries. You usually start from a particular final product, and map out all firms engaged in its supply, production, and distribution. The final product may be furniture, garments, or agricultural machinery. Alternatively, you may start from a key raw material, and describe the various transformation and distribution systems in which it is used. Raw materials such as hides and skins, cotton, or citrus provide the basis for many subsector studies. The art of drawing boundaries lies in defining a manageable yet meaningful unit of analysis. Too large a frame provides too many firms and too many relationships to understand in one map. Too small a frame omits key firms and industrial relationships that must be understood to appreciate what is going on in the subsector. Although you will have to use your judgment in deciding where to draw the lines, the examples below offer some guidelines.

Figure 1
Subsector Mapping Conventions



Location

● = Assembly point

Enterprises

□ = Enterprise boundary

|| = Skipped or implicit function

Coordinating Mechanisms

↑ = Sale of goods in spot market

↑ = Contract sale

← = Subcontract

Overlays

N = Number of firms

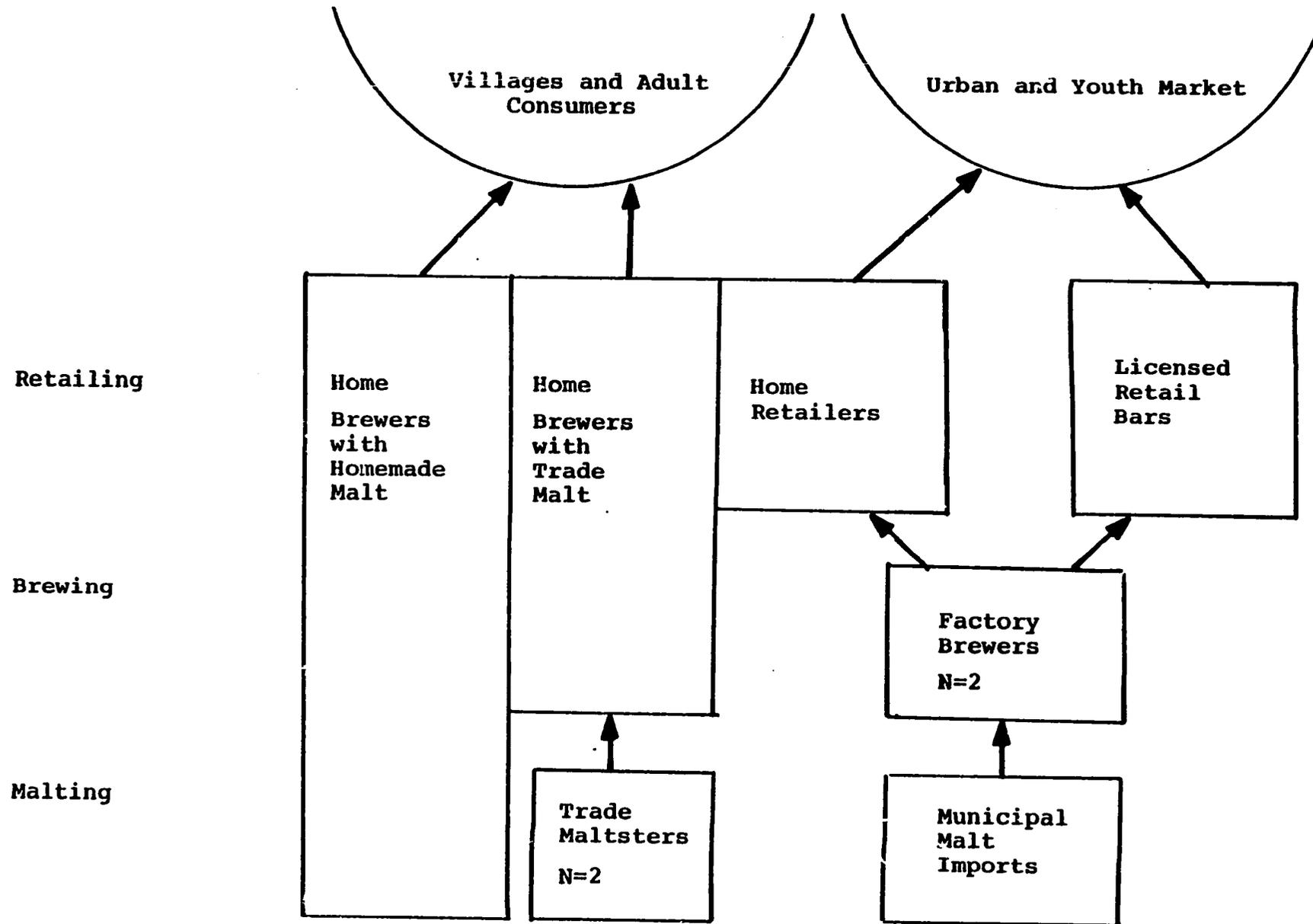
S = Sales

L = Employment

V = Volume

⊛ = Gearing ratio

**FIGURE 3
PRELIMINARY SORGHUM BEER SUBSECTOR MAP**



Silk. The Thai silk subsector is much larger and more complex. It employs 360,000 households and spans 8 distinct functions, from mulberry and sericulture research up through retailing.

The principal participants include traditional silk-producing households; households that have specialized in yarn production; factory reeling and weaving mills, both large and small; and the fully integrated industry leader, the Jim Thompson Company. See Figure 4 for a summary of the functions each performs and the technologies they use.

The participants supply silk cloth to several principal customers: traditional Thai consumers for ceremonial wear, domestic tourists, and export markets. A clear quality difference distinguishes the modern Thai silk, destined for tourist and export markets, from the coarser, traditional weaves.

Parts of the map (Figure 5) are clearly understandable at this stage, while others remain fuzzy. The two extremes seem especially clear. The integrated traditional household producers contrast vividly with the fully integrated but highly modern Jim Thompson company. Both perform all functions in-house, from growing mulberry to weaving and retailing cloth. But where household producers rear traditional silkworms, the Jim Thompson company rears the finest white hybrids. Where traditional households reel silk yarn by hand, Jim Thompson uses automated multi-end reeling machinery. Where households weave on slow, hand-shuttle looms, the Jim Thompson company favors carefully calibrated fly-shuttle handlooms.

But between these two extremes, in the middle portion of the subsector map, product flows and participant interaction are less clear. We know that not all households weave their own yarn into cloth. Some specialize as producers of yarn, while others rear white cocoons and sell without even reeling yarn themselves. What remains blurry is our understanding of which silkworm varieties are used under differing levels of household integration. And the relationships among factory reelers and factory weavers, large and small, remains murky.

Although we have clearly delineated two principal channels, the remaining middle part of the system could comprise as many as three to six more. To refine our understanding, further field interviews should concentrate on the fuzzy portions of the map, on factory reelers and factory weavers, both large and small.

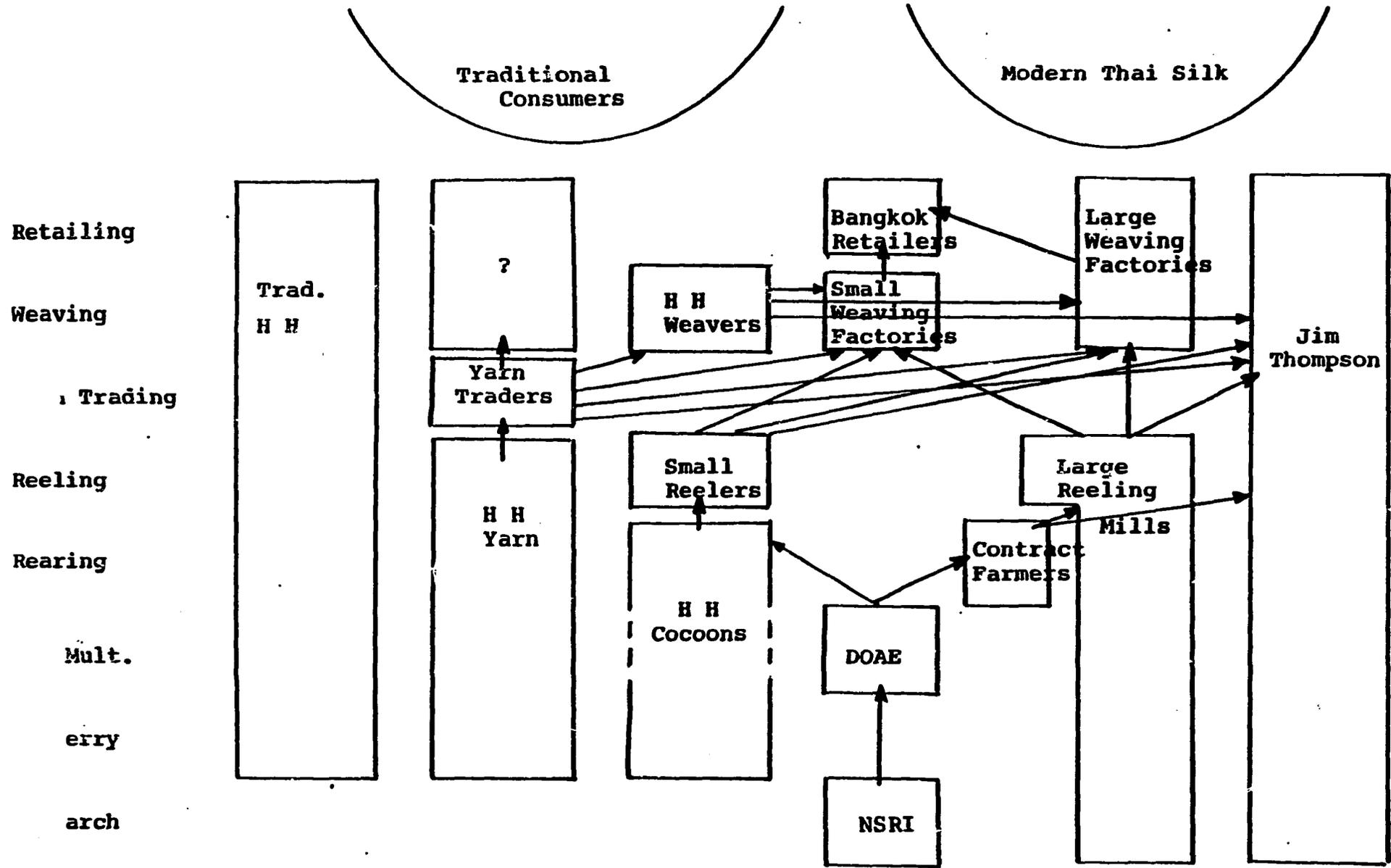
Since CARE targets its assistance to village households, it is not surprising that starting with its clients left us uncertain about how the large weaving and reeling factories operate further upstream in the system. Similarly on equity grounds, CARE operates in the remotest part of northeast Thailand, while the Jim Thompson company and virtually all large reeling and weaving factories cluster together 400 miles away near the village of Pakton Chai. So to clarify our understanding of the silk subsector, we must travel to Pakton Chai, a one-day ride each way.

FIGURE 4

SAMPLE COMPLETED WORKSHEET 3.A – SILK
FUNCTIONS, PARTICIPANTS, AND TECHNOLOGY

Functions	Participants											Technology				
	Traditional HH	Jim Thompson	HH Yarn	HH Cocoons	Yarn Merchants	NSRI	DOAE	Small Farmers	Small Reelers	Large Reelers	Contract Farmers		Small Weavers	Large Weavers	Contract Weavers	
Retailing																
Weaving																Hand Shuttle Fly Shuttle
Yarn Trade																
Reeling																Hand Improved; auto; Semi-Automatic; auto- matic
Rearing	T	W	Y	W				W		W	W					Traditional silk worm yellow hybrids white hybrids
Egg Mult.																
Mulberry																Traditional Hybrid
Research																

FIGURE 5
PRELIMINARY SILK SUBSECTOR MAP



Step 4. Specify the Regulatory and Institutional Environment Affecting Participants

Concepts

The environment in which participants operate includes the rules affecting firms in the subsector as well as the organizations that exist to support them.

The rules may be formal or informal. Government pricing legislation, tariffs, labor regulations, interest rate ceilings, investment codes, and import and export procedures all affect output prices, input prices, and quantities available. All exert an important influence on the operation of the subsector. The effect of sociocultural factors will be harder to identify and assess, but these are equally important in affecting the behavior of firms in the subsector.

Support organizations and programs cover a range of different groups. Trade associations, the Chamber of Commerce, ministerial departments, export agencies, and a welter of NGOs all potentially offer sources of support. Credit and financial institutions are also crucial elements of the institutional support network.

The environment in which participants operate includes the rules affecting firms in the subsector as well as the organizations that exist to support them.

Procedures

In discussions with subsector participants and key informants, you will discover which rules and support organizations operate in your subsector. Although you cannot easily graft them onto the subsector map, they represent important factors you must keep in mind and consider along with the map. Since the environment often affects individual channels differently, you will find the map helpful in focusing discussion on segments of the subsector where the policies or institutions impinge.

Your output in this step is improved understanding of the way the business environment affects the dynamics and competitiveness of different channels. As in much of subsector analysis, your understanding will improve throughout your entire investigation. It does not stop at Step 4.

An important part of your investigation should focus on ways in which the environment affects different channels.

An important part of your investigation should focus on ways in which the environment affects different channels. Differential impacts occur frequently. Many times they explain the relative strength of different channels. In some cases, channels may owe their very existence to a particular set of rules or regulations. A study of the Egyptian garment subsector, for example, found that one entire tailoring channel existed only because of a government cloth subsidy program.

Examples

Sorghum Beer. Retail licensing regulations critically affect home retailer access to factory-brewed sorghum beer. Government statutes specifically provide for home retailer access to factory-brewed sorghum beer. The intent of the law is to enable home brewers displaced by factory brew to recoup lost brewing income by retailing factory-brewed sorghum beer. Even so, licensed retailers periodically exert pressure on licensing officers of the local councils to forbid delivery of factory-brewed sorghum beer to the home retailers. When asked to rule, the Attorney General indicated that these attempts to restrict home retailer access were clearly illegal and that home retailers enjoy, as a legal right, unencumbered access to factory-brewed sorghum beer for retailing at home.

In addition to the district and town councils, which regulate retailing, the other key government institution influencing sorghum beer is the Ministry of Commerce and Industry. Because of the ministry's mandate to promote rural industries, it has closely monitored evolution of the brewing industry.

Other important institutions include the Sorghum Beer Institute in South Africa and the Rural Industries Innovation Center, a Botswana nonprofit organization. The Sorghum Beer Institute has undertaken technical research leading to major changes in malting and brewing technology. The Rural Industries Innovation Center also maintains an ongoing interest in sorghum milling and processing.

Silk. Government quotas on imported silk yarn strongly influence the profitability of various subsector participants and channels. When the government institutes quotas, they favor domestic reeling factories but impose costs on weaving mills, which are then forced to procure yarn domestically at higher cost and lower quality. In contrast, free yarn imports pressure reelers but improve quality and profitability of weaving. The struggle between large reelers and large weavers for influence with policy makers has resulted in vacillating, on-again, off-again quotas. Household producers who supply white cocoons to the reeling mills are whipsawed by these rapid policy shifts. One year cocoons are in great demand. The next, households cannot sell them because yarn imports reduce sales from the reeling mills.

Second, the government's 50-percent subsidy on hybrid egg sheets artificially increases the financial returns to households rearing yellow and white hybrid silkworms. It also limits the supply of egg sheets by reducing budgetary resources of the National Sericulture Research Institute and by stifling incentives for private firms to supply egg sheets.

Institutionally, the National Sericulture Research Institute (NSRI) and the Department of Agricultural Extension (DOAE) provide vitally important research and extension services to household silk producers. The ILO and CARE run donor-financed programs to promote household silk production.

Step 5. Refine the Subsector Map

- Interview representative participants
- Revise the map
- Streamline it

Objectives

To refine your understanding of subsector flows, you must clear up ambiguities and uncertainties revealed by your preliminary subsector map.

To refine your understanding of subsector flows, you must clear up ambiguities and uncertainties revealed by your preliminary subsector map.

Procedures

Begin by targeting your second round of interviews at segments of the subsector map where your understanding is least clear.

As you proceed, you will want to begin collecting interesting quantitative information as well. Although described separately, in Step 6, quantitative data collection normally proceeds in tandem with the second round of mapping interviews. The two steps are closely related because the quantitative overlays will help you refine the map by identifying which channels are important and which are merely curiosities.

The subsector map will evolve almost continuously during your study, along with your understanding. Over the course of your investigations, you will discover new channels and cross out others that you learn are insignificant. Like an artist on canvas, you will refine some portions of your picture, fill in new segments, and paint over others entirely.

As you hone your understanding of the system, you will revise and simplify your map, from the excruciatingly correct rendition that includes every special case and curiosity (and resembles an electrical

engineer's wiring diagram), to a more operational map that highlights important channels and ignores special cases.

Strive to simplify your map. Special cases always exist. Since you will never catalog them all, your excruciatingly correct map will probably never be exactly correct, even if you make it your life's work. Your contribution will lie in showing others, less steeped in the subsector than you, where fundamental options and opportunities lie. Your final subsector map should convey the following message to other interested parties: I think these are the important channels. They include the major ones operating today plus any smaller ones with clear potential. These are the channels to watch. Examples follow.

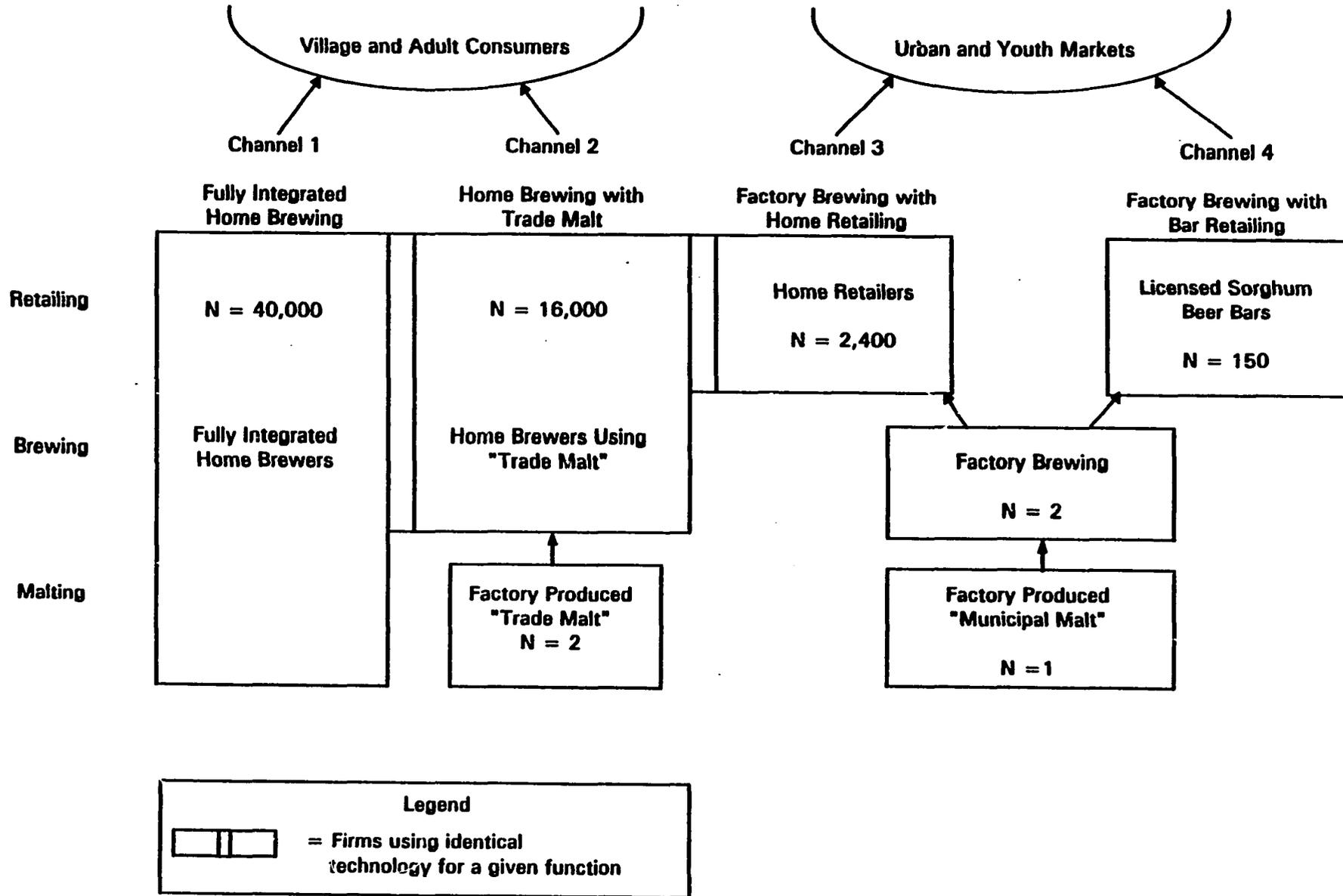
*Strive to simplify
your map.*

Examples

Sorghum Beer. With only three functions, this is an unusually simple system. Consequently, the subsector map never varied much, as you can see by comparing Figures 3 and 6. It proved easy to keep simple.

FIGURE 6

BOTSWANA'S SORGHUM BEER SUBSECTOR, 1982



Silk. In contrast, the silk subsector map changed many times in a brief two-week period. Over the course of the analytical ebbs and flows, it ranged in size anywhere from eight channels to four. As the field work ended, the investigators felt confident that five principal channels summarized the essence of the system. But at the eleventh hour, they discovered a sixth, the powerlooms, that did not even figure on the preliminary map.

The final version of the subsector map, in Figure 7, delineates six principal supply channels. As before, Channel 1 includes the fully integrated household producers who supply the local Thai market for ceremonial silkware using traditional technology.

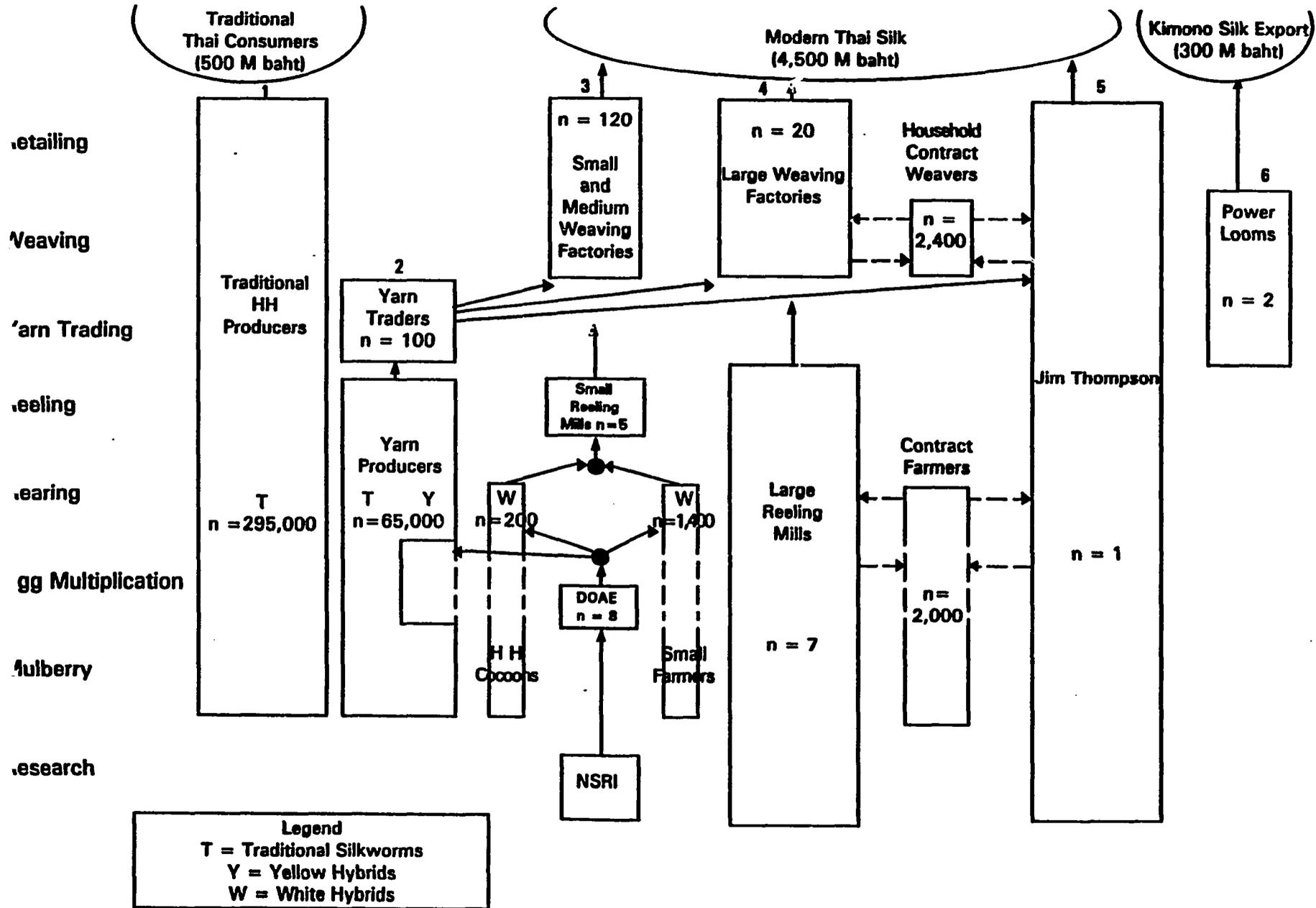
But Channel 2 now represents household producers who have begun to specialize as yarn producers. Note that some of them have begun to rear hybrid yellow silkworms. They sell hand-reeled yellow yarn, which is used as the horizontal, or weft, weave by the factory weavers. The household producers sell their yarn through a network of yarn merchants who deliver the home-reeled silk yarn to the weaving factories.

Channels 3 through 5 represent the modern Thai silk industry, built up since World War II by Jim Thompson around the tourist and export markets. Channel 5, the Jim Thompson company, remains depicted as before, a fully integrated large-scale producer with its own in-house research staff. The company uses the most modern silkworm varieties, reeling equipment, and handlooms and serves as de facto arbiter of quality standards for Thai silk. Channel 4 uses similar technology but operates with large reeling mills and separate companies involved in weaving. Channel 3 serves the same market but through a more heterogeneous network of small reeling mills and small weaving factories. Village women and small farmers specialize in supplying the white hybrid cocoons that provide the raw material for Channel 3.

Channel 6, the powerlooms, import all their silk yarn and export their woven cloth directly in an international subcontracting arrangement that features no direct supply links with the rest of the subsector. Nonetheless, the analysts included them as part of the subsector because they influence yarn prices and import quotas that govern competitiveness of the other handloom channels.

Not until the very end of the study did Channel 6 come to the investigators' attention. Because the powerlooms operate only in Bangkok, they were not visible in the northeast, where the handloom industry operates and where the field work had focused.

**FIGURE 7
THE THAI SILK SUBSECTOR MAP**



Step 6. Quantify Overlays of Particular Interest

- **Identify overlays of interest**
 - Enterprise numbers
 - Employment
 - Gender
 - Volume of product
 - Sales value
 - Price margins
 - Income
 - Returns to labor
 - Inventory holdings
- **Select participants to be interviewed**
- **Interview representative participants**
- **Fill in overlays**

Concepts

The basic subsector map can serve as a foundation supporting any number of quantitative embellishments.

In producing the subsector map, at a minimum you will gain a rough notion of the relative importance of different channels. Frequently, you will find it necessary to quantify more precisely by adding overlays to the plain map. In the same way that an overhead projector enables you to superimpose information onto a clean diagram, the basic subsector map can serve as a foundation supporting any number of quantitative embellishments.

Objectives

Overlays summarize information in a way that is easy to understand. Although any data can be displayed as an overlay, they most commonly relate to size, income and its distribution, efficiency, leverage, and target groups.

Most investigators need to consolidate what they know about the size of the subsector and the relative size of different channels. Size overlays reveal where in the system small firms are major players and where they are only minor actors. Relative sizes of different channels identify the most widely used technologies and marketing outlets. This knowledge is often helpful in targeting investigations and interventions and setting priorities. The most common measures of size include number of enterprises, employment, volume of product, and sales value.

Investigators need to consolidate what they know about the size of the subsector and the relative size of different channels.

Depending on the purpose of your review, you may want to include other overlays as well. Basic financial budgets are extremely valuable for determining how much income is earned in the subsector and what share small enterprises receive. As a crude proxy for income, price margins have much to recommend them. By simply comparing the cost of purchased inputs with the selling price of output, these price margins reveal how much of the final consumer price is earned at each stage in the system. In marketing systems, especially, these price margins are useful for comparing the efficiency of different channels and identifying which participants capture the bulk of the profits.

From basic financial budgets, you will often find it helpful to calculate returns to family labor (See Appendix D). Returns to labor measure how much microenterprise workers can earn per day in alternative activities. Since poor people have mainly their labor to sell, income per day offers one of the best available indicators of where their financial incentives lie. High returns often flag growing channels, while low returns signal those on the wane. Consequently, returns to labor provide valuable clues about both participant incentives and system dynamics.

A returns-to-labor overlay provides valuable clues about participant incentives and system dynamics.

For designing projects, special leverage-locating overlays can help identify the highest-payoff points of intervention. For an example of these "gearing ratio" overlays, see the examples in Step 8. Other overlay

candidates include inventory holdings, technology, female participation rates, and spatial distribution.

But you need not feel constrained by convention. If something seems important for your study, by all means include it as an overlay.

Procedures

Once you have determined which overlays matter, you must collect sufficient data to quantify them.

Once you have determined which overlays matter, you must collect sufficient data to quantify them. In some cases, secondary sources and technical manuals will provide the data you require. In others, you will have to piece together the data yourself through field interviews.

Generally, it is prudent to avoid intensive data collection until you are reasonably confident that your latest iteration subsector map captures most essential firm types and production/distribution channels. After you know what the universe of firms looks like, you will be able to seek data from each category of participant. You should not worry about scientific sampling methods. Just try to interview a cross section of representative firms. Don't visit only the large businesses in the capital city. Don't visit only the small.

Most important, don't forget the distributors and input suppliers. Since they operate at system nodes, where large volumes of a product pass through only a few hands, they offer a means of estimating sales and output volumes for large numbers of small firms in a single visit. Often the distributors and input suppliers know most about the system and where it is headed.

How can you estimate income from suspicious, illiterate businesspeople who do not keep good records? Rather than asking about income directly, select a standard output — a square meter of silk cloth, for example. Then ask a series of producers how much yarn it requires. Ask others about yarn prices. Before long, you will have a good feel for standard input-output ratios as well as prices. Putting the two together, you can construct sensible, standardized budgets for each category of participant.

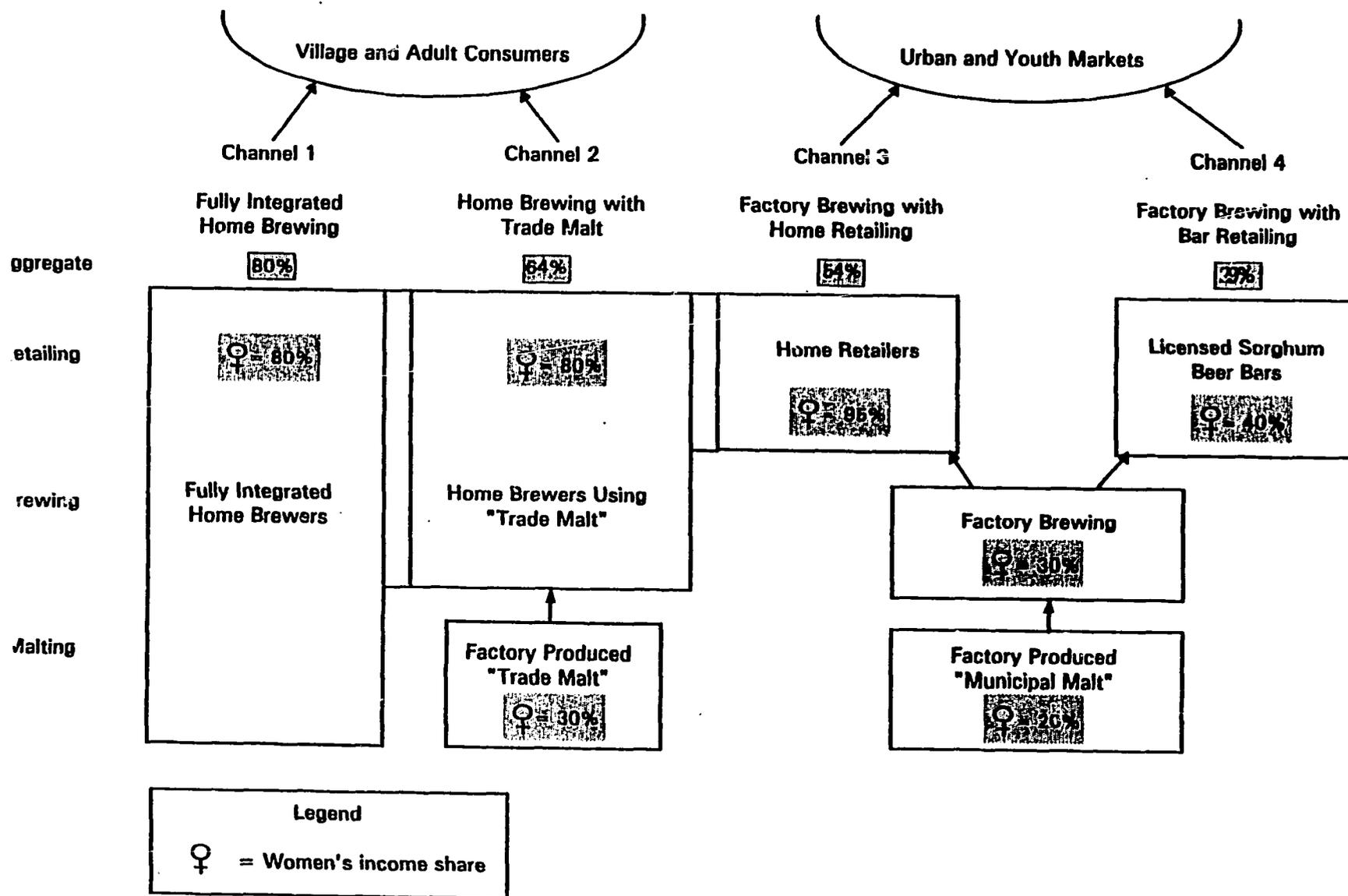
As a crude, second-best income indicator, price margins (sale price minus purchased input costs) have much to recommend them. They are easy to obtain and broadly indicative of income spreads.

Examples

Sorghum Beer. This investigation produced a full complement of overlays: employment, enterprise numbers, sales, income, economic efficiency, rural versus distribution of income, male versus female distribution of income, and efficiency in grain use by channel. Figure 8 reproduces a gender overlay for each channel.

To quantify these overlays, the field interviewing lasted two months. It followed stratified random sampling procedures that resulted in the selection of two representative towns, two major villages, and two small villages. In all, the investigators interviewed both factory breweries, both maltsters, a dozen licensed retailers and several hundred household brewers and retailers. Data analysis required another several months. Most operational studies do not require such rigor.

**FIGURE 8
A GENDER OVERLAY FOR
BOTSWANA'S SORGHUM BEER SUBSECTOR, 1982**



Secondary sources proved extremely valuable in collecting data.

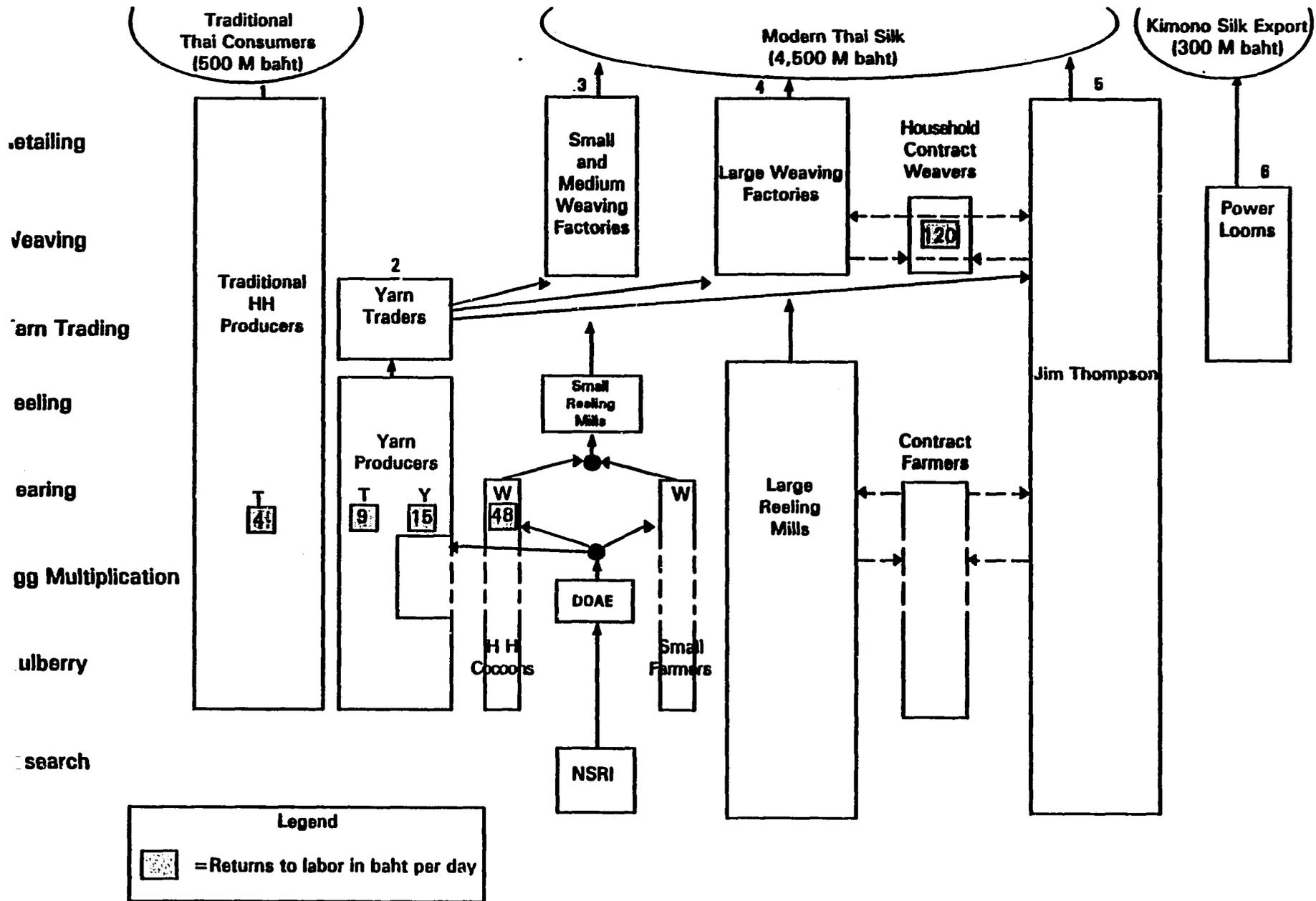
Silk. Overlays produced in this study include enterprise numbers, sales, income, and returns to labor. The basic subsector map in Figure 7 displays the standard enterprise numbers and sales overlays. It also includes a technology overlay indicating which variety of silkworm each participant rears. Another overlay, the returns to labor overlay reproduced in Figure 9, proved extremely valuable in analyzing subsector dynamics, as we will see in continuing installments of the silk example.

To collect the necessary quantitative data, investigators spent two weeks interviewing firms in the field. Without any sampling, they opportunistically selected representative firms using each different technology. In all, they interviewed several dozen firms.

Secondary sources proved extremely valuable in this study. Technical manuals on sericulture, project data from the pilot project, several ILO studies, and farm budget data from an agricultural university offered useful data as well as a means of crosschecking input-output coefficients (the yarn/cocoon and yarn/cloth ratios, for example), income, and returns to labor calculations.

After the field interviewing, another two weeks with the secondary data and a spreadsheet produced the necessary income budgets. Because the final tabulations and secondary documents revealed wide variation in two numbers, mulberry yields per hectare and yarn output per hour of reeling, the investigators asked project staff to follow up and help pinpoint these key coefficients.

A RETURNS TO LABOR OVERLAY FOR THE THAI SILK SUBSECTOR MAP



Step 7. Analyze Dynamics

- **What channels are growing most rapidly?**
- **Which driving forces and constraints are responsible?**
 - **Market demand**
 - **Technological change**
 - **Profitability of different niches**
 - **Risk**
 - **Barriers to entry**
 - **Large-firm behavior**
 - **Input supply**
 - **Policies**
- **What are the consequences?**
- **Where are the best prospects for MSE growth?**
- **Is intervention required to achieve that potential?**

Objectives

This step is vital for moving from analysis to action. By understanding how the subsector is changing, you learn where the opportunities and pitfalls lie. Further understanding of the forces driving this change often reveals the key opportunities for MSE growth.

In analyzing subsector dynamics, you seek answers to the following three questions: Which channels enjoy the most secure prospects for growth? What role can small enterprises play in those channels? How can you enhance their ability to participate in the growing niches?

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Driving Forces and Constraints

Answering these questions requires understanding how the subsector is changing, and why change occurs. Among the forces affecting change, the following are often key:

- **Market demand** — population growth and changes in the larger economic environment (prices, wages, harvests, adjustment programs, and so on) can cause consumption patterns to change rapidly.
- **Technological change** — new machinery or know-how can greatly change production costs, making small firms more competitive — or driving them out of business.
- **Profitability of different niches** — individual niches within the production system yield differing returns, providing incentives to change to the more profitable technologies, supply relationships, and levels of specialization.
- **Risk** — changes in demand, technology and profitability bring both opportunities and risks. The microentrepreneur must balance rewards and risks in choosing which channels to operate in.
- **Barriers to entry** — regulations (such as licensing and zoning), banking practices, lack of information, and collusion can restrict microenterprise growth opportunities.
- **Large firm behavior** — changes in the level or range of activity of a few large firms may dramatically affect the opportunities open to microenterprises.
- **Input supply** — poor quality raw materials or unreliable supply sources can severely restrict the growth potential of firms.
- **Policies** — policies often discriminate against channels in which smaller-scale firms operate.

Procedures

Although it is not possible to format rigidly the blend of analytical reasoning and judgment required to understand these dynamics, Step 7 above offers a useful sequencing guide.

The checklist in the box also furnishes a list of usual suspects to consider when reviewing driving forces and constraints. To summarize the forces affecting subsector dynamics, Figure 10 provides a format you may find helpful. The following case studies illustrate how you might identify opportunities for MSE growth as well as interventions that might accelerate that growth.

Examples

Sorghum Beer. Over the past 25 years, the principal change in this subsector has been the introduction and rapid expansion of factory-brewed sorghum beer. Of the two factory brewing channels, the one distributing through licensed bars (Figure 10, Channel 4) is largest and growing most rapidly. The home retailing of factory brew (Channel 3) sputters and spurts depending on licensing enforcement and home retailer access to factory brew. While home brewers still produce the majority of sorghum beer sold, they are rapidly losing market share in the face of competition from factory brewers. While home brewing output has stagnated overall, output of brewers using trade malt (Channel 2) is growing at the expense of those who malt their own sorghum (Channel 1). About 25 percent now prefer trade malt.

(Continued)

Several forces are driving these trends. First is new technology in malting and brewing. In the mid-1950s, after 50 years of research in South Africa and Zimbabwe, researchers first determined how to brew sorghum beer at factory production scales. Successive improvements in sorghum malt form a central component of the scaled-up technology package. Second, aggressive new corporate managers launched a successful expansion campaign in the 1970s that doubled Botswana's output of factory-brewed sorghum beer within three years (large-firm behavior). Third, rising urbanization and employment opportunities for women have increased the opportunity cost of home-brewing labor. This has diminished the profitability of home brewing, especially in urban areas where the bulk of population, income, and growth in sorghum beer demand is occurring (profitability of different niches). Fourth, the colorful packaging of factory-brewed sorghum beer, together with marketing appeals aimed at the increasingly affluent young consumers, increases the prestige of factory-brewed sorghum beer (market demand). Finally, the traders who operate licensed sorghum beer outlets periodically use their influence to prevent home retailer access to factory brew (input-supply constraints, large-firm behavior). Although Botswana's legal texts explicitly exempt home retailers from licensing requirements for selling both home- and factory-brewed sorghum beer, the wealthy license holders have succeeded in capturing 70-80 percent of the lucrative retailing of factory-brewed sorghum beer (policies).

Several consequences have accompanied this transformation. Employment in the sorghum beer subsector has fallen 30 percent. National earnings from sorghum beer have declined by 5 percent because of partial foreign ownership and the higher import content of factory-brewed sorghum beer. Income distribution has worsened considerably, with factory brewing transferring earnings from poor and middle income groups to the very wealthy, from women to men, and from rural to urban areas.

Prospects for home brewers center around two options. First, instead of brewing themselves, they can shift to home retailing of factory-brewed sorghum beer (Channel 3). Second, they can switch to home brewing with trade malt (Channel 2). Because of the higher quality of trade malt, this reduces their grain requirements by 40 percent, thereby lowering production cost and raising profits. At the same time, trade malt improves brew consistency and hence competitiveness.

The shift to home retailing of factory-brewed sorghum beer (Channel 3) will certainly require policy change. Someone will have to prevent council licensing officers from mistakenly blocking home retailer access to factory-brewed sorghum beer. Although the expansion of trade malt (Channel 2) has moved rapidly on its own, it may be possible to accelerate its spread through advertising, extension work, and demonstrations.

FIGURE 10

SAMPLE COMPLETED WORKSHEET 4 — BEER

EVALUATING SUBSECTOR DYNAMICS

	<u>Channel 1</u>	<u>Channel 2</u>	<u>Channel 3</u>	<u>Channel 4</u>	<u>Channel 5</u>	<u>Channel 6</u>
a. What channels are growing most rapidly?	—	+	— +	++		
b. What driving forces and constraints are responsible?						
• Market demand	+	+	++	++		
• Technological change		trade malt (+)	+	new brewing technology (+)		
• Profitability of different niches	—	+				
• Risk						
• Barriers to entry			—			
• Large firm behavior			--			
• Input supply			—			
• Policies			—			

Bar owners lobby to exclude home retailers

Silk. Channel 1 is a dying channel. Traditional production of low-quality, ceremonial silk is stagnant if not declining. In contrast, sales of modern Thai silk to tourists and export markets (Channels 3-5) have been growing at 10 percent per year during the 1980s, and are expected to continue at that rate into the foreseeable future. Households in Channel 2, which supply the horizontal, weft yarn to factory weavers, can expect to grow in tandem.

Demand for different qualities of silk cloth drive these radically different growth prospects across channels. Demand for ceremonial silk is stagnant. In stark contrast, demand for modern Thai silk seems secure. Declining exports from Japan, combined with China's inability to fill the gap, have resulted in robust prospects for other supplying countries.

To participate in the growing segments of the silk market, rural household producers must shift out of Channel 1 and into the channels supplying modern Thai silk.

Where they move depends on where incentives match opportunities. Reviewing driving forces and constraints (Figure 11) suggests three options:

(a) Small producers would prefer to work as employees or contract weavers for the large weaving mills. There, they can earn 120 baht per day. But this opportunity is available only to those fortunate enough to live within a 15-kilometer radius of the village of Pakton Chai, where all of the large weaving mills are located. This extreme concentration results from a long weaving tradition in the area reinforced by Jim Thompson's location of his production facility there. Because he sets quality standards in the weaving industry and because many of the weaving factories are spin-offs operated by his former employees, virtually all operate in close proximity. Growth prospects are excellent, but they will occur without intervention and only to residents of Pakton Chai.

(b) Household producers can supply white cocoons to small reeling mills. That is, they can shift to Channel 3. This yields high returns because the hybrid silkworms are so productive and the eggsheets are heavily subsidized by government. But this niche is currently the riskiest one for small producers. Demand for white cocoons varies dramatically from year to year as yarn import quotas lead to gyrating demand for locally reeled white yarn. Also, the Department of Agricultural Extension (DOAE) cannot supply the long waiting lists of villagers wishing to buy white hybrid eggsheets. Subsidies reduce DOAE revenues and limit the output DOAE can produce. Subsidies likewise discourage private sector supply of eggsheets. Availability of mulberry leaves further constrains production.

(c) Household producers can specialize as suppliers of yellow weft yarn. By operating in Channel 2, they can sell yarn to merchants who, in turn, deliver it to the weaving factories in Channels 3-5 for use as weft yarn. The demand for weft yarn is growing in tandem with expansion in Channel 3-5 output. Consequently, this niche seems most secure for village producers.

Adoption of improved reeling and rearing technology appears necessary to make this option financially attractive. As Figure 9 indicates, hand reeling and traditional silkworms yield returns of only 9 baht per day, whereas yellow hybrid silkworms and improved reeling equipment will increase that by 60%, to 15 baht per day. As with white hybrids, access to egg sheets and mulberry constrains women who wish to move to the higher-return segment of this channel.

To facilitate the home producer move to Channel 2 or 3 requires support in three areas: improving egg sheet supply, increasing mulberry output, and improved reeling technology.

Step 8. Identify Sources of Leverage

- System nodes
- Geographic clustering
- Policies

Concepts

Leveraged interventions are those that influence large numbers of small firms at a single stroke. They are more likely to be cost-effective than one-on-one assistance delivered to individual MSEs. Leveraged interventions, because they affect many firms at once, simultaneously multiply benefits and reduce per-firm contact costs.

Leveraged interventions are those that influence large numbers of small firms at a single stroke.

Procedures

To identify sources of leverage, look for one of three key ingredients: system nodes, geographic clustering, or policy constraints.

System nodes are points where large volumes of product pass through the hands of only a few actors. Often, input suppliers and output distributors function as system nodes. You can most easily identify them by calculating "gearing ratios" at transaction points in each channel. You can calculate these ratios simply by dividing the number of smaller enterprises by the number of larger intermediaries. Figures 12 and 13 provide examples of gearing ratio overlays.

To identify sources of leverage, look for one of three key ingredients: system nodes, geographic clustering, or policy constraints.

Clustering, where it occurs, offers the opportunity to reach dozens or even hundreds of small firms in a single visit. For a variety of reasons, micro- and small-scale enterprises frequently cluster together. They cluster to ensure access to key inputs and market output, or because of zoning regulations, ethnic segregation, or historical happenstance.

Policies serve as the most powerful lever of all.

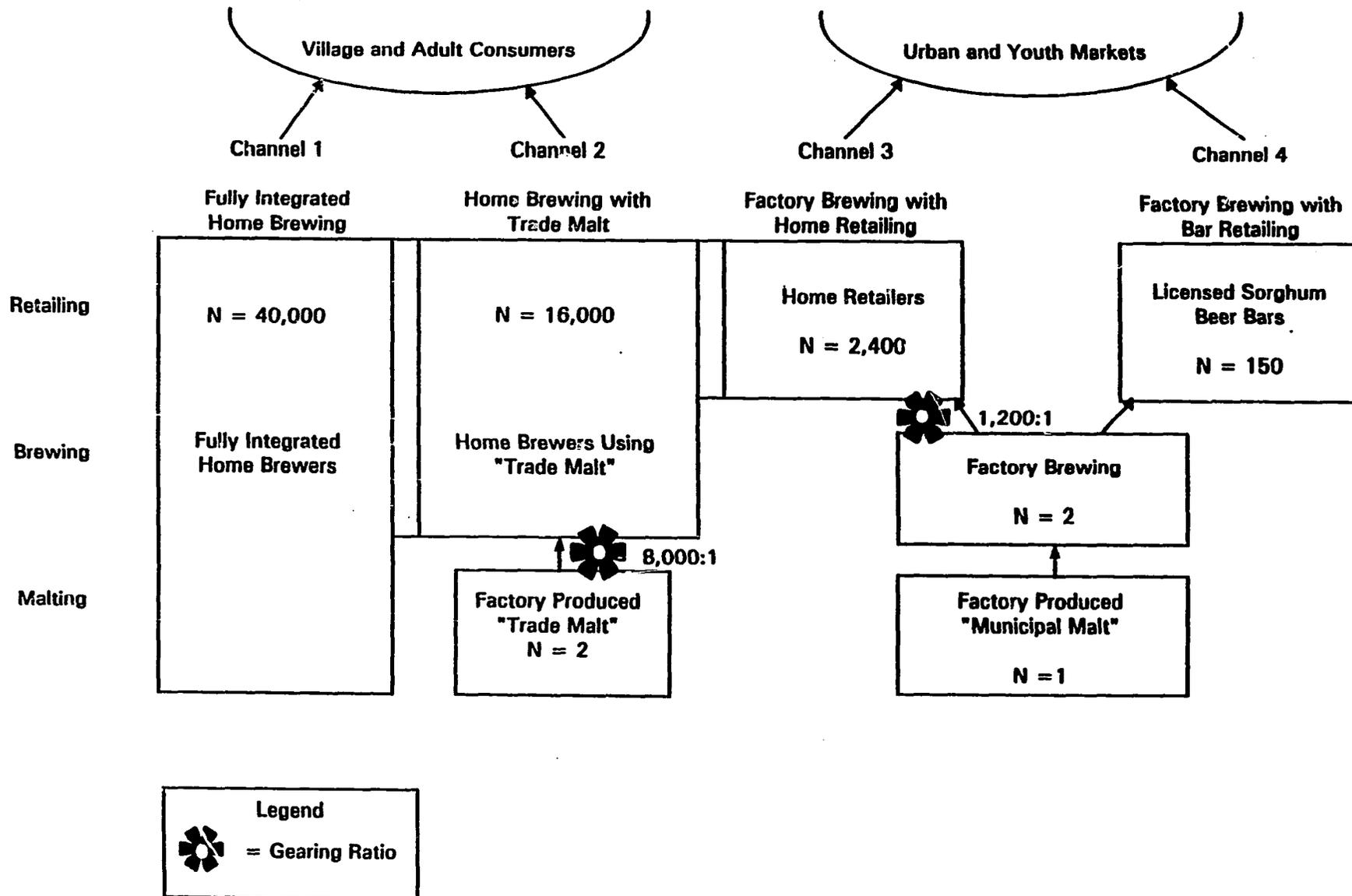
Finally, policies serve as the most powerful lever of all. Since policies affect thousands of small firms, any intervention that brings about policy reform will influence multitudes of MSEs, literally at the stroke of a pen. Of course, policy reform is usually the most difficult of all interventions to achieve. Yet given the regular policy discrimination against MSEs, the payoffs to policy dialogue are potentially enormous.

Examples

Sorghum Beer. This subsector offers three sources of leverage. One results from policy leverage and the other two from large-firm intermediaries operating at system nodes.

First, the sorghum beer retailing legislation affects 2,400 home retailers in Channel 3. It potentially affects many more who would like to switch from home brewing to retailing of factory brew but cannot because council licensing officers prevent them by misinterpreting the sorghum beer retailing laws. Given the single law that affects so many brewers, this lever offers a gearing ratio of at least 2,400:1. Second, the country's two trade maltsters sell improved malt to 16,000 home brewers in Channel 2, resulting in a gearing ratio of 8,000:1. Third, back in Channel 3, the two factory breweries deliver sorghum beer to 2,400 home retailers, a gearing ratio of 1,200:1.

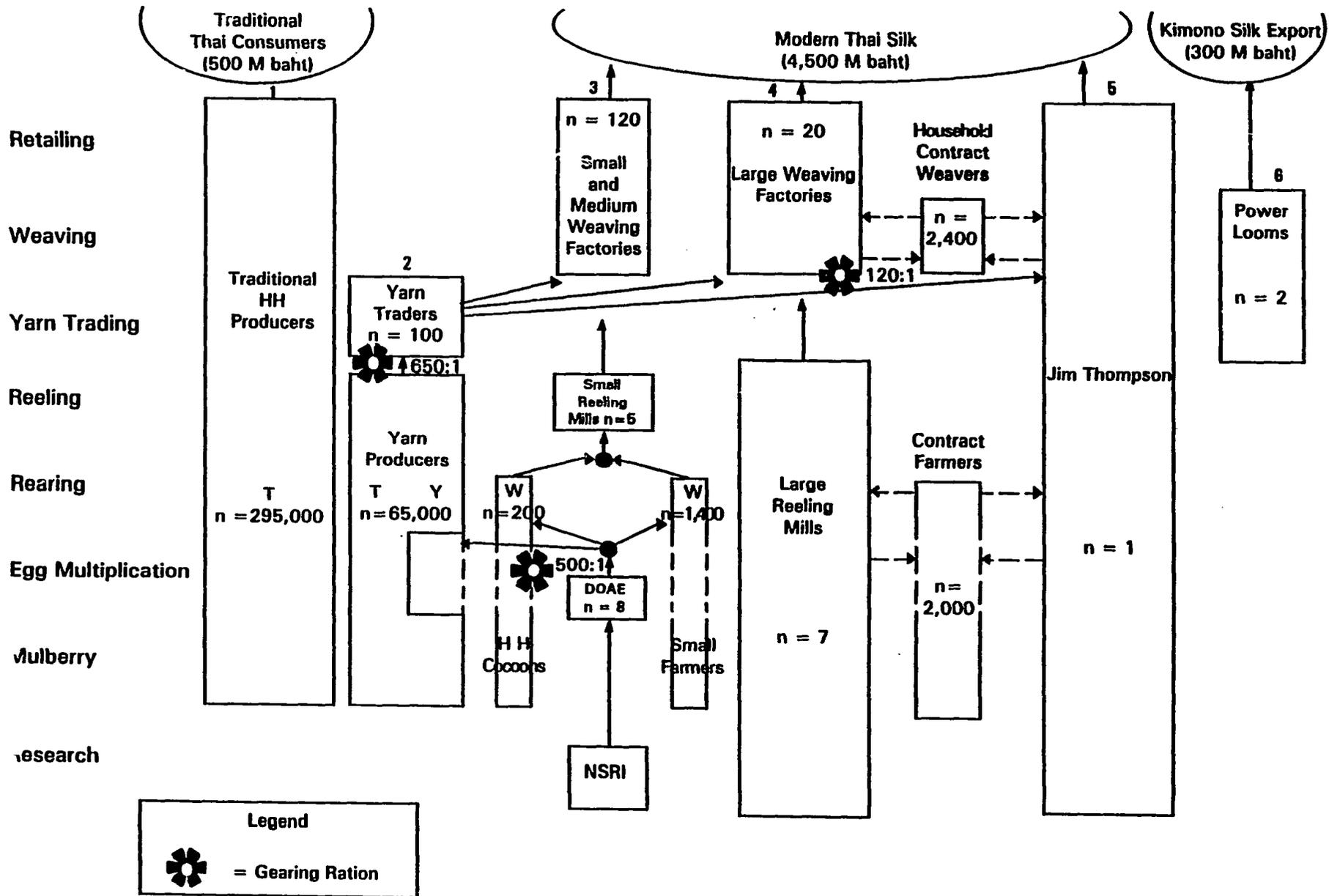
FIGURE 12
A GEARING RATIO OVERLAY FOR
BOTSWANA'S SORGHUM BEER SUBSECTOR, 1982



Silk. Four levers are available for reaching large numbers of household businesses. One results from geographic clustering, two from large-firm intermediaries operating at system nodes, and one from policy reform.

First, the assembly points offer a location where 4,000 households convene to procure eggsheets and to sell their cocoons in Channels 2 and 3. With eight assembly points nationwide, this results in a gearing ratio of 500:1. Second, 100 yarn merchants buy yarn from 65,000 households in Channel 2, thereby linking them to factory weavers in Channels 3-5. This small-numbers funnel achieves a gearing ratio of 650:1. Third, the approximately 2,400 household subcontract weavers in Channels 4 and 5 can be reached through their 20 parent firms, offering a gearing ratio of 120:1. Finally, removal of eggsheet subsidies offers prospects for increasing eggsheet availability to many thousands of households that cannot presently procure them. The potential gearing ratio here would likely exceed 400:1.

FIGURE 13
A GEARING RATIO OVERLAY FOR
THE THAI SILK SUBSECTOR MAP



Step 9. Explore Opportunities for Leveraged Interventions

Where do Leverage and Opportunities for Intervention Converge?

Objectives

Of the opportunities for intervention in your subsector, which offer prospects for leveraged delivery? Which offer prospects for reaching the largest number of small firms?

Procedures

To determine which intervention offers prospects for leveraged delivery, explore the convergence between the opportunities for intervention and the available leverage.

To find out, simply explore the convergence between the opportunities for intervention and the available leverage (Figure 14). In most subsectors studied to date, the two converge.

But sometimes they do not. About 20 percent of all subsector studies fail to locate congruence between opportunities and leverage. In some cases, no interventions seem appropriate. So if you are unable to identify any opportunities for leveraged intervention, the most probable cause will be an absence of any sensible intervention. There is no shame in this. Knowing where not to intervene represents valuable information. It will spare you costly failures. It allows you to reorient your efforts to other subsectors or locations where you can achieve high payoffs with your project resources.

FIGURE 14

**DIAGNOSTIC PROCEDURES
FOR IDENTIFYING LEVERAGED SUBSECTOR INTERVENTIONS**

Understand Dynamics (Step 7)

Usual suspects

- a. market demand
- b. technological change
- c. changing profitability
- d. risk
- e. barriers to entry
- f. large-firm behavior
- g. input supply
- h. policies

1. Forces driving change
Channels 1, 2, ...

2. Bottlenecks
Channels 1,2, ...

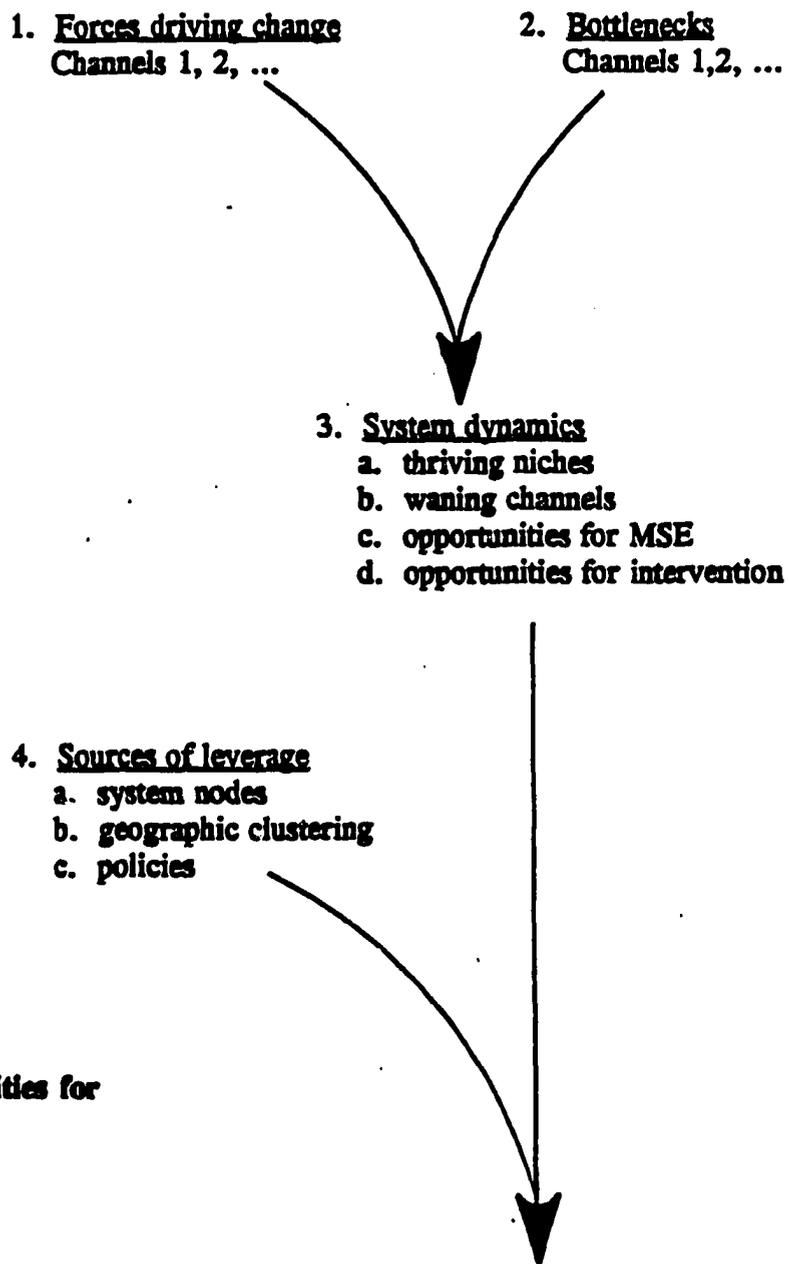
3. System dynamics
a. thriving niches
b. waning channels
c. opportunities for MSE
d. opportunities for intervention

**Identify Sources of Leverage
(Step 8)**

4. Sources of leverage
a. system nodes
b. geographic clustering
c. policies

**Explore Convergence and Opportunities for
Leveraged Intervention (Step 9)**

5. Opportunities for leveraged intervention
a. policies
b. projects



Examples

Sorghum beer. Both interventions, retail policy enforcement and expanded distribution of trade malt, converged with opportunities for leverage. To ensure home retailer access to factory-brewed sorghum beer, enforcement of retailing legislation requires review. As the events actually unfolded, discussion with the Attorney General's office resulted in a letter under his signature being sent to the offending councils. It succeeded in curtailing harassment of home retailers selling factory-brewed sorghum beer.

Expanded distribution of trade malt offers prospects for working through the existing two maltsters to reach 40,000 prospective new customers in Channel 1. In this case, interveners encouraged the maltsters to use their sales force to promote trade malt more aggressively. So long as competition keeps the price of malt fair, expanded sales will benefit both the company and the home brewers. Given the very small numbers here, only two trade maltsters, and the consequent opportunity for collusion, interveners will need to monitor malt prices and home brewer budgets to ensure that both parties gain from the transaction.

Silk. To expand home producer yarn sales in Channel 2 requires three interventions: (a) increasing the supply of yellow hybrid eggsheets, (b) increasing mulberry output, and (c) improved reeling technology to overcome a production bottleneck and improve returns. Leverage is available in all three instances.

(a) To increase the supply of yellow eggsheets, removal of the current 50-percent subsidy seems most important. Project staff need to lobby for subsidy removal, a classic application of policy leverage.

(b) To expand mulberry output, project staff might consider working with nurseries and commercial farmers to train them in grafting techniques. The nurseries and commercial farmers could then propagate and distribute hybrid mulberry, selling their grafting services directly in farmer fields. Note that this source of leverage emerged from discussions with project staff rather than from gearing ratios in the subsector map. This is because most nurseries do not currently perform this service and hence do not yet appear on the subsector map.

(c) Improved reeling will require investigation of technological options and perhaps research and development. A better reeler that will benefit several hundred thousand households offers prospects for considerable leverage.

After project staff identify a preferred technology, or a range of options, they must disseminate it to home producers. For households rearing yellow hybrids silkworms, project staff can reach 2,000 producers by giving demonstrations at the eight assembly points where they convene to collect eggsheets. For households that still rear traditional varieties of silkworms, yarn merchants offer the lowest-cost contact point. Since yarn output and quality depend on reeling, the yarn merchants have a financial interest in extending more productive technology to the villagers from whom they buy yarn. Because they visit their supplying villages regularly and because they know intimately the determinants of yarn quality, they are well positioned to serve as persuasive, low-cost distributors of any new reeling technology.

Note that leverage may be available but not operationally useful. The large weaving firm subsector is a case in point. Although parent weaving mills can each reach their 120 subcontract weavers at low cost, the subcontractors appear to be receiving adequate assistance from their parent firms and do not require outside assistance.

SECTION THREE

FROM ANALYSIS TO ACTION

IMPLEMENTING AGENCIES

The best way of translating analysis to action is to insist that a potential implementer perform the subsector analysis. Although consultants and academics can produce careful, insightful studies, experience suggests they are less likely to generate action. When the field staff of implementing organizations participate in these studies, they generate institutional enthusiasm for follow-up action. Whether they are NGOs, business groups, or local government agencies, these organizations normally participate in the first place because they seek opportunities to assist MSEs. Because the analysis is their own, they believe in it. They also make key contacts with subsector participants, contacts that help them launch and monitor interventions.

The best way of translating analysis to action is to insist that a potential implementer perform the subsector analysis.

INTERVENTIONS

A typical subsector study will identify a range of potential interventions. Yet a single organization may not feel equipped to act on all of them.

Don't feel you have to act on all of the opportunities identified. Some may fit more clearly within your institutional mandate than others. In the Thai silk subsector, for example, many NGOs would rather promote improved reeling equipment or hybrid mulberry than lobby for policy reform. Other organizations, in this case the ILO and FAO, may step in to promote the policy options. Subsector analysis provides a general framework for orienting a broad range of potential intervenors.

Different target groups and institutional priorities may lead two organizations to respond differently to the same subsector analysis. In the Thai silk example, the strong equity orientation of CARE automatically directed its attention to opportunities for poor village households. But

other organizations might choose to concentrate on the larger, better-off, largely male contract farmers who face many of the same mulberry and eggsheet constraints as the small-scale, female village producers.

STAFFING IMPLICATIONS

Subsector analysis does not require a Master's degree in economics or business administration. It requires common sense, rapport with MSE operators, and the ability to reason analytically. Generalists and technology specialists alike — certainly your current project managers — can all aspire to subsector analysis.

Because subsector analysis looks at the broad system within which MSEs operate, it requires that you draw information from sources your staff may not be used to accessing — macroeconomic data, large firms, and policy-making bodies. Although some staff members will feel confident plunging in with only the aid of this manual and examples from other case studies, others will want training. A three-day training seminar followed by field trials will normally suffice.

PHILOSOPHY AND LEVERAGE

Leveraged interventions make some MSE professionals feel uneasy, for leverage frequently requires indirect intervention. Although geographic clustering allows face-to-face delivery of assistance to small firms, the other two sources of leverage — policies and system nodes — do not require direct contact. Instead, they entail intervening on behalf of MSEs by working with other participants, up- or down-stream in the subsector. These intermediaries then transmit inputs, prices, information or technology to the targeted MSEs.

But if you aim to help the very poor, is it legitimate to assist them indirectly? Without looking them in the eye, how can you be sure the MSEs will enjoy the benefits you intend for them? Many MSE professionals share this concern.

Since staff motivation is key to the success of any intervention, implementing agencies must decide up front if leveraged interventions are consistent with their institutional mandate. Of course, monitoring and evaluation systems can be designed to verify that the intended MSE beneficiaries actually benefit from indirect interventions.

But ultimately, the most powerful argument for leverage is the observation that if you really wish to help the poor, surely it is better to help hundreds and thousands rather than only handfuls. Because one-on-one extension to MSE is so costly, to insist on it is to limit project coverage drastically. The virtue of leverage is that, within the confines of inevitably limited project budgets, it strives to deliver maximum benefits to target MSEs.

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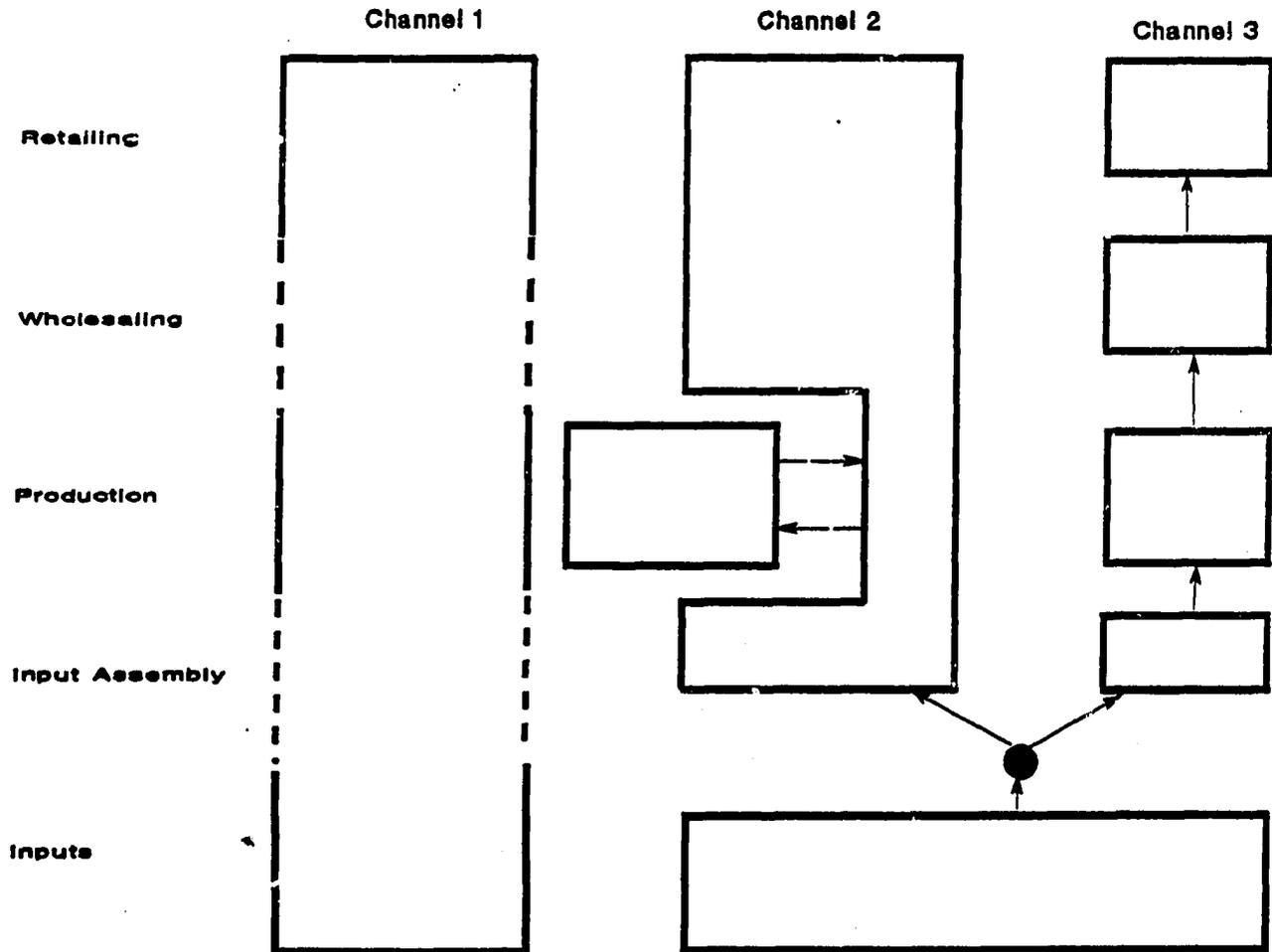
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APPENDIX A
SUBSECTOR MAPPING CONVENTIONS

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Figure A-1
Subsector Mapping Conventions



Location

● = Assembly point

Enterprises

□ = Enterprise boundary

|| = Skipped or implicit function

Coordinating Mechanisms

↑ = Sale of goods in spot market

↑ = Contract sale

← → = Subcontract

Overlays

N = Number of firms

S = Sales

L = Employment

V = Volume

★ = Gearing ratio

SUBSECTOR MAPPING CONVENTIONS

Why?

At the heart of subsector analysis lies the subsector map. The map summarizes schematically the larger economic system within which micro- and small-scale enterprises operate. It provides a framework for summarizing what you know about a particular subsector, for organizing data and thinking, and for focusing discussion.

For clarity of exposition, and to ensure that discussions focus on substance rather than form, standardized mapping practices are required. The generic subsector map discussed as Figure 1 in Section Two (repeated here as Figure A-1) summarizes current mapping conventions.

The Plain Vanilla Map

The subsector map lists functions vertically along the left-hand side, starting with raw materials at the bottom and ending with final consumers at the top. When quality differences lead to segmented output markets, the map lists the various final markets across the top of the map. The functions and markets form a grid onto which you map the subsector participants.

Rectangles represent the participant firm types. The height of the box indicates how many functions the firm performs in-house. Its width normally indicates the relative size of that category of firm, with product volume or numbers of firms as the usual measure of size.

Arrows describe the product flows between participants. Solid arrows represent market sales, while dashed lines indicate contract sales.

In many subsectors, geographic locations serve as assembly points where hundreds or even thousands of firms may gather to procure inputs or market output. Since these assembly points offer an important source of leverage, the map pictures them graphically, using a large dot — a point — to represent the assembly point visually.

Overlays

The plain, unadorned map serves as a base on which you can superimpose a wide array of information to help describe the differences among subsector supply channels.

These overlays require symbols that effectively identify the data you are superimposing on the map. For number of firms (N), sales (S), volume of output (V), and employment (L), simple letters suffice. Gearing ratios and others may require symbols as described in Figure 1. For other overlays, not designated in Figure 1, feel free to adopt any coding system that you feel clearly expresses the information you wish to convey.

APPENDIX B
ANALYTICAL WORKSHEETS

WORKSHEET 2

INTERVIEW GUIDE FOR DISCUSSIONS WITH SUBSECTOR PARTICIPANTS

A. Core Questions

1. Where do you obtain your raw materials?
2. To whom do you sell your output?
3. a. What technology do you use?
b. What alternatives exist?
c. Why do you use this one?
4. What major changes have occurred in this business since you began?

B. Useful Additional Questions

5. What price do you normally charge for your principal output?
6. Can you suggest other informants who know this system well?

C. Overlays, if anticipated in Step 6

- | | |
|---|---------|
| 7. Labor time per unit of output | Easiest |
| 8. Raw material use and cost per unit of output | ↓ |
| 9. Investment costs | Harder |

WORKSHEET 4

EVALUATING SUBSECTOR DYNAMICS

	<u>Channel 1</u>	<u>Channel 2</u>	<u>Channel 3</u>	<u>Channel 4</u>	<u>Channel 5</u>	<u>Channel 6</u>
a. What channels are growing most rapidly?	_____	_____	_____	_____	_____	_____
b. What driving forces and constraints are responsible?						
• Market demand	_____	_____	_____	_____	_____	_____
• Technological change	_____	_____	_____	_____	_____	_____
• Profitability of different niches	_____	_____	_____	_____	_____	_____
• Risk	_____	_____	_____	_____	_____	_____
• Barriers to entry	_____	_____	_____	_____	_____	_____
• Large firm behavior	_____	_____	_____	_____	_____	_____
• Input supply	_____	_____	_____	_____	_____	_____
• Policies	_____	_____	_____	_____	_____	_____

APPENDIX C
GLOSSARY OF TERMS

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GLOSSARY OF TERMS

Channel: a vertical supply chain of firms that transform raw materials and deliver them to consumers in the form of goods.

Environment: the regulations, informal rules, and support organizations that influence business opportunities, incentives, and actions.

Function: one step in a supply channel, one step in the sequence of transformations necessary to translate raw materials into finished products in the hands of consumers. The transformations may include transport, processing, packaging, assembly, or distribution.

Gearing ratio: the average number of participants in one function purchasing inputs from each firm in the function immediately beneath it. You can calculate gearing ratios from an enterprise numbers overlay simply by dividing N_1 by N_2 .

Industry: a collection of firms performing the same function. The automobile industry produces cars, while the steel industry produces steel. The weaving industry produces cloth, while the spinning and reeling industries produce yarn. A vertical collection of industries, together with the transport, financial, and distribution services that tie them together, form a subsector.

Leverage: the ability to reach large numbers of micro-and small-scale enterprises at a single stroke. You can achieve leverage in three ways: (a) through large firms that supply inputs or market output to many small firms; (b) geographic clustering, which allows you to contact numerous small firms at a single location; and (c) policies that influence a multitude of small businesses at the stroke of a pen.

Leveraged intervention: a promotional activity that affects large numbers of small firms simultaneously. Leveraged interventions involve (a) working through large-firm intermediaries, (b) delivering services to geographically clustered firms, or (c) policy reform.

Node: a point in a production/distribution system where a large volume of product passes through only a few hands. A node is like a funnel. High gearing ratios often identify system nodes.

Overlay: information superimposed onto a basic subsector map to describe differences among participants and channels. Common overlays include enterprise numbers (N), employment (L), product volume (V), sales (S), or income (Y).

Participant: a household or firm performing one or more functions in a production/distribution system.

Returns to Labor: income per fixed amount of times in a given task. This term is also discussed in Appendix D.

Sector: one of nine categories of economic activity defined by the International Standard Industrial Classification (ISIC) of the United Nations. Agencies producing national income or employment data normally disaggregate their results by sector. Sometimes, they consolidate the nine sectors into three: primary (agriculture and mining); secondary (manufacturing, utilities, and construction); and tertiary (commerce, transport, services, and government). In any case, sectors simply classify activity by type; they do not describe interrelationships among activities.

Subsector: a network of related firms that transform raw materials into finished products and transmit them through vertical supply channels to final consumers. A subsector normally includes a series of vertically related industries together with segments of the transport, service and commercial sectors that link them together. Subsectors revolve around either a common output market or a common raw material. MSE subsectors are usually defined from the top down, as the constellation of firms supplying a single or closely related set of final output markets. In contrast, agricultural commodity subsectors are defined from the bottom up. They include the set of vertical transformations emanating from a single agricultural raw material.

Subsector map: a schematic diagram that describes the product flows and contractual relationships among firms in a subsector. It describes a series of alternate supply channels that compete to supply the same final market. In the case of agricultural commodity subsectors, the map shows the alternate supply channels through which a single farm commodity is transformed and delivered to consumers in the form of finished goods.

System node: see node.

TECHNICAL GLOSSARY FOR CASE STUDIES

Sorghum Beer

Brewing: production of an alcoholic beverage from grain. Barley, sorghum, millet, maize, rice — or any other grain — can be brewed to produce alcohol. Brewing involves three steps: (a) the grain is cooked to release its starches into solution, (b) malt breaks down the grain starches into sugars, and (c) yeast transforms the sugars into alcohol.

Malt: grain that has been soaked in water and allowed to germinate for 12-48 hours, then dried and milled. Looks like very coarse, whole-grain flour. Germination produces enzymes, not present in the original grain, that break down starches into sugars.

Malting: the process of producing malt from grain. Although any grain can be malted, Western brewers prefer to malt barley while African home brewers malt sorghum and millet.

Millet beer: beer produced from malted millet and millet grain.

Shebeen: a home retailing establishment selling sorghum beer and other beverages.

Shebeen queen: a woman retailing sorghum beer or other beverages from her home.

Sorghum beer: beer produced from malted sorghum. Brewers combine the malted sorghum with unmalted maize, sorghum or millet. The unmalted grain is the source of grain starches on which the sorghum malt acts to produce sugars and subsequently alcohol.

Yeast: microorganisms that feed on sugars and in so doing produce alcohol and carbon dioxide. The carbon dioxide produces the fizziness of sorghum beer. Home brewers rely on wild yeasts present in sorghum grain. In contrast, factory brewers add pure strains of laboratory-produced yeast.

Silk

Cocoons: fibrous shell of silk yarn that silk worms spin at the end of their life cycle. A cocoon consists of a single strand of unbroken silk thread wound round and round the silkworm. Native silkworms produce a single strand of thread 300 meters long, while the much larger white hybrids produce a thread 1,000 meters long.

Mulberry: tree whose leaves are the sole food of the silkworm.

Rearing: raising silkworms. Involves allowing eggs to hatch into silkworms. Fed on finely chopped mulberry leaves, the silkworms grow, and after about 20 days they spin cocoons. If allowed to mature further, the worm would transform itself into a moth, hatch, and lay eggs to start the life cycle once again.

Reeling: unwinding silkworm cocoons to produce silk yarn. Yarn combines the 7-20 individual strands of silk thread from 7-20 cocoons.

Silkworm: small worm, native to China, that spins a cocoon of silk thread. It eats mulberry leaves as its sole food.

Warp yarn: the vertical strands of yarn that run the full length of a bolt of fabric.

Weft yarn: the horizontal strands of yarn that run the width of the silk cloth.

APPENDIX D
TECHNICAL POINTERS

TECHNICAL POINTERS

Consumption Data as a Window onto Size and Dynamics

Market size. You will normally find it difficult to estimate total MSE sales by aggregating up from a multitude of individual small businesses. Not only do they maintain sketchy records, they often operate seasonally or part-time.

Consumption data, when available, can help determine the magnitude of specific MSE markets. Government statistics offices and central banks are the agencies that most frequently collect these data, often as part of their responsibility for tracking changes in prices of a standard basket of consumer goods. You may find these studies referred to as consumption surveys, studies of household budgets, or household expenditure.

Using an example from Lesotho, Table D-1 illustrates how to estimate market size from consumption data. Note that this method allows you to estimate the size of regional or national markets simply by knowing population size and average expenditure per person. In the same way, data normally allow you to differentiate between rural and urban areas, since data collection agencies usually distinguish between the two.

In the field, practitioners have used consumption data to estimate MSE sales in a variety of subsectors. Examples include used clothing and banana wine in Rwanda, and construction materials, construction services, cloth, and knit garments in Lesotho.

Of course, household expenditures only enable you to estimate the value of domestic demand. For MSEs oriented toward the export market, you will need to turn to trade statistics or major export agencies.

Growth potential. Consumption data also indicate which domestic markets are likely to grow most rapidly. The key is to compare differences in consumption between rich and poor households. This comparison indicates how households spend additional income, as their earnings grow.

Table D-2 illustrates how you can estimate what households will purchase as their income grows. It continues with the Lesotho example, in which a team of subsector investigators was interested in comparing potential growth in three areas: (1) knit and cloth garments, (2) leather footwear, and (3) construction materials and services. The calculations in Table D-2 suggest that construction expenditures will grow most rapidly in the future, while leather footwear will grow most slowly. Households will spend 13.9 percent of additional income on construction

TABLE D-1

ESTIMATING SALES VALUE
FROM HOUSEHOLD CONSUMPTION STUDIES^a

Expenditure Category	Household Consumption Data, Lesotho 1986		Estimated Sales Value in a Region with 40,000 Households (million moloti per year) ^c
	Cash Expendi- ture per House- hold per Month (moloti/month) ^b	Average Budget Share (percent)	
Food and beverages	71	37.8%	34.1
Clothing & footwear	33	17.6	15.8
• Garments, cloth & knit	(17.9)	(9.5)	(8.6)
• Footwear	(9.2)	(4.9)	(4.4)
Rent, fuel and power	11	5.6	5.3
Furniture and household	23	12.2	11.0
Medical	3	1.6	1.4
Transport and communication	10	5.3	4.8
Education and recreation	7	3.7	3.4
Miscellaneous	30 ¹	16	14.4
• Building materials	(12.2)	(6.5)	(5.9)
• Construction services	(7.9)	(4.2)	(3.8)
Total	188	100.0%	90.2

^a Household consumption studies are sometimes called "household budget" or "household expenditure" surveys.

^b The moloti is the national currency of Lesotho. One moloti equals approximately one U.S. dollar.

^c Calculated as Column 1 × 12 months × 40,000 households.

TABLE D-2

**PROJECTING GROWTH IN LOCAL DEMAND
FROM HOUSEHOLD CONSUMPTION SURVEYS**

Expenditure Category	Household Consumption Data		Estimated Share of Additional Income Spent on Each*
	Poor Households	Rich Households	
Food and beverages	43	161	22.0
Clothing & footwear	14	104	16.8
• Garments, cloth & knit	(7)	(56)	(9.1)
• Footwear	(3.5)	(26)	(4.2)
Rent, fuel and power	6	27	3.9
Furniture and household	8	104	17.9
Medical	2	12	1.9
Transport and communication	4	40	6.7
Education and recreation	2	32	5.6
Miscellaneous	9	144	25.2
• Building materials	(4)	(84)	(8.4)
• Construction services	(3)	(32)	(5.5)
Total	88	624	100.0%

*Calculated as $(Exp[rich] - Exp[poor]) / (Totexp[rich] - Totexp[poor])$. Consider food and beverages as an example: $(161 - 43) / (624 - 88) = 22.0\%$.

materials (8.4 percent) and services (5.5 percent), but only 4.2 percent on leather footwear. Of course, the raw data could have been disaggregated differently for those interested in other activities.

Given estimates of income growth, you can use these data to project the absolute amount of sales growth in each domestic market. For example, if national household income of \$100 million dollars grows at 5 percent, demand for construction materials will increase by approximately \$420,000 ($100 \times .05 \times .084$).

Calculating Returns to Labor

Poor people have only their labor to sell. So returns to labor is the key indicator of where their best opportunities and incentives lie.

The silk discussion in Step 7, together with Figure 9, described how you can use returns to labor in projecting subsector dynamics.

The following formula allows you to calculate returns to labor.

$$\text{Revenue} - \text{Raw Materials} - \frac{\text{Depreciation of Fixed Assets}}{\text{of Land}} - \text{Rental Cost} = \text{Net Income}$$

$$\text{Returns to Labor} = \frac{\text{Net Income}}{\text{Labor Time}}$$

Note that depreciation of fixed assets are extremely small in most MSEs. And rental cost of land applies primarily to agribusiness operations such as silk where land must be taken out of other crops to support a nonfarm processing activity.

Like wage rates, returns to labor are given in currency per unit of time — for example, dollars per day, pesos per month, or rupees per year.

Wage rates register what the market pays hired workers — the 15-20 percent of MSE workers who receive a cash wage. Whatever projects you undertake, you will benefit from keeping closely abreast of wage rates — in agriculture, for men and women, and in a range of common nonfarm activities.

There are a number of other ways to examine the profitability of different firms and functions. For more information, see Malcolm Harper, *Consultancy for Small Business* (London: Intermediate Technology Publications).

Writing Up Your Findings

The subsector map synthesizes your understanding of a particular subsector and the way microenterprises fit into it. So preparing a clear, simple subsector map is your best tool for conveying your understanding to others. The map proves invaluable for focusing presentations and discussions. In many cases a clean, clear map, verbal discussions, and perhaps a few tables will be sufficient for your agency's needs.

In other instances, you will want a written report to summarize your findings, recording them and making them available to others. Many formats can be effective in doing this. In cases in which you have difficulty getting started, you may wish to consider the sample format offered below.

A SAMPLE SUBSECTOR REPORT

- I. Rationale for Investigation**
- II. Markets and Consumer Demand**
- III. Structure of the Subsector**
 - A. The subsector map**
 - B. Technology**
 - C. Alternate supply channels**
- IV. Dynamics**
 - A. Driving forces**
 - B. Ascendant channels**
 - C. Opportunities for microenterprise growth**
- V. Opportunities for Intervention**
 - A. Unblocking growth potential**
 - B. Sources of leverage**
 - C. Leverage interventions**