

Industrial Extension Manual

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for small and medium industries
in developing countries

Volume Two

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VOLUME TWO

INDUSTRIAL EXTENSION MANUAL
FOR SMALL AND MEDIUM INDUSTRIES
IN
DEVELOPING COUNTRIES

TECHNONET ASIA
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- Canada

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TECHNONET ASIA

TECHNONET ASIA is a cooperative grouping ("network") of 14 Participating Organizations in 11 Asian-Pacific countries, which aims at improving the quality and efficiency of production in those countries' small and medium scale industrial enterprises. Particular emphasis is given to the application of knowledge concerning known processes, methods, techniques, equipment, modifications and approaches to existing operations, effected by the transfer of technical information and technologies, provision of industrial extension services, and promotion of entrepreneurship development programs.

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INDUSTRIAL EXTENSION MANUAL

VOLUME TWO

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FOREWORD

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Coming up with a Manual for industrial extension practitioners in developing countries was a cherished ambition of Technonet Asia since its inception over a decade ago. Throughout the past years it has been an elusive dream and a constant challenge to us. That it took several years to make this project come into fruition underscores the very evolution of industrial extension in the Asia-Pacific region. From its humble beginning as a project of the International Development Research Centre in 1972 to its present status as an international non-governmental organization (NGO), Technonet Asia has, over the years, sown the seeds of industrial extension for assisting small-scale industries and continues to nurture its growth in its member countries.

Today, we catch a glimpse of this evolution from virtually just a speck of idea in the minds of policy makers then to a full-fledged profession with over 5,000 trained industrial extension officers within the Technonet network. Industrial extension has definitely come of age and is now strongly recognized as an integral part of a developing country's program of assistance to the small-scale industry sector.

This Manual draws its inspiration from the thousands of dedicated industrial extension officers out there in the factory floors of small-scale industries - bringing technology, solving problems and in the process helping these firms maximize their potential contributions to their countries' economies. This development work has inspired Technonet to produce this Manual for them as a field companion for the industrial extension officer, a desk handbook for the industrial extension manager and a reference book for the industrial extension trainer. This Manual was written to make their task more effective and with this contribution Technonet Asia is proud to be part of the action.

We thank the International Development Research Centre (IDRC) of Canada for sharing our dream by supporting this project. We gratefully acknowledge the valuable inputs of the contributor-writers, the Editorial Board, the heads and staff of the Participating Organizations, the Institut National de Productivite du Quebec and Productivity Plus Management Consultants, Inc. and for the many others who patiently waited for the birth of this book.



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CHAPTER 1: INTRODUCTION

1. BACKGROUND
2. ORGANIZATION
3. APPROACH
4. HOW TO USE THIS MANUAL

CHAPTER 1: INTRODUCTION

1. BACKGROUND

This is the accompanying volume of the Industrial Extension Manual. The Manual is a comprehensive coverage of industrial extension concepts, methods, techniques and practices relevant to small-scale industries (SSI) in the developing countries. Volume I has been written as a field handbook for industrial extension officers, while Volume II is designed as a desk handbook for industrial extension managers. Both volumes can also serve as textbook for industrial extension training courses.

This Manual is a major accomplishment of Technonet Asia and marks the culmination of several years of conceptualization and preparation. Its publication answers a long-felt need for a field companion and a desk handbook for more than 5 000 industrial extension officers, managers and trainers in Technonet Participating Organizations' countries. The project was made possible through a financial grant from the International Development Research Centre (IDRC) of Canada.

2. ORGANIZATION

Volume II is divided into nine chapters, viz:

- Chapter 1 - Introduction
- 2 - Overview of Small-Scale Industries
- 3 - Managing Small-Scale Industries
- 4 - Industrial Extension Methods
- 5 - Setting Up and Operating an Extension Service
- 6 - Conducting Training Programs
- 7 - Entrepreneurship Development
- 8 - Technical Information and Extension
- 9 - Evaluating Extension Programs

Volume I is divided into seven chapters, viz:

- Chapter 1 - Introduction
- 2 - Industrial Extension and the Extension Officer
- 3 - Developing and Maintaining Extension Relationship
- 4 - Investigating and Reporting
- 5 - Industrial Extension Tools
- 6 - Special Topics
- 7 - Industrial Extension Cases

Volume II was written to guide the industrial extension manager in effectively and efficiently managing the extension service unit. It is expected that extension service units possess copies of Volume I in their offices for reference.

In organizing Volume II, efforts were made to anticipate the questions that the target audience would ask. Table 1.1 presents the logical flow of questions and the scheme of answers that became the basis of this volume's organization.

3. APPROACH

In preparing this Manual, emphasis was made on making it a practical guidebook for industrial extension practitioners. Hence, while it provides a comprehensive coverage of essential industrial extension subjects, it cannot claim to cover everything. The conceptual treatment is meant to discuss extension principles, processes and practices without going into too much detail. The educational background (mostly college/university graduates in engineering and social sciences) and work experience (majority of the extension managers were formerly industrial extension officers themselves) of the target audience were a major consideration. With English as a second language for most of the readers, the book is written in a simple style to pave way for easy translation into the local languages, if necessary. Extensive use of illustrations (tables, charts, figures, examples, cases and pictures) is made to better present concepts and highlight important learning points. For ease of skimming, liberal use of titles and sub-titles was resorted. To constantly alert the reader, summaries are provided at the beginning of each chapter and references at the end.

4. HOW TO USE THIS MANUAL

The reader will get a bird's-eye view of the coverage of this Manual by looking at the Table of Contents. He can then select the specific chapter or section related to his areas of interest. Reading the summary and skimming the titles and sub-titles will prove valuable. Some parts may be read casually, while others require careful reading. In its entirety, this Manual is a quick and easy reference handbook for industrial extension practitioners.

Table 1.1.
ORGANIZATION SCHEME OF VOLUME II

QUESTIONS IN THE MIND OF THE EXTENSION MANAGER	ANSWERS AS PROVIDED BY THE MANUAL
I am an extension manager, but what should I do?	Through familiarity with the concepts of small-scale industry development, appreciate the role of industrial extension service Chapter 2 - Overview of Small-Scale Industries
Now I understand the small industry concepts and processes, what else do I need to know?	Know the fundamentals of managing a small-scale industry (SSI) as it will aid you in designing an effective extension assistance program to SSIs in your territory Chapter 3 - Managing Small-Scale Industries
Now I have adequate information about SSIs, how can I effectively design an extension assistance program?	Have mastery of the industrial extension methods Chapter 4 - Industrial Extension Methods
As an extension service manager, what do I need to know to discharge my duties effectively?	Master the techniques and practical tips in organizing and managing an extension service Chapter 5 - Setting Up and Operating an Extension Service
As an extension service manager, I train people - the extension officers and SSI entrepreneurs, what concepts and methods do I need to know?	Know the principles and requirements in planning, organizing and conducting training programs Chapter 6 - Conducting Training Programs

QUESTIONS IN THE MIND OF THE EXTENSION MANAGER	ANSWERS AS PROVIDED BY THE MANUAL
Now I understand the concepts of SSI and extension methods as well as my job as extension service manager. What is their link with entrepreneurship development?	<p>By knowing entrepreneurship development concepts and processes, appreciate its strong relationship and supportive role to SSIs' development as well as the crucial role industrial extension plays in their promotion</p> <p>Chapter 7 - Entrepreneurship Development</p>
An extension service unit is an information supplier. How can I set up and operate a technical information service responsive to the SSIs' needs?	<p>Know how to design an information system and operate a technical information service</p> <p>Chapter 8 - Technical Information and Extension</p>
An extension service manager has to evaluate the effectiveness of his staff, his unit and its activities. He has also to know how the extension program is going to be evaluated. What do I need to prepare myself for this task?	<p>Know the concepts and tools of evaluation. Learn the stages of conducting an extension program evaluation.</p> <p>Chapter 9 - Evaluating Extension Program</p>

CHAPTER 2: OVERVIEW OF SMALL-SCALE INDUSTRIES

SUMMARY

1. INTRODUCTION

2. IMPORTANCE

- 2.1. Capital Saving and Employment Creation
- 2.2. Utilization of Local Resources
- 2.3. Nursery of Entrepreneurial Talent
- 2.4. Dispersal of Industries
- 2.5. Income Distribution
- 2.6. Strengthening the Industrial Structure
- 2.7. Quantitative Contributions

3. CHARACTERISTICS

- 3.1. Organization and Management
- 3.2. Types
- 3.3. Strengths
- 3.4. Weaknesses

4. CONDITIONS FOR DEVELOPMENT

- 4.1. Human Resources
- 4.2. Material Resources
- 4.3. Natural Resources
- 4.4. Intangible Resources
- 4.5. Financial Resources
- 4.6. Physical Infrastructure
- 4.7. Institutional Infrastructure

5. CHARACTERISTICS OF ENTREPRENEURS

CHAPTER 2: OVERVIEW OF SMALL-SCALE INDUSTRIES

SUMMARY

This chapter describes the importance and characteristics of small-scale industries in the context of the developing countries' economies. It also presents a conceptual treatment of the conditions and factors that lead to successful promotion of small-scale industries. The chapter ends with a sociological, psychological and economic profile of the entrepreneur - the man behind the small-scale industry.

1. INTRODUCTION

Definition of a small-scale industry (SSI) varies from country to country, hence it is futile to arrive at a common definition. Based, however, on adopted policies of most developing countries in the Asian-Pacific region, SSI refers to both manufacturing and industrial service enterprises.

Manufacturing involves a processing activity necessitating a change in form from raw material (input) to the end product (output). Such change may either be chemical (e.g. rubber and plastics), mechanical (e.g. machine, transport) or physical (e.g. furniture, garment) in form.

Industrial service refers to support services related to manufacturing such as machine and repair shops, kiln drying facilities, commercial testing laboratories, etc.

A small-scale industry is described using several criteria such as number of workers, sales volume, total assets, fixed productive assets, use of power, etc. It is through the use of one or a combination of these criteria that SSIs are differentiated from cottage, medium and large industries for statistical and assistance purposes.

2. IMPORTANCE

Small-scale industries play a vital role in the pursuit of economic progress by the developing countries. Their qualitative contributions include the following :

2.1. Capital Saving and Employment Creation

In countries characterized by a low rate of capital formation and the existence of surplus labour, SSIs which are fairly labour-intensive, create employment opportunities at relatively low capital cost. They are an important source of off-farm and non-farm employment in the countryside.

2.2. Utilization of Local Resources

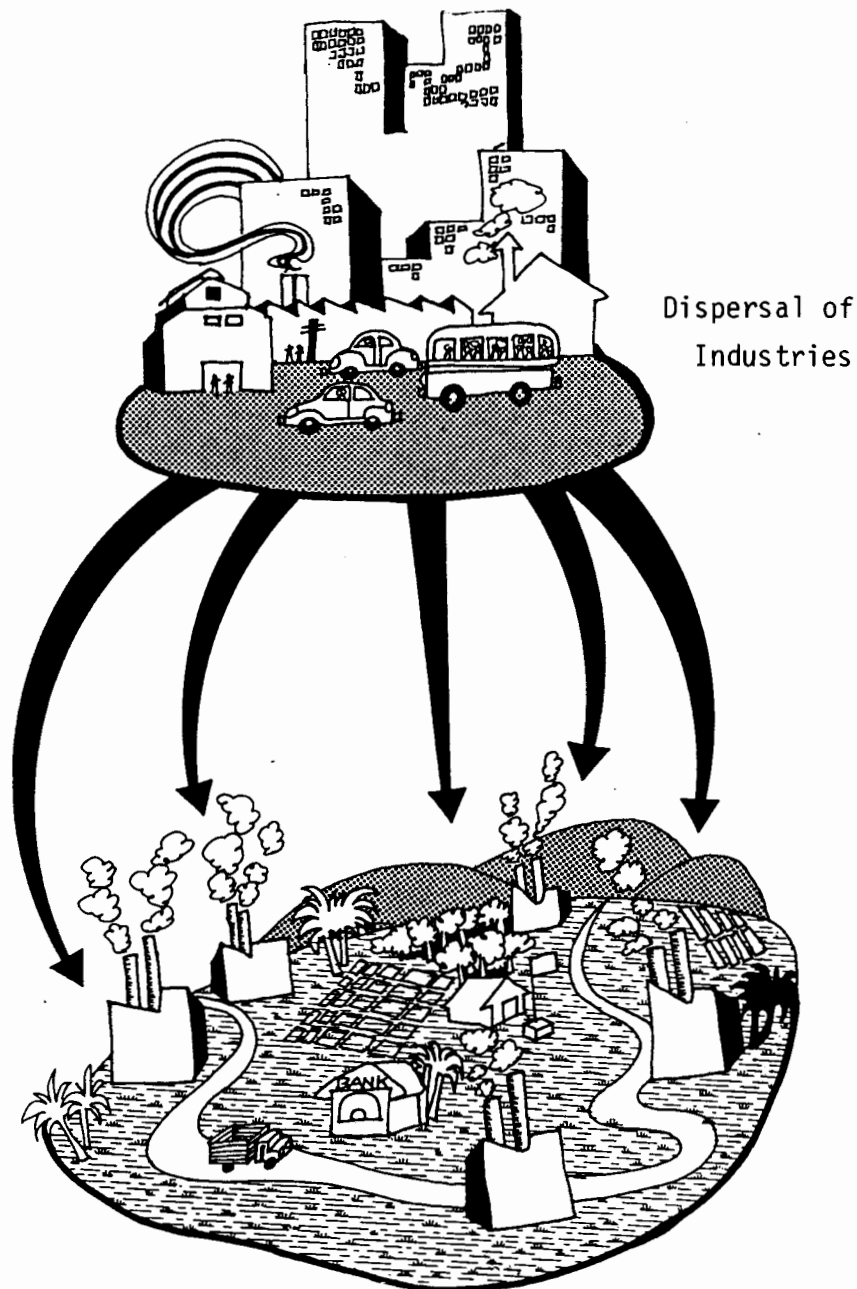
Small-scale industries utilize local resources like capital (such as family savings), skills (in traditional crafts which can be harnessed to produce handicrafts or basic goods), or material resources (like wood into furniture).

2.3. Nursery of Entrepreneurial Talent

Many large industries start small, hence SSIs serve as a training ground for entrepreneurial ability and managerial talent. Small-scale industries enable risk-taking and motivated individuals to find avenues for their talents to new types of business activities and innovations.

2.4. Dispersal of Industries

Small-scale industries tend to develop in various regions of the country, hence contributing to reduce concentration of industries in urban areas and promoting balanced economic growth.



2.5. Income Distribution

Small-scale industries help build a strong middle class by producing a group of entrepreneurs-managers, hence discouraging the concentration of economic power in the hands of a few persons.

2.6. Strengthening the Industrial Structure

Through sub-contracting tie-ups and other complementarity relationships, SSIs complement large industries by performing certain operations, providing raw materials for the latter and utilizing their outputs to produce other products. The promotion and development of SSIs should not be considered an alternative to the promotion of large industries. Rather, a strong and productive industrial structure can only be achieved where small, medium and large industries not only co-exist but also function in symbiotic relationship.

2.7. Quantitative Contributions

Small-scale industries' quantitative contributions can be measured in terms of value added, employment, foreign exchange earnings through export, as well as foreign exchange savings through the production of import substitutes. Table 2.1. presents some of the important economic contributions of SSIs in selected Asian countries.

Table 2.1.
COMPARATIVE DATA ON SMALL-SCALE INDUSTRIES

Country	Year	% of SSI to Total Manufacturing	% of SSI Employment to Total Manufacturing	% of SSI Value Added to Total Manufacturing
Bangladesh	1980	98.0	87.0	54.0
Indonesia	1981	99.0 <u>1/</u>	77.5	60.0
Korea	1979	96.5 <u>2/</u>	47.7	35.2
Malaysia	1978	97.5 <u>3/</u>	51.0	36.0
Philippines	1981	99.0 <u>4/</u>	50.1	33.0
Sri Lanka	1982	98.0 <u>5/</u>	71.0	52.0
Thailand	1980	92.5 <u>6/</u>	78.0	35.0

1/ includes medium industry 4/ up to 99 employees
2/ up to 300 employees 5/ up to 100 employees
3/ up to 49 employees 6/ up to 49 employees

Sources : 10th International Conference on Small Business (ICSB) Proceedings, September 1983, Singapore; and
Small Enterprise and Entrepreneurship Development (SEED) Workshop Proceedings, February 1983, Pattaya, Thailand, published by Technonet Asia.

3. CHARACTERISTICS

Small-scale industries' contribution to the economy can be enhanced by making extension work more effective through a better understanding of their characteristics such as organization and management, types, lines of business, advantages and disadvantages.

3.1. Organization and Management

Small-scale industries are usually characterized by one-man management in the person of the entrepreneur who oversees the marketing, production, finance, personnel, and overall aspects of the business, usually without the help of specialized staff. Their organizational structure is simple with very few levels between workers and management, as well as seldom staff positions. They are usually single proprietorship, family-run businesses characterized by a paternalistic type of management where the entrepreneur maintains close personal contact with his workers.

3.2. Types

Small-scale industries can be classified into the following types:

a) Inputs Orientation

- **Agro-based** (processing of agricultural crops and by-products, also processing of livestock and poultry)
- **Resource-based** (processing of raw materials from mineral, aquatic and forest resources)
- **Utility-based** (processing activity is highly dependent on such utilities as power and water)
- **Skill-based** (processing activity is highly dependent on specialized labour skill as well as technical competence).

b) Market Orientation

- **Household market** (production of food, garments, footwear, furniture used by individuals and households)
- **Industrial market** (production of machinery and spare parts for the use of other industries)
- **Sub-contracting** (production under contract with other industries such as components, or performance of specialized operations for other industries like finishing, electroplating, packing).

c) Geographic Orientation

- **Urban-based** (processing is mostly undertaken in urban areas where nearness to market or presence of certain facilities is required)
- **Rural-based** (processing is mostly undertaken near sources of raw materials or skills; SSIs serve as non-farm or off-farm employment source)
- **Footloose** (processing is not highly dependent on locational advantage but based on the availability of certain critical factors).

d) Technology Orientation

- **Physical product** (production of physical objects utilizing specific product technology)
- **Service** (repair and maintenance, electroplating, machining utilizing specific process technology).

3.3. Strengths

"Small is beautiful", Schumacher preached. Small-scale industries possess certain advantages over their larger counterparts. The extension officer can exploit these advantages to maximize SSI's full potentials:

a) Low economies of scale

Due to their lower overhead and fixed costs, SSIs can produce profitably for a small total demand brought about by limited localized market or income level. Limited demand may be due to short delivery time, perishable product, availability of inputs, clients' preference for local products.

b) Flexibility

Due to centralized decision making in the entrepreneur, decisions can be taken fast. Small-scale industries are more flexible than their larger counterparts to the extent that they can accept orders for small lot sizes, produce more styles or diversify into new products using the same machines.

c) Close integration with local community

There is relatively close integration of the SSIs with the local community through local ownership, management, dependence on local market as well as sources of labour and raw materials.

3.4. Weaknesses

Small-scale industries suffer from certain inherent weaknesses which the industrial extension officer must be aware of so that he can find ways to minimize their effects and even eliminate the handicaps.

a) Lack of control of outside environment

Small-scale industries encounter difficulties in obtaining credit and capital. Financial institutions have bias against lending to SSIs for reasons of higher exposure to risk and greater administrative burden of evaluating and maintaining several small loans. Likewise, SSIs have no special bargaining strength in buying of raw materials and selling of finished products due to their limited purchases and production. Several developing countries give SSIs preferential treatment in selling to government agencies as well as incentives in organizing producers and marketing cooperatives.

b) Unbalanced management skill

Lack of management competence is the major cause of an SSI's failure or distress. Many internal problems of SSIs are actually symptoms of this illness. Management weakness presents itself in many forms such as :

- lack of long-term policy for the business
- decisions is based purely on intuition rather than on systematic analysis and rational decision making
- poor marketing practices
- inadequate quality control system
- low technological level of firm
- poor production system and organization
- inadequate bookkeeping and accounting system
- poor credit and collection practices
- lack of information on and about their business, competitors, market, technology, etc.

Awareness of these problems and inherent weaknesses has led many governments to formulate specific programs of assistance to the SSI sector. An integrated approach at promoting SSIs commonly covers financing, marketing, technological, technical, managerial and information assistance, infrastructure and support facilities as well as fiscal incentives (e.g. lower interest rates for loans and tax exemptions).

4. CONDITIONS FOR DEVELOPMENT

Certain prerequisites are necessary to create an environment (political, economic, social and technological) conducive to SSI development. Due to the dynamics of these factors, it is difficult to pinpoint which particular factors in what degree and to what extent are necessary to guarantee successful promotion of SSIs. A set of factors proven effective in one country may not be found suitable in another. In the same manner while certain resources

propelled several economies to industrial progress, their absence did not deter other countries from equally achieving, even surpassing, the former's growth performance. These factors are divided into the following broad categories :

4.1. Human Resources

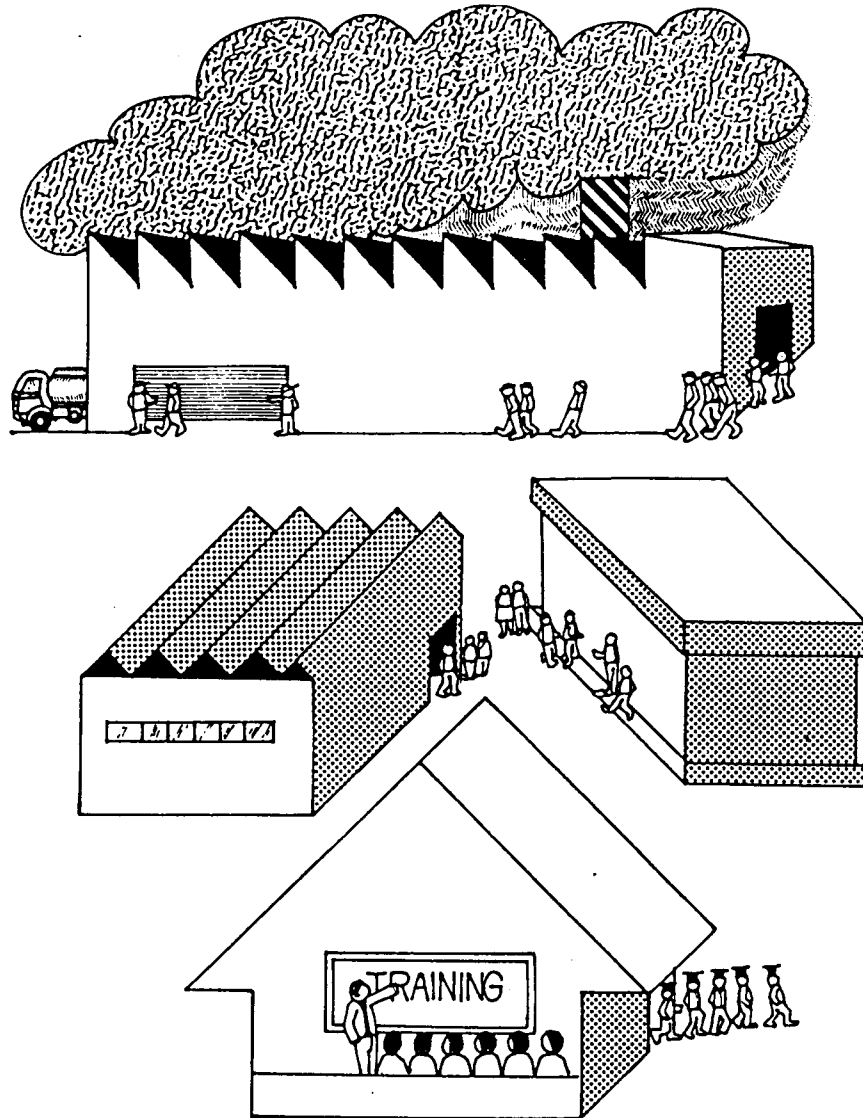
The human factor is the most vital ingredient in SSI development.

a) Entrepreneurs

Central to the theme of SSI development is a pool of highly motivated and risk-taking entrepreneurs - the prime movers of industrial growth and organizers of resources for productive and profitable endeavours. Maurice Zenkin once emphasized, "No entrepreneur, no development".

b) Labour

Basic skills are needed to operate the machines, design systems and manage SSI's diverse activities to ensure that outputs can be achieved with high productivity in the use of capital and labour. Aside from skills it is important that labour has the proper work values and discipline.



c) Industrial Extension Officers

Their sense of commitment to assist SSIs has brought about the emergence of new SSIs and the improvement/expansion of existing ones.

4.2. Material Resources

Some of the raw materials available for SSIs to process can be classified as follows :

- a) Agriculture - food crops (rice, corn, yam); cash crops (coconut, sugar, cassava); waste and by-products (rice hull, molasses); livestock (swine, cattle, lamb, goat); poultry (chicken, duck, turkey).
- b) Forest - Hardwood (rosewood, mahogany, teak); softwood (pinewood, rubberwood); other forest products (rattan, bamboo).
- c) Mineral - metallic (copper, zinc, iron); non-metallic (sand, clay, gemstones, petroleum-based products).
- d) Aquatic - marine (fish, shells, seaweeds); fresh water (fish, shells).

4.3. Natural Resources

These include oil, gas, geothermal energy, rivers, waterfalls, etc. If harnessed, they act more as inducers or facilitators in SSI development.

4.4. Intangible Resources

These consist of such factors as indigenous technology, information, creativity of the people, etc.

4.5. Financial Resources

Capital is needed to finance and support SSIs' operations; on the other hand, consumers must have the purchasing power to buy the products of SSIs.

4.6. Physical Infrastructure

These are the support facilities that enable and facilitate the production and marketing of SSI products :

- a) Basic infrastructure (road network, port, airport)
- b) Utilities (power, water)
- c) Support facilities (communication, transportation and warehousing, credit, industrial research institutes, testing laboratories, data banks).

4.7. Institutional Infrastructure

- a) Government with its basic traits of developmental attitude, leadership by example, absence of graft and corruption, absence of administrative red tape, existence of rational industrialization program, favourable incentives and assistance programs, peace and order, political stability.
- b) Private sector with its basic characteristics of positive attitude towards work, strong motive to succeed and excel, social mobility of people from all walks of life, strong social responsibility, self-help rather than dependence on government.

While the quantity and availability of these facilities are important, their quality and accessibility to SSIs are more crucial. The extension manager plays a key role in facilitating and matching the delivery of vital services to SSIs. As a change agent, he can influence the entrepreneur's perception of his environment.

5. CHARACTERISTICS OF ENTREPRENEURS

The entrepreneur has been variously described as "one who allocates and manages the factors of production and bears risk" (Marshall, 1920); "someone who innovates, whose function is to carry out new combinations called enterprises" (Schumpeter, 1934); one who is gifted with the ability to "perceive latent economic opportunities and to devise their exploitation" (Cole, 1959); "an individual who conceives the idea of business, designs the organization of the firm, accumulates capital, recruits labour, establishes relations with suppliers, customers and the government and converts the conception into a functioning organization" (Hagen, 1968).

Entrepreneurs in developing countries vary widely in terms of their socio-economic characteristics. For instance, in some developing countries, the average educational attainment of the entrepreneur is college education, in others it is secondary education. In some countries, the average age of the entrepreneur is about 40 years old, in others it is younger or even older. A growing trend in developing countries, however, is for new entrepreneurs to venture into business before they reach the age of 30. Almost all entrepreneurs have previous business exposure either through employment or managing a family enterprise.

One of the most critical social factors for stimulating entrepreneurship is the family of the individual. Permissive, middle-class family environments encourage the emergence of entrepreneurial youth. Entrepreneurs are also found to have parents who were engaged in business-related occupations (e.g., trading and manufacturing), as well as parents who inculcate the spirit of independence in their children. Members of unstable families (as those stricken by divorce, separation, death and other stresses) and upwardly or geographically mobile families make up a significant proportion of entrepreneurs. Size of family and

sibling position have also been identified as related to entrepreneurship. Often entrepreneurs either are eldest sons in large families, or belong to small families. Unpleasant experiences during childhood, particularly anxiety-producing events, have been found to be common among entrepreneurs.

The individual's peer group is also a determining social factor. Entrepreneurs are reported to have associated with friends whose career aspirations are high, or who are involved in enterprising activities. A significant percentage of entrepreneurs are reported to have received financial support from various sources when they establish their business. This finding points to the role of the economic environment, specifically, access to capital, as a stimulus to entrepreneurship development.

Studies reveal that the Asian entrepreneur is self-confident. He is optimistic : he believes in the possibility of change or mastery of the environment, through himself. He is flexible and receptive to change. He prefers independent work where his individuality shows. He is dynamic and is a leader wherever he goes, in whatever he does. The entrepreneur is creative and innovative. He is not only knowledgeable in his field of interest, but on general matters as well. He is versatile and achieves on his own initiative and resourcefulness. Problems are seen by the enterprising man as challenges. He likes to take risks after he has calculated his chances for success. Moderate risks appeal to him. They also have a positive attitude towards work, because they show persistence, perseverance, determination, hardwork, drive and energy in their activities.

Perhaps the most frequently mentioned trait is the high need for achievement called n-Ach, of the entrepreneur. In psychological tests, scores of entrepreneurs are significantly higher for n-Ach compared to non-entrepreneurs. Entrepreneurs, almost invariably, display a concern for excellence and to excel in competitions. Recent studies reveal that in addition to need for achievement, entrepreneurs need to influence and lead others (need for power). Inversely, they have a low need to establish emotional relationships (need for affiliation) and a high capacity to discipline one's own self. Hence, although a combination of high need for achievement and power may produce a self-centred autocrat, entrepreneurs are known to have a strong ability for self-discipline.

As the industrial extension manager will constantly interface with the entrepreneurs, it is important that he has a good understanding of his clients. It would be meaningful to define the entrepreneur, not just from an economic point of view, but also from sociological and psychological angles. Table 2.2. presents a synthesis of the entrepreneur's profile.

Table 2.2.
REPORTED CHARACTERISTICS OF ENTREPRENEURS

Category	Characteristics
Psychological	Need for achievement Need for power Independence Propensity to take risk Drive Self-confidence and will power Creativity Ambition Discipline Recognition Benevolence Diligence Adaptability
Economic	Financial Support Business experience Occupational background
Sociological	Leadership ability Social mobility drive Family background
General	Good salesman Pleasing personality Integrity

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CHAPTER 3 - MANAGING SMALL-SCALE INDUSTRIES

SUMMARY

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CHAPTER 3 - MANAGING SMALL-SCALE INDUSTRIES

SUMMARY

Besides knowing how to manage an extension unit, the industrial extension manager can increase his unit's effectiveness of assisting SSIs if he knows what it takes to manage an SSI. Such knowledge does not necessarily make him an entrepreneur but gives him a better understanding of the managerial requirements of running a small business. The extension manager has only to bear in mind that management weakness is the main cause of SSI failures. In this chapter, important principles and practices of small industry management are discussed without too much elaboration. From reading this chapter, the extension manager will appreciate more the SSI's uniqueness.

1. MANAGEMENT FUNCTIONS

The success of the SSI largely depends on the managerial competence of its owner-manager - the entrepreneur. Competence comes from a combination of the appropriate knowledge, skills and attitudes required in running a small business profitably, as discussed in the previous chapter. The entrepreneur needs to perform certain managerial functions - planning, organizing, executing and controlling human, material and intangible resources. He performs all these functions - not necessarily sequentially but even simultaneously - as he manages the enterprise functions of marketing, production, finance and personnel. Mastery of these skills is crucial as entrepreneurs may start their business with unbalanced skills. For example, a marketing-oriented entrepreneur will have to concentrate learning the technical and financial aspects of the business, while a production-oriented entrepreneur will have to devote his attention to the marketing aspects of the SSI. All these entrepreneurial efforts are addressed toward satisfying the SSI's publics (customers, suppliers, creditors, etc.) as a means of achieving his business objectives. Figure 3.1. presents a schematic diagram of this management process.

1.1. Planning

Planning is perhaps the most neglected function of the entrepreneur who is usually pre-occupied with day-to-day activities like selling, factory supervision and arranging for finance. The entrepreneur should learn to delegate routine activities and minor decision making to trusted and capable subordinates to allow time for planning.

Since the business environment is dynamic, the entrepreneur must plan to protect his business from competition, take advantage of market opportunities or decide on the directions of the SSI. Planning involves (a) setting objectives; (b) determining alternatives to attain objectives; (c) selecting the best alternative; and (d) formulating strategies to translate the chosen alternative into implementable actions.

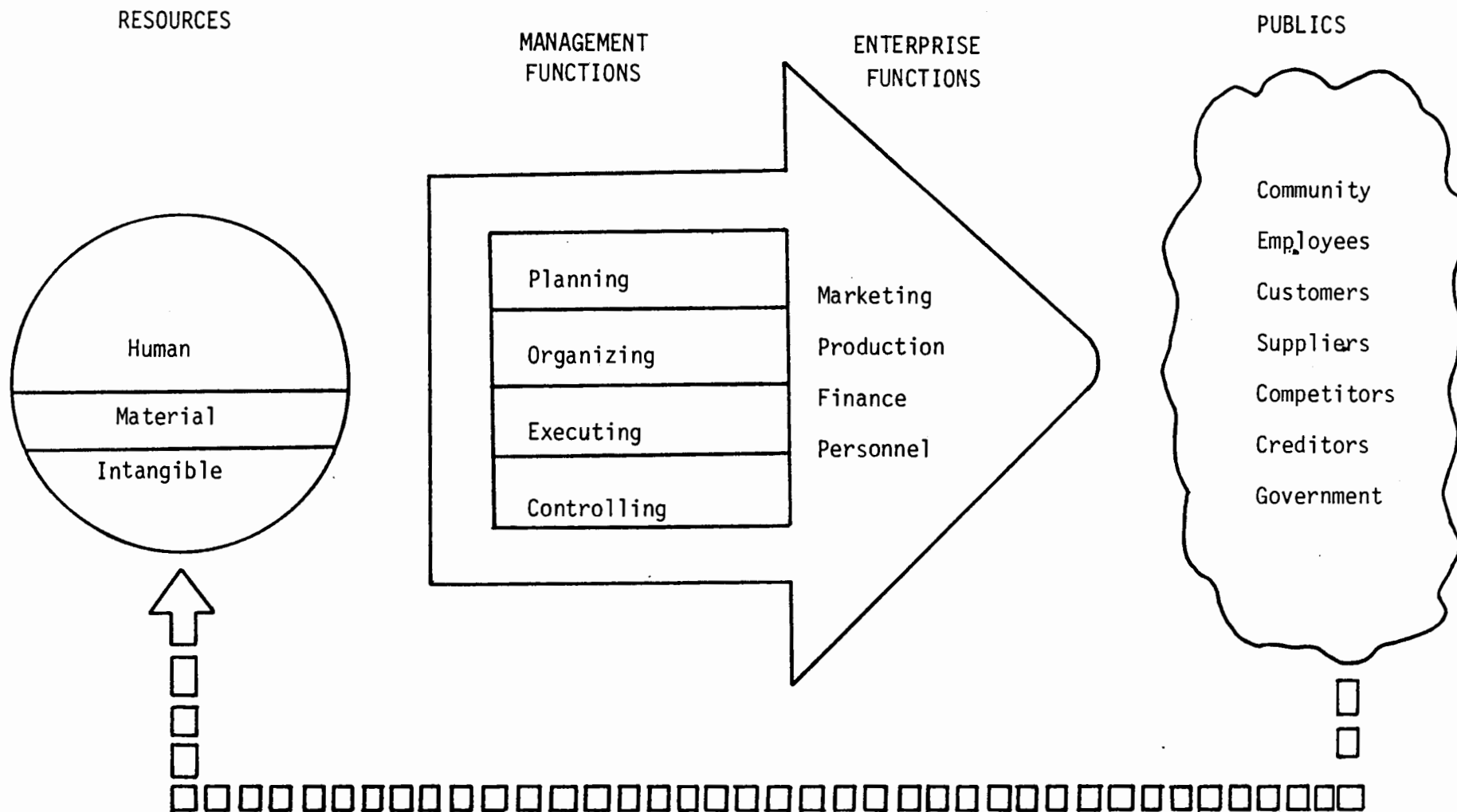


Figure 3.1. Management Process.

Planning is time bound, hence the entrepreneur should make a distinction between his short-term plan (usually up to one year), medium-term plan (1-5 years) and long-term (over 5 years). For ease in implementation and evaluation, plans should be translated in quantifiable terms like sales targets, target volume, profit goal, cost, etc.

Planning requires imagination, sound judgement and practical ability so that plans are realistic and can be reasonably implemented. Planning in SSI should not require voluminous documents, otherwise the objective of planning is lost.

1.2. Organizing

The entrepreneur needs to design a simple but efficient organization to achieve his objectives. The process of organizing requires : (a) identifying the task to be done; (b) grouping the tasks into related activities; (c) assigning responsibility and authority to specific persons/groups for task accomplishment; (d) determining the working relationship between and among persons/groups; and (e) designing the structure to ensure a cohesive and efficient functioning of the enterprise.

It is advisable that the entrepreneur keeps a lean and simple organization. Specialization can be introduced in some areas, whereas flexibility in operation and assignments gives the SSI the advantage of immediate response to environmental changes. Redundant staff should be avoided and overhead expenses should be kept as low as possible without sacrificing efficiency.

In many SSIs, job descriptions are not written, nor are organization charts available to depict the structure. Yet it does not mean that they do not exist. The industrial extension officer can help the entrepreneurs by developing and explaining the usefulness of such management aids.

1.3. Executing

This managerial function covers a wide range of activities that can perhaps best be summed up as management of day-to-day business. Such activities include directing, leading, supervising, coordinating, motivating, among others. This function occupies most of the entrepreneur's time and is also the area where entrepreneurs face the greatest difficulty. It involves the management of day-to-day business affairs, marketing his products, pricing them correctly, controlling their costs, organizing production inputs like raw materials and labour, financing the business, motivating the workers, etc.

This is the area where the entrepreneur's mastery of the art and science of management is put to test. His actions should inspire outstanding performance. His leadership style dictates the work atmosphere and culture of the organization. Above all, he must motivate his workers by giving good example, setting

reasonable standards of performance and providing adequate financial and non-financial benefits.

1.4. Controlling

The key to a profitable business is how well the entrepreneur is able to control his operation. He has to establish performance standards, procedures, targets and budgets. With these guides, he can monitor workers' performance, job progress, the SSI's financial condition, etc. He would normally involve his subordinates in their preparation, inform them about the standards and the procedures, and monitor their compliance. He conducts periodic evaluation of production targets, sales performance, cost behaviour, collection, cash flow, etc., to determine attainment of objectives and resolve problems encountered.

Specifically, the controlling function of the entrepreneur necessitates :

- a) **Establishing standards of accountability** - The entrepreneur's first task is to determine what factors to use as standards and then seeing to it that these standards are valid, fair, acceptable and understood by all concerned.
- b) **Measuring work in progress** - The entrepreneur monitors the performance of ongoing activities to detect and solve problems early enough and to ensure that work proceeds as planned and budgeted. Monitoring necessitates the availability of timely and accurate reports, hence the entrepreneurs must design a simple reporting system. This aspect needs emphasis as one of the major weaknesses of SSIs is lack of information on and about their business. Good information is essential to sound decision making. Measurement can take different forms such as in terms of money, unit, manhours or machine hours.
- c) **Interpreting results** - Information generated in the monitoring system, whether written, verbal or visual, will be analysed. Accomplishments will be compared against standards and any deviation, either positive or negative, must be investigated for their implications.
- d) **Taking corrective action** - After investigating the cause(s) of deviations, the entrepreneur has to make decisions to put the operation or activity back into course. This may require him to take corrective actions or to make some adjustments/improvements in the plan, procedures or budget. This means that the entrepreneur must be flexible and pragmatic in his approach, always keeping in mind the results he expects to achieve.

2. PERSONNEL MANAGEMENT

Managing his workers is more demanding for the entrepreneur than managing material resources and intangibles because human beings are dynamic. Yet it is how skillfully the entrepreneur motivates his staff to show their best effort that spells the difference between profitable and unprofitable operation. The entrepreneur has to consider the following areas :

2.1. Communication

The entrepreneur has to communicate - his decisions, policies, feedback, etc. All these must be known by his workers, hence the need for effective communication channels. Communication channels both downward and upward must always be maintained to ensure a two-way traffic. Any communication gap between the entrepreneur and his workers is dangerous as it adversely affects morale and feeling of unity. The entrepreneur's constant close contact with his workers is a plus factor in maintaining communication lines open. There are situations wherein he spends most of his time outside the plant - marketing his products or looking for finances. He must be made to realize the advantages of written job descriptions, written notices and bulletin boards.

2.2. Human Relations

This is a strength of most SSIs. Because of his paternalistic attitude, the entrepreneur is regarded as a benefactor and benevolent leader. The cordial and informal atmosphere akin to one-family camaraderie pervading in the SSI proves to be one of the strongest holding attractions to the workers, despite the SSI's relatively low wages. Workers are motivated to be resourceful and productive. It pays to be people-centred. As an anonymous author puts it, "profit comes from people, not products".

2.3. Wage and Remuneration

A fair and realistic wage and remuneration system helps significantly in creating an environment conducive to productive work in the SSI. Neglect of this vital issue leads to demotivated workers that eventually cause serious problems like poor product quality, high rejects and reworks, high absenteeism and excessive turnover. The entrepreneur must realize that certain industries or specific work contracts have particular characteristics, while others would normally exhibit common features requiring different wage structures.

2.4. Working Conditions

Other factors that encourage productive endeavours include : (a) the entrepreneur's concern for creating a favourable and safe working condition; (b) reviewing the performance of workers on a regular basis for purposes of promotion and incentives; (c)

providing opportunities for on-the-job training; (d) participation in decision making in aspects which they are familiar with; and (e) offering fringe benefits within the capability of the enterprise. These, of course, depend largely on the attitude and values of the entrepreneur. A well-intentioned entrepreneur, who is interested in the long-run prospects of his business, cannot dismiss these issues. The entrepreneur can also minimize personnel problems if he selects his workers properly ensuring the hiring of the right person for the right job and not merely because they are relatives or recommendees of friends.

3. MARKETING MANAGEMENT

Marketing principles can be summarized in two principles. The first is **know your market**; the second, **know your product**. From these two principles follow what the entrepreneur needs to know in managing the SSI's marketing function. A good start is to have a good understanding of marketing concepts like **marketing** and **selling**. Marketing covers **pre-selling** (e.g. product development, market research, marketing plan formulation), **selling** (e.g. sales proposition, negotiation, closing sales) and **post-selling** activities (e.g. after-sales service, maintaining spare parts, honouring guarantees).

Next is for the entrepreneur to recognize the interdependence of the marketing function with production, finance and personnel. Marketing decisions such as pricing, credit sales, product differentiation affect production and finance. On the other hand, quality control system and credit policies affect marketing performance. The entrepreneur must take care that conflicting policies do not arise.

3.1. Marketing Variables

Next to financial problems, the entrepreneur would usually rank marketing problems in terms of difficulty. This is because in marketing the entrepreneur is dealing with dynamic forces - his consumers (people who consume/use his products), his customer (people who help him bring his products to the consumers), his competitors (people who affect his marketing performance) his salesmen, government people, and many others. The entrepreneur has control over some of these forces. It is his ability to effectively manage these variables and deploy them skillfully that counts. Figure 3.2. shows the controllable and uncontrollable variables which affect the entrepreneur's marketing decisions.

CONTROLLABLES

Target market segments on which the firm's effort is concentrated

- location or geographic area
- target customer
- timing

Product(s) or service(s) offered

- type of product or service
- range of products or services
- design features
- quality standards

Price

- price level
- price variability (discounts)
- price maintenance

Advertising and Promotions

- advertising level
- advertising media
- advertising image
- sales promotions

Distribution

- distribution channels
- types of distribution
- number of sales outlets
- warehousing facilities
- inventory levels

Servicing

- extent of servicing
- service facilities

Packaging

- utility function
- marketing strategy

UNCONTROLLABLES

Resource availability

- availability of required materials
- cost and quality of required materials

Competition

- direct competition
- indirect competition

Economic conditions

- total market size
- economic trends
- income situation

Socio-cultural conditions

- societal values affecting consumer behaviour
- life style
- fashion consciousness
- consumer preferences

Political and legal conditions

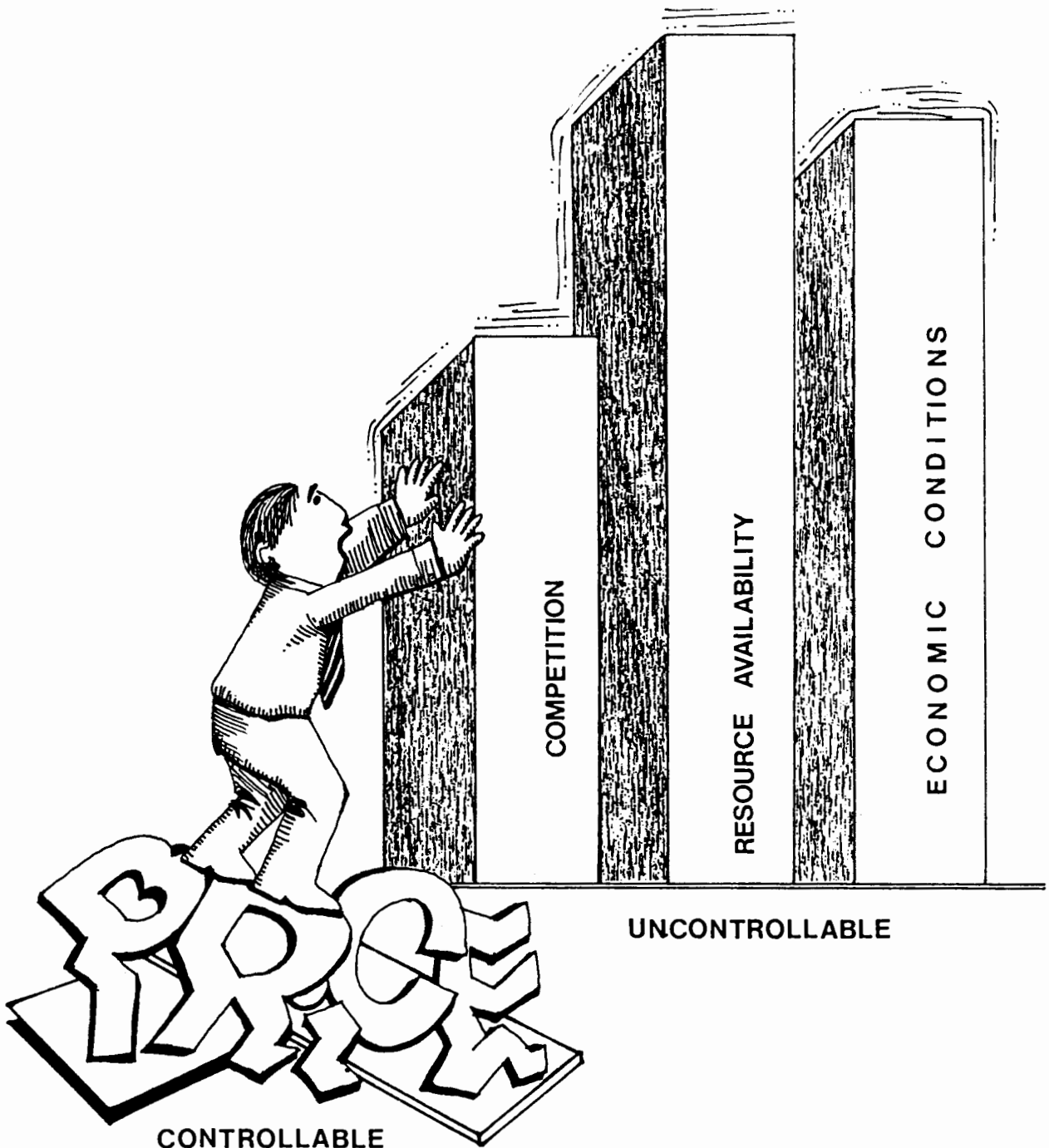
- political risk situation
- legal regulations
- power of regulating agencies

Technological situation

- state of technology
- rate of technology change

Figure 3.2. Marketing Decision Variables

The entrepreneurs' controllable variables are mostly the resources of the SSI. With these he can decide what products to produce, to which market, at what price. With his resources he can dictate his advertising and promotion strategies. The SSI's resources are, however, limited and this fact conditions the entrepreneur's approach in manipulating the uncontrollables. He is successful if he perceives the right opportunities, makes the right decisions and correctly anticipates the directions of the uncontrollable forces.



3.2. Market Segmentation

Knowing the firm's target market and producing market-satisfying goods and services are cardinal marketing principles. Segmenting or classifying the market according to different variable like age, income, lifestyle, buying habits, location, etc., gives the entrepreneur a better understanding of the SSI's market. Conducting marketing research, no matter how simple and informal as long as it is done systematically, can help the entrepreneur get a better feel of market characteristics, the size of the market, market preferences, the factors affecting demand and supply, the SSI's position in the marketplace, future market conditions, etc. The entrepreneur can then decide his appropriate entry, expansion or diversification strategies. He can decide whether he should produce one product for several market segments or several designs of one product for a discriminating market segment.

3.3. Marketing Planning

The entrepreneur must plan the SSI's marketing activities. Some entrepreneurs may not appreciate the importance of marketing planning, others claim they do not have the time nor the skill to make one. The industrial extension officer can, however, teach entrepreneurs the basic elements of marketing planning. The idea is not to let them come up with elaborate and intricate marketing plans that cannot even be implemented but a plan that is realistic and consistent with his resources and the realities in the marketplace.

Marketing planning directs the entrepreneurs to answer such questions as : What are the SSI's plans for dealing with its competitors? What are the SSI's plans for dealing with substitute to its products? What should the SSI do in the short term and in the future with regard to product and market development? The entrepreneur would need background data on various aspects of the market before he can prepare a good marketing plan. This necessitates investing in some kind of market intelligence. There are many things which the entrepreneur already knows through his association with his customers, suppliers and creditors. In addition, he must know the different elements of the marketing mix and determine how the various marketing mix strategies - product strategy, pricing strategy, distribution strategy and promotion strategy - can be effectively combined to provide an integrated marketing thrust. Marketing planning involves analysing the market, setting targets, formulating marketing strategies, making assumptions, preparing cost estimates and budget, as well as evaluating and monitoring results. Figure 3.3. illustrates the marketing planning cycle.

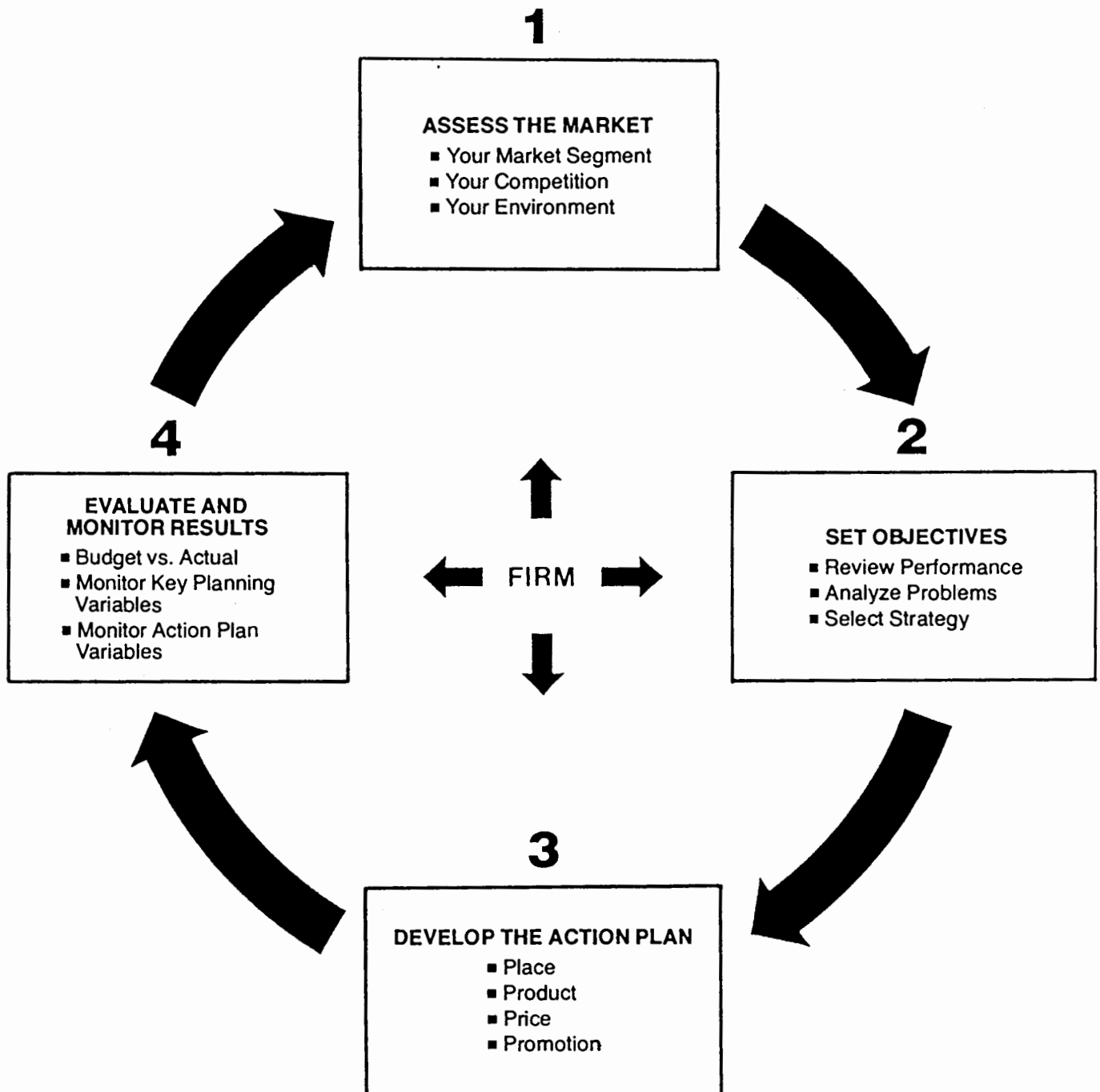


Figure 3.3. Marketing Planning Cycle

3.4. Marketing Mix

Marketing is the lifeblood of the SSI, for there is no use organizing for production if the products cannot be sold. The entrepreneur must understand the strategic implications of the various elements of the marketing mix and how he can effectively combine them to be able to satisfy his customers. The marketing mix is composed of the following elements : product, price, place and promotions.

3.4.1. Product

This refers either to a physical product (e.g. shoes) or a service (e.g. machining and repair). The entrepreneur must realize that he is not merely marketing a physical object or service per se, but the whole concept behind the product - what it can do or promises to achieve and what it symbolizes to the customer. In generating product ideas, the entrepreneur can be guided by the following basic considerations :

- a) The product is presently imported and there is potential in producing and selling it competitively.
- b) There is a supply gap with existing production capacities not able to satisfy demand.
- c) The product has distinctive features. These may be lower price, better quality, better service, artistic design, etc.

The entrepreneur can formulate different product strategies at any given stage of the product life, that is, introduction, growth, maturity and decline. Brand name is important in selling to a competitive market. Branding enables the consumer to distinguish the SSI's products from its competitors and will be particularly useful if the brand has earned goodwill and reputation. Small industries who subcontract for large industries or big department stores often do not face this decision. Packaging is another important consideration. Packaging or the presentation of a product is like introducing oneself. To be an effective marketing tool, the package must not only create a good impression of the product but must also preserve and protect it. Bad packaging can kill a good product, and inversely good packaging can sell a bad product.

3.4.2. Price

Pricing the product is another important marketing decision the entrepreneur has to make. Some products sell, because of the price. A sensible pricing policy and strategy significantly contributes to profit generation. Before setting the price, however, the entrepreneurs should first determine his marketing objectives :

- a) **Market-penetration objective** - The entrepreneur may set a relatively low price to stimulate the growth of the market and to increase his market share. The following conditions may favour setting low price :
(a) the market appears to be highly price-sensitive;
(b) unit production and distribution costs are reduced with output; and (c) the low price is intended to discourage actual and potential competition.
- b) **Market-skimming objective** - The entrepreneur may set his price high to take advantage of the existence of buyers who attribute a high present value to the product and are thus willing to pay a higher price for it. The premium price may gradually be lowered as the value attached diminished and the buyers become price conscious.
- c) **Early-cash recovery objective** - The entrepreneur may set a price that will lead to a rapid recovery of cash either because of the cash needs of the business or future uncertainties.
- d) **Satisfying objective** - The price is set to achieve a satisfactory rate of return. While another price may produce a higher return over the long run, the entrepreneur is satisfied with a return that is reasonable for a given level of investment and risk.
- e) **Product-line promotion objective** - The entrepreneur may establish a price that will promote the sales of the entire product line. An example is loss-leader pricing in which a popular product or main product item is priced lower or even at a loss to attract buyers to buy a whole set or induce a large number of buyers to buy the other products of the firm.

Three common methods of pricing the product are :

- a) **Cost-oriented pricing** - The price is set largely on the basis of the product cost. Two basic principles are used here. The first is, the lower the unit cost, the higher the profit mark-up. The second is, the more frequently a product is purchased, the lesser the mark-up.
- b) **Demand-oriented pricing** - Pricing is based primarily on the intensity of demand. A higher price is charged when or where demand is strong, and a low price when or where demand is weak even though unit cost may be the same in both cases. Prices may also vary based on the customer, place, time and product considerations.

- c) **Competition-oriented pricing** - Pricing is determined mainly by the prices of competitors for the same or similar products. The prices need not be the same. The entrepreneur may keep his prices higher or lower than the competitors' within a limited percentage.

3.4.3. Channels of Distribution

The entrepreneur has to decide how his product moves from the factory to the consumer. He may not have as many choices as large industries due to certain factors like limited resources, small volume, market location, etc. Between him and the final users are possible various marketing intermediaries - the retailers and the middlemen who can either be simply merchants, or department stores, wholesalers, distributors. Figure 3.4. illustrates several levels of marketing channels.

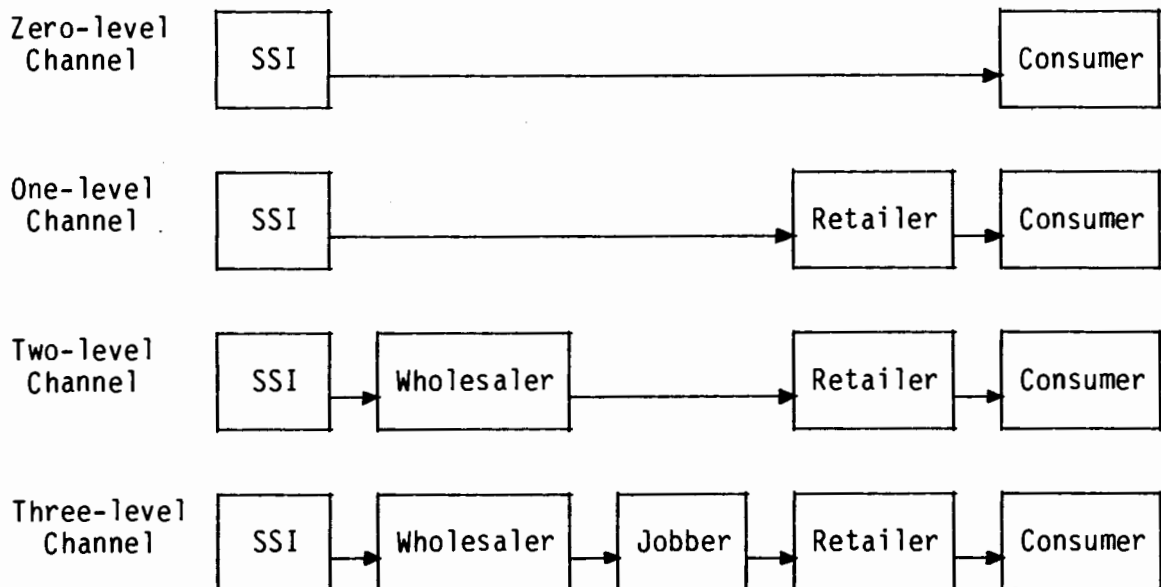


Figure 3.4. Examples of Different Level of Channels

The choice of channels is influenced by cost, the speed of distribution, control by the SSI, product characteristics and market characteristics. For example, product characteristics would dictate that :

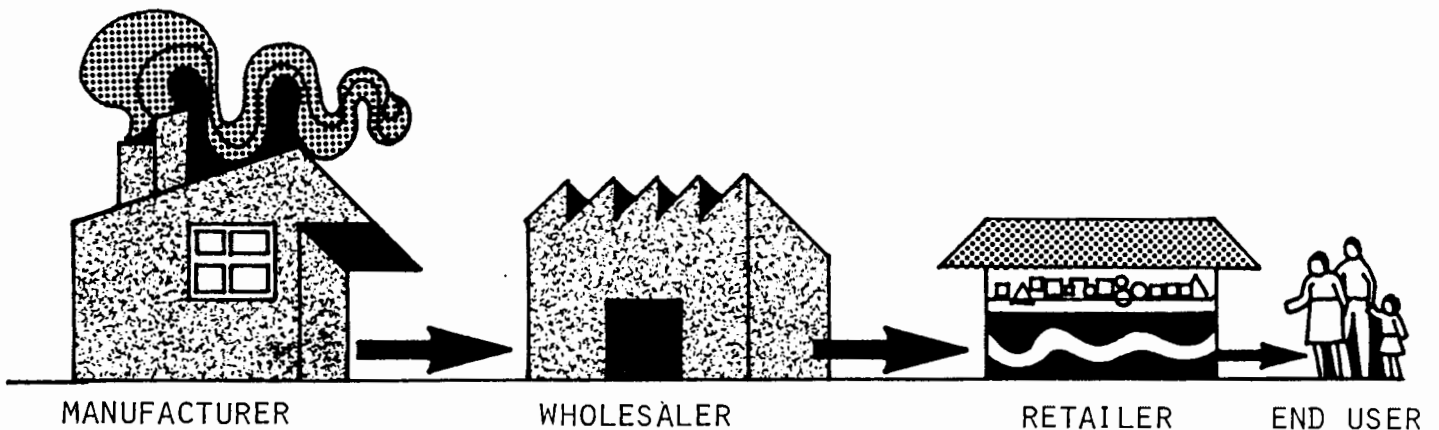
- perishable products require more direct marketing to reduce spoilage;
- bulky products like furniture usually require channels that minimize shipping distance and number of handlings;
- non-standardized products are usually sold directly by the firm because of difficulty of finding middlemen

with the required technical knowledge or even interest to handle and push the product; and

- products that require installation and/or maintenance services are usually sold and maintained directly by the firm or authorized dealers.

On the other hand, market considerations would require that :

- when the number of customers is large, manufacturers tend to use long channels with many middlemen on each level. The opposite is likely to happen when the number of customers is small.
- the high cost of serving small and frequent orders leads producers to rely chiefly on wholesalers; and
- some customers may be more readily induced to buy the products that are well displayed as in supermarkets or department stores.



3.4.4. Promotions

It is not enough for the SSI to have a good product, price it attractively and make it accessible to its intended market. The entrepreneur must communicate these benefits to the target market. Consistent with the SSI's resources and nature of business, the entrepreneur can promote his product through :

- **Advertisements** (use of printed materials like handbills and posters; use of printed media like newspapers and magazines; use of billboards, radio and television). It is a common misconception that SSIs should not or cannot afford to advertise.
- **Personal Selling** - oral presentation in a conversation with prospective buyers through the user of salesmen and agents.
- **Free Publicity** - planting commercially beneficial news about the product or the enterprise in the media and in other business and social occasions.
- **Sales Promotion** - short-term incentives to encourage immediate purchase of the product through discounts, contests, give-aways, display, public-demonstrations.

There is greater need for promotional activities where :

- products are alike, hence the need to make the entrepreneur's product different or distinctive from that of his competitors;
- buyer awareness of the product or its features is minimal;
- products are in a mature stage and there is a need to maintain market shares;
- products are sold on a self-service, hence the need for non-personal communication medium.

Figure 3.5. illustrates an example of price-promotions strategy as the product moves through its life cycle.

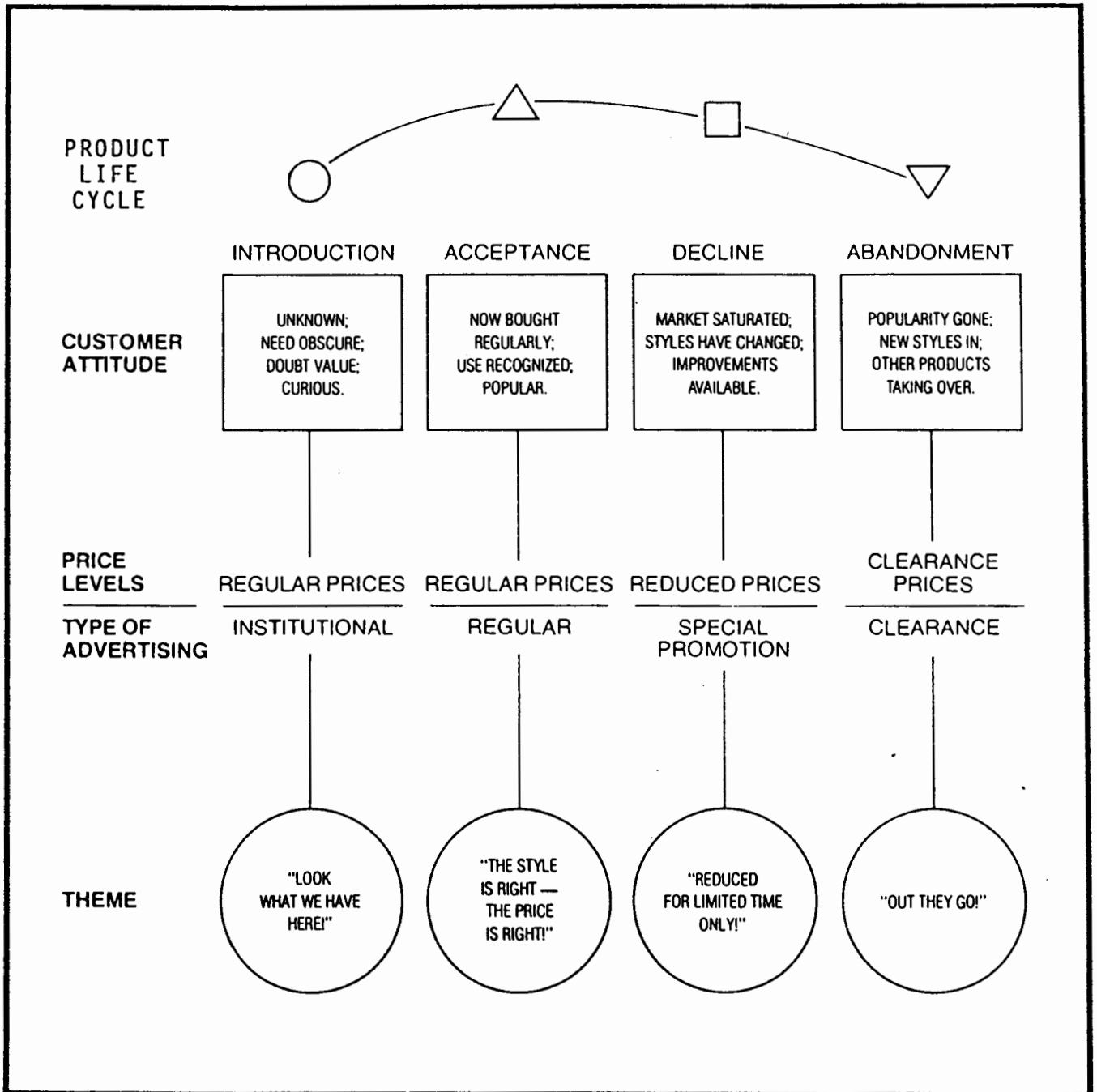
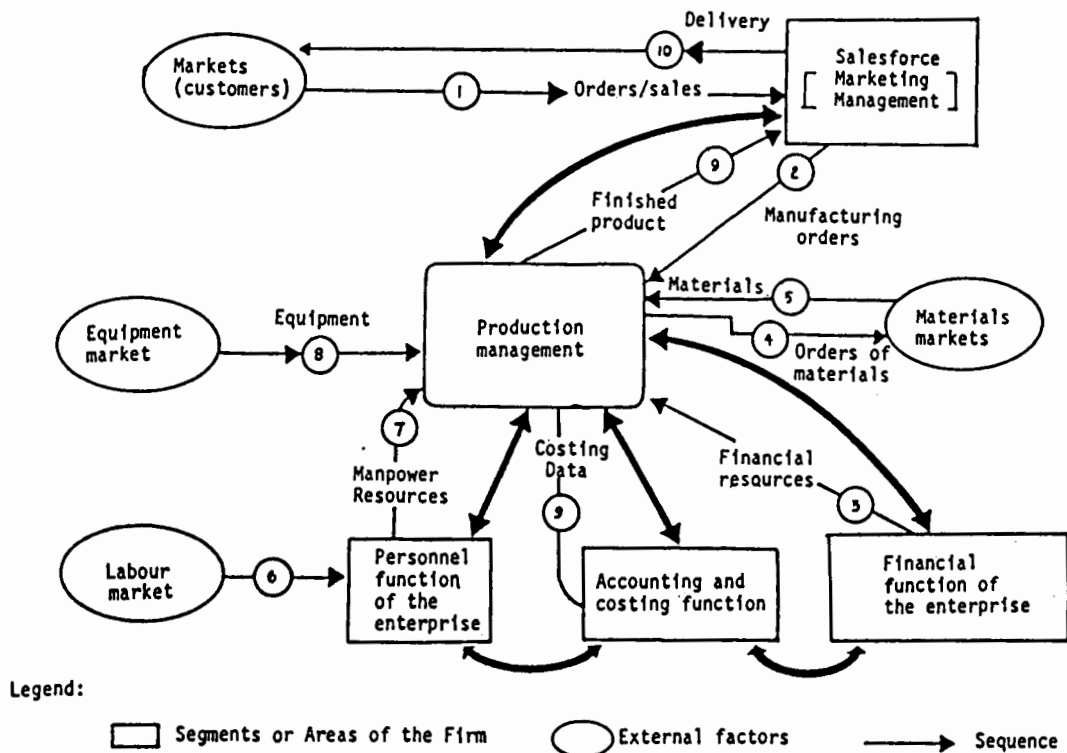


Figure 3.5. Product Life Cycle and Price-Promotions Strategy

4. PRODUCTION MANAGEMENT

The SSI produces goods or renders services for its target market. It is the entrepreneur's task to organize the needed resources and activities for this production function. Production management refers to the entrepreneur's conscious effort to plan, organize, execute and control the entire process of creating goods and services at the right cost, time, quality and quantity. As one of the managerial functions, production management must be integrated with the other functions of marketing, finance and personnel. Production derives its significance from marketing (knowing what to produce, how much and for whom) from finance (for paying for its activities) and from personnel (who make things happen). This relationship is shown in Figure 3.6.



Note: Feedbacks have been eliminated to simplify presentation

Figure 3.6. Relationship of Production with Other Enterprise Functions

The SSI's production function is a system requiring a set of inputs and in turn yielding a set of outputs. The inputs consist of production factors, e.g., materials, manpower, methods, etc. These inputs undergo a transformation process as in lumber (input) to a piece of furniture (output). This relationship is illustrated in Figure 3.7.

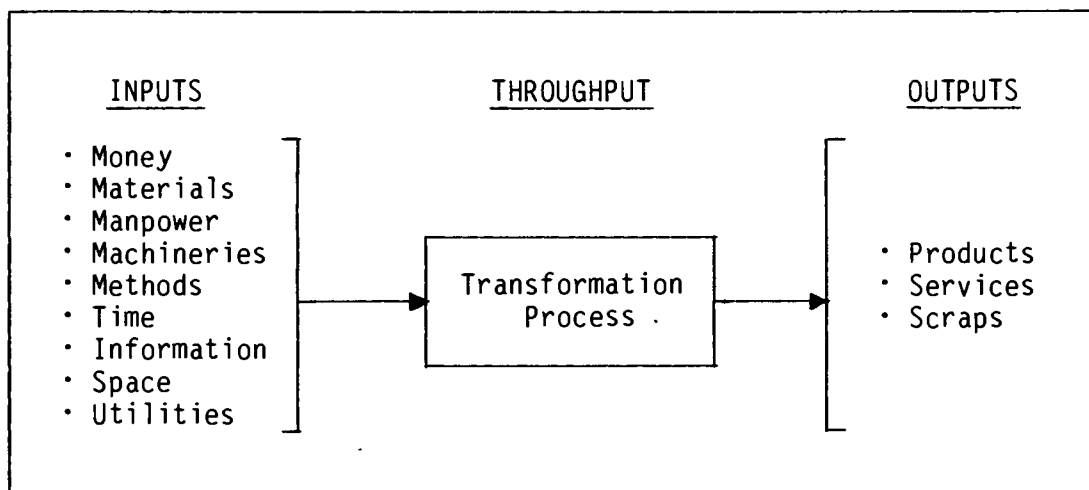


Figure 3.7. The Production System

The entrepreneur must continually provide the much-needed resource inputs to sustain continuous and profitable operation. Some inputs may be considered as "one-time decisions" or fixed (e.g., land, building, machinery and equipment) - at least for a certain period since these investments are often made at the start of the business operation and will be used for a longer time. Additional investments are made when the SSI expands its operation. Other inputs like raw materials, manpower, methods, information, etc., are continuing or recurring in nature, hence they demand more attention from the entrepreneur.

4.1. Production System

The SSI's production system normally dictates the pace of life and work culture in an SSI. The entrepreneur's options can be classified into three broad categories: **intermittent, continuous and combination of intermittent and continuous operation**. Under an intermittent production system, the SSI produces for specific orders or buyers so that when there are no orders, production stops. The intermittent system may be further subdivided into the job-order type (e.g. machine shop) and traditional mass production (e.g. seasonal woodcarving). Under a continuous production system, the SSI manufactures to stock (that is, production takes place even without a buyer at hand at that given time). The continuous system may be broken down into the modern mass production (e.g. garments manufacturing) and the process type (e.g. electroplating). A combination occurs when the SSI produces several products with one group under

intermittent production and the other under continuous operation, as in the case of wooden toys for a specific buyer versus furniture making for the mass market. The entrepreneur's choice of the type of production system is a strategic one. It largely depends on the characteristics of the SSI's target market, the type of products, the processes required, and the potentials of the firm for market and production expansion.

4.2. Production Planning and Control

One of the most important sub-systems of a production system is production planning and control. As the information nerve centre of the entire production operation, production planning and control ensures that the flow of materials, money, machinery, men, etc., is adequate, timely and orderly and that they are available at a rate which will permit the production system to meet delivery schedules. Essentially, production planning and control has the elements shown in Figure 3.8. The sub-system can be further divided into **production planning** and **production control** where each has specialized functions.

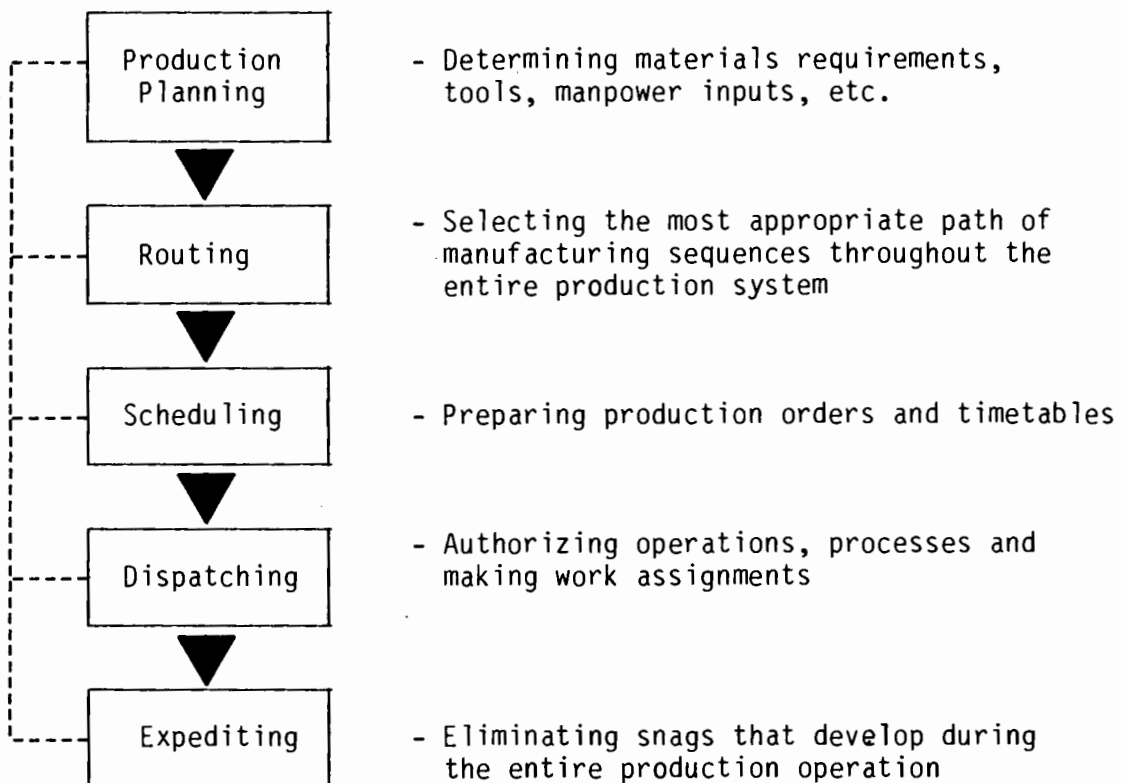


Figure 3.8. Essential Elements of a Production Planning and Control System

4.2.1. Production Planning

Production planning function generally consists of the following tasks :

- a) coordinating the activities of the production section with those of other sections of the SSI like marketing and finance;
- b) determining what the production section must produce based on market demand;
- c) calculating the quantities to be produced based on sales forecasts;
- d) scheduling the delivery of the products to the customers;
- e) programming the schedule and quantity requirements for materials, parts, labour and facilities; and
- f) synchronizing the contributions of personnel, purchasing and administration to the total production activity.

4.2.2. Production Control

Production control function has the following tasks :

- a) promoting effective shop operations by controlling all activities within the production section;
- b) coordinating manufacturing activities in accordance with the production plan; and
- c) overseeing routing, loading, scheduling, expediting and follow up activities.

In reality, production planning and control function in many SSIs is often not systematic. Among small enterprises, most of the planning activities are crudely formulated and stored in the head of the entrepreneur. Because the entrepreneur is pre-occupied with many other aspects of the SSI, there is danger of falling into inordinate planning effort and haphazard control procedures, resulting in oversight, uneconomical moves and sometimes serious errors.

4.3. Materials Management

Materials management constitutes an important production management sub-function since material cost can go as high as 60 percent of production cost in many SSIs. Its scope covers the other functional areas of production management, notably : (a) production planning and scheduling; (b) purchasing; (c)

materials handling; (d) warehousing/storage; and (e) inventory control. Figure 3.9. shows a schematic presentation the scope of materials management.

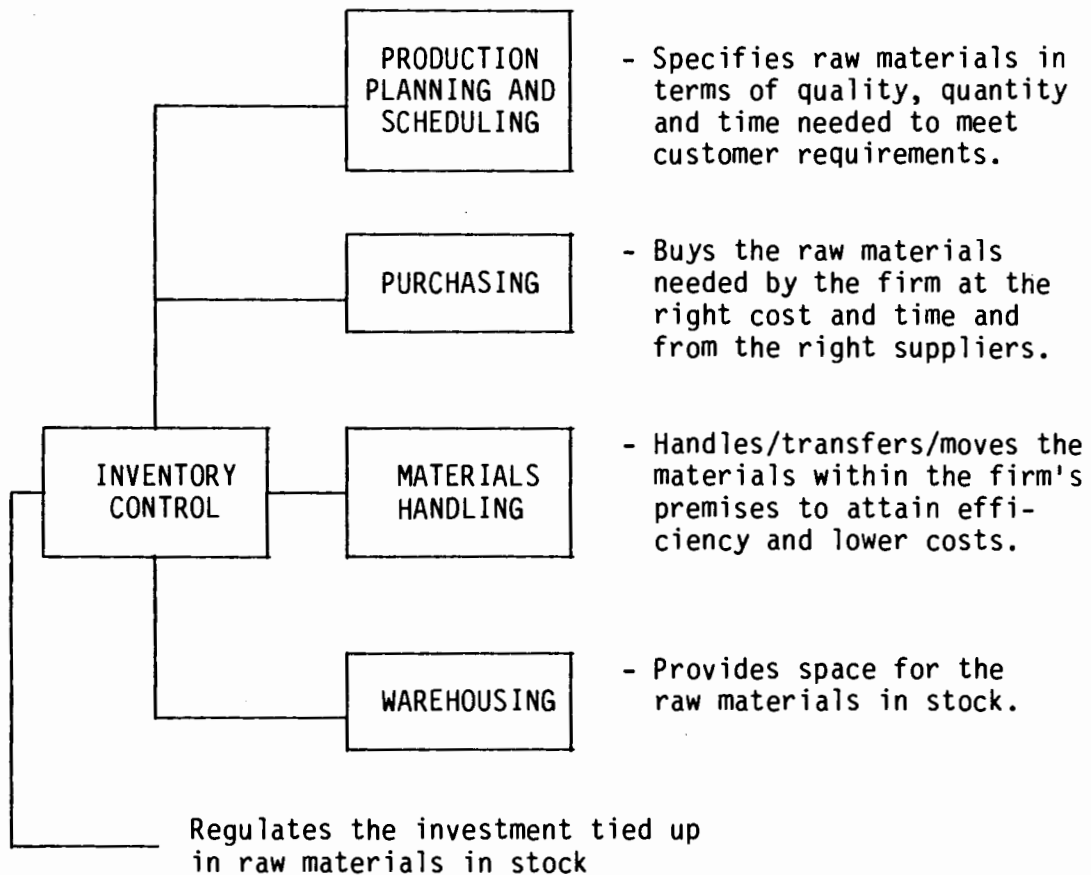


Figure 3.9. Scope of Materials Management

4.4. Quality Control

Another very important area in production management is quality control. Quality control means the identification and correction of various causes, defects, and variations from the set standards or specifications of the product. The objectives of every quality control initiative must be both **remedial** and **preventive**. The remedial objective involves sorting out the defective at the final stage of production so that only products that pass set standards will reach the end users. The preventive aspect is concerned with determining at various points or stages of production the reason(s) why defects occur in order to keep them at a minimum at the final stage of production.

In viewing the quality of the product, the entrepreneur should consider two major characteristics : **variable** and **attribute**. Variable characteristics refer to the physical characteristics

which are directly measurable, i.e., length, width, strength, thickness, etc., while attribute characteristics refer to those which cannot be directly measured physically, i.e., beauty, smoothness, appeal, etc. The entrepreneur's job is to strike a balance between these two characteristics to suit the target market's requirements.

The SSI's smallness is no reason for the absence or lack of an appropriate quality control system. Simple procedures as outlined in Figure 3.10. can be adopted by the SSI.

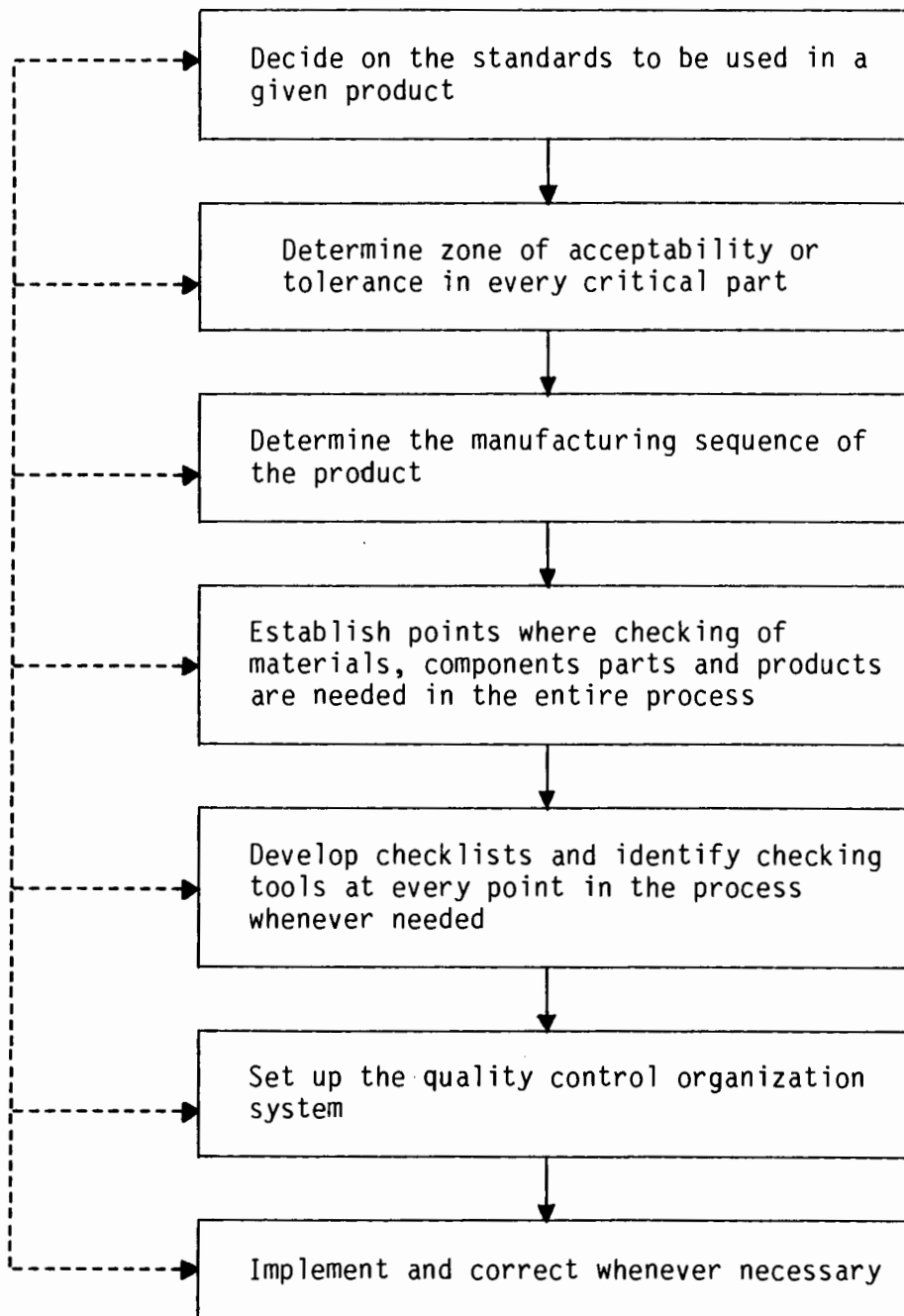
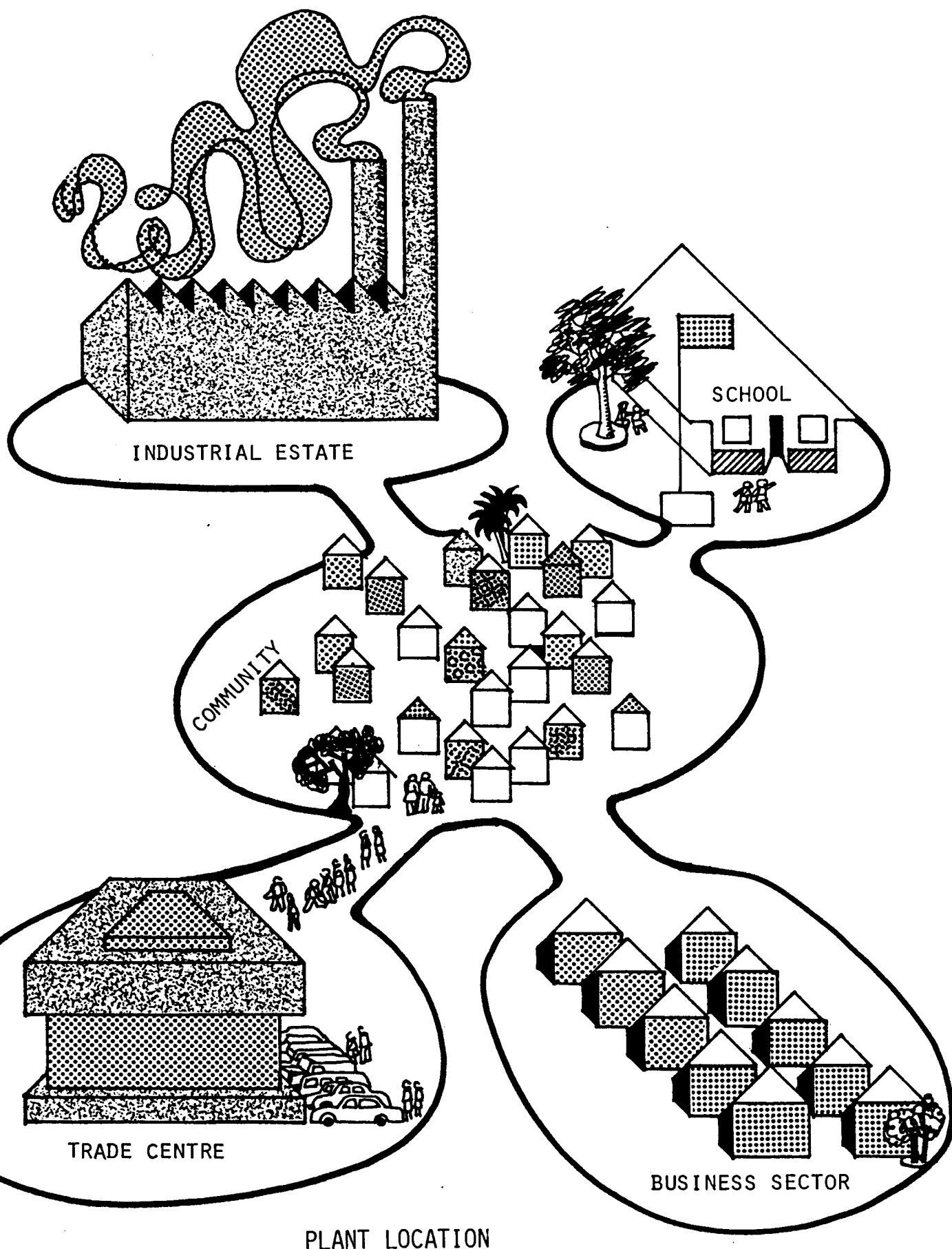


Figure 3.10. Procedures for Assuring Control of Quality in Small Manufacturing Plants

4.5. Plant Location

For most start-up entrepreneurs, decision on plant location is not much of an issue because for the most part they have no choice. Many SSIs have factories located in the entrepreneur's residence or are found in the same neighbourhood. Hopefully, the SSI will expand and the issue whether to move or relocate becomes imperative. The entrepreneur can consider the following factors in his location decision :

- a) **proximity to sources of raw materials** - the acquisition of bulky raw materials can be very expensive if the plant is located far from their source.
- b) **proximity to market** - distribution costs of finished products will be greatly affected by the plant's proximity to its most important markets.
- c) **transportation facilities** - the cost of transporting, as well as the availability, reliability and frequency of transport services in and out of the chosen site is an important consideration.
- d) **community facilities** - the facilities needed by the SSI and available within a certain community must be considered. These include common service facilities, power, road connection, etc.
- e) **availability of labour** - the cost of labour, the skills and work attitude are important considerations in plant location decision.



5. FINANCIAL MANAGEMENT

The SSI thrives because of funds provided for its operation. Financing is the lubricant of business - paying for production inputs and receiving payment for production outputs. The financial function of the enterprise translates business activities in financial terms and provides an information system to monitor business results. It is thus important that the entrepreneur has a good understanding of financial management concepts and tools. He has to know what records he should keep, what accounting system to use, how to find out whether or not the business is profitable, how to determine the financial position of the SSI, etc. The scope of financial management covers bookkeeping, cost accounting, assets management, cost control, financing, budgeting and capital budgeting. Ratio analysis, funds flow analysis and breakeven analysis are tools in interpreting business results.

5.1. Bookkeeping

The foundation of sound financial management is adequate and accurate financial information and records. Many SSIs fail because of inadequate record keeping and this is an area which is less appreciated by many entrepreneurs. Good records keep the entrepreneur informed of his profit, assets, liabilities, capital, accounts receivable, cash requirement, among others.

The following records should be maintained by the entrepreneur :

- (a) cash receipts and disbursements book; (b) sales record;
- (c) purchase book; (d) general ledger; (e) general journal;
- and (f) petty cash book.

The entrepreneur can choose either the **single entry** or **double entry** bookkeeping.

5.1.1. Single Entry Bookkeeping

The single entry system is simple bookkeeping which records only those transactions which affect the entrepreneur's cash and personal accounts. Business transactions are recorded in a narrative way in a single journal called a daybook. Single entry procedures are frequently found in SSIs whose activities do not need the services of a bookkeeper. When maintaining the single entry system, it is advisable that the entrepreneur hire a professional accountant on a retainer basis to prepare and interpret financial statements as well as income tax returns and other reports required by the government. The different records commonly used in a single entry system consist of : (a) daybook or general journal; (b) cash book; and (c) ledger accounts showing debtor and creditor balances.

5.1.2. Double Entry Bookkeeping

This is the universally used system of bookkeeping which indicates that two entries are made from each transaction that occurs. The basic concept is that each time goods or services are received, some other goods or services must be given up, meaning that every transaction must have equal debit and credit entries. The final effect of any transaction is a change in the value of some assets, liabilities, in ownership or a combination of changes. The following rules for debiting and crediting accounts are observed :

Debit an account when

- an asset increases
- a liability decreases
- capital decreases
- income is reduced
- expense is incurred

Credit an account when

- an asset decreases
- a liability increases
- capital increases
- income is earned
- expense is reduced

5.2. Assets Management

Assets are the resources of the business, hence they are crucial in determining the SSI's capacity to produce and its ability to earn a profit. Assets, by definition, refer to the things of value owned by the business and are of two major types : fixed assets and working capital. Fixed assets include land, plant, equipment and other facilities used in business operations. Working capital is the lifeblood of the business. An adequate and reasonable amount of cash balance has to be set aside for day-to-day cash operating and manufacturing expenses. A reasonable level of inventory, in terms of raw materials, finished goods and work-in-process, must likewise be maintained. Accounts receivable means the SSI financing credit sales.

All these signify that the entrepreneur must effectively manage the SSI's assets. He has to plan their proper allocation and strike a balance between not over-investing in any asset (such as machinery or building) and not investing enough (as in the case of critical raw materials inventory). He must ensure that the SSI's assets are utilized productively and contribute to project generation. Parts of his consideration are to examine and decide how the assets are and will be financed - whether by debt or his own capital, and to ensure continuity of financing for the SSI. Creditors are also interested not only in the profitability of the business but also its liquidity position (its ability to pay maturing debts).

5.3. Cash Management

Cash management is essential to the successful operation of the business. The cash position at any given time is a significant index of the firm's ability to grow and take care of contingencies. The SSI can be profitable but cash-less because cash is tied in inventory, accounts receivable or fixed assets. Effective cash management requires that the entrepreneur avoids the common pitfalls in cash management, such as :

- **poor internal control** - the SSI may incur cash losses as a result of theft, misappropriation or manipulation of records.
- **lack of cash planning** - the SSI runs short of needed cash for its operation.
- **diversion of funds** - working capital fund is used to finance the purchase of machinery and equipment, or is used for other purposes than what it is intended for.
- **poor collection of bills** - at times, the entrepreneur cannot keep track of his creditors or does not collect due accounts.
- **lack of expense control** - expenses are not balanced to the level of production, size or resources of the firm, sometimes due to the absence of an expense budget.

Effective cash management also dictates that the entrepreneur takes positive measures to safeguard cash, estimate cash flows, prepare a cash budget and daily cash report. He should also study the effect of depreciation and non-cash items on cash flows and take advantage of money-saving opportunities such as discounts.

5.4. Cost Accounting

Crucial to the SSI's profitability is the entrepreneur's understanding of how much his products cost. Many entrepreneurs price their product without fully knowing their cost implications. Cost accounting aids the entrepreneur in determining the efficiency of the various cost centres of the SSI. The primary objectives of cost accounting are to determine the cost of manufacturing the product (direct materials, direct labour and manufacturing overhead) and to control the cost of business operation by associating costs with centres of responsibility, comparing actual with planned cost, and taking corrective action. For this purpose, the entrepreneur must adopt a cost accounting system as a method of developing cost information within the framework of general ledger accounts. Depending on the nature of the SSI's operation, the entrepreneur can choose :

- a) **Job-order costing system** - where cost is associated with a job. The cost of raw materials, direct labour and manufacturing overhead applicable to each job is compiled and divided by the number of finished units to arrive at the average unit cost. This system is used in machine shop operation and sub-contracting arrangements.
- b) **Process costing system** - where the focal points in costing are the various sections or processes in the production cycle. The cost of raw materials, labour and manufacturing overhead applicable to each section or process for a given period of time is compiled. The average cost of processing the product through each section is determined by dividing the total section cost by the number of units processed during the period. Process costing is used by food processing, chemical, and canning factories, among others.
- c) **Contract costing system** - where raw materials, labour and other costs are direct contract costs. Overhead expenses are charged to contracts on an appropriate basis.
- d) **Batch costing system** - this is job costing for a group or batch of identical products such as in garments manufacturing.

5.5. Budget and Budgeting Control

An essential quality of the successful entrepreneur is preparedness. Budgeting means planning for the future and budgeting ahead assists the entrepreneur in projecting how much the SSI will need in terms of its future requirements. A budget expresses in common monetary language this plan of future activity. The budgeting process takes account of past performance and how resources can be used to achieve the desired objectives. It sets targets for the whole SSI and its various sections at a definite period. It schedules the timing requirements of the SSI's production inputs (e.g. materials, labour, etc.) and estimates in advance the amounts the SSI must have available at different times during the year.

Two types of budgets can be prepared by the entrepreneur, namely:

- a) **Operating budget** - which sets out the estimates of income and expenditures during a future period.
- b) **Financial budget** - which reveals the amounts of cash flowing in and out of the business during the budget period.

It must be borne in mind that budgets can hardly be "100 percent correct" since they are based on assumptions. Their accuracy and usefulness rest on the validity and soundness of the underlying assumptions.

5.6. Capital Budgeting

Buying of major assets is a major decision for the entrepreneur. A good decision can propel his SSI to a profitable operation; a bad decision can paralyze the business. He must therefore do some judicious capital budgeting. The term means planning expenditures whose returns come in beyond one year. Such expenditures may involve the acquisition of assets such as land, building, machinery and equipment. Capital budgeting requires good information for decision making, such as : (a) data about future receipts and costs from a proposed investment; (b) criteria to select the proposed investment; and (c) alternatives, mostly in the form of more investment proposals.

The entrepreneur must adopt a systematic approach in capital budgeting especially in generating alternatives (e.g. machines of different capacities, performance or features) making forecasts, and evaluating the alternatives which may require review of past performance or experiences of others, research, and even demonstrations and observations in other factories. He must consider the technological developments, maintenance requirements, operating requirements, and cost of money, etc. The entrepreneur can adopt various evaluation methods : (a) pay-back period; (b) return on investment; (c) net present value; and (d) internal rate of return. Each method is discussed in Chapter 5, Volume I of this Manual.

It is advisable that the entrepreneur seeks the guidance of the extension officer regarding this matter. The final decision should support the entrepreneur's expectation that the assets will produce desirable future benefits, meaning the value of the benefits will exceed the cost of the assets.

5.7. Financial Statements

The entrepreneur needs feedback on the financial results of his operation and information on the financial position of the SSI. Financial statements are the means of conveying to the entrepreneur and interested parties a concise picture of the profitability and financial condition of the business. These consist of :

- a) **Balance Sheet** - which is a formal statement of financial position of the business that shows its assets, liabilities and owner's equity in a classified manner and at a specific date.
- b) **Profit and Loss Statement (Income Statement)** - which is a financial report that summarizes the revenue items, expense items and the difference between them, either profit or loss, for the accounting period.

The analytical entrepreneur may also seek the preparation of a **funds flow statement** to determine the SSI's sources and uses of working capital during an accounting period, and **cash flow statement** to examine cash outflow and inflow. Financial statements are only useful if they are understood by the entrepreneur, much more used for decision making. Their analysis with the use of various financial tools (see Chapter 5, Volume I of this Manual) provides vital information to the entrepreneur such as profitability, productivity, favourable or unfavourable trends, liquidity, stability, etc.

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CHAPTER 4: INDUSTRIAL EXTENSION METHODS

SUMMARY

1. INTRODUCTION
2. RECOGNIZING EXTENSION METHODS
3. TYPES OF INDUSTRIAL EXTENSION METHODS
 - 3.1. SSI Visit
 - 3.2. Conference
 - 3.3. Roundtable
 - 3.4. Process Demonstration
 - 3.5. Model SSIs
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 - 3.8. SSI Tour
 - 3.9. Newsletter
 - 3.10. Radio and Television
 - 3.11. Walk-Ins
4. SELECTING THE EXTENSION METHODS

CHAPTER 4: INDUSTRIAL EXTENSION METHODS

SUMMARY

The chapter presents the brief description, preparation, execution, advantages, and limitations of eleven frequently used industrial extension methods, namely, (1) SSI visit, (2) conference, (3) roundtable, (4) process demonstration, (5) model SSIs, (6) campaign, (7) exhibition, (8) SSI tour, (9) newsletter, (10) radio and television, and (11) walk-ins. The chapter ends with suggestions on how to select the appropriate extension method.

1. INTRODUCTION

The basic goal of industrial extension in SSI promotion and development is to attain desirable action on the part of the entrepreneurs for their own benefit. But entrepreneurs do not normally accept they have problems or that certain changes will benefit them because people in general are not interested in disturbing the existing situation. Hence, before any action can happen, entrepreneurs must become interested, must develop the desire for change, and must obtain the relevant skills for the actions desired. Stated simply, all entrepreneurs' actions respond to a stimulus.

This implies that extension methods - used in bringing about changes - must build a background of ideas and facts to develop in the entrepreneurs an interest and a desire for the changes needed. Obviously, the extension officer's suggested changes must be **sound**. They must fit the real needs of the entrepreneurs. And when entrepreneurs try them, they must generate the results anticipated. Success with one action enables entrepreneurs to take more **calculated** risks and learn more.

Learning is a habit forming process. Entrepreneurs often unlearn old ideas to learn new ones, one thing at a time. Normally entrepreneurs are bombarded with ideas - by their co-entrepreneurs, workers, suppliers, customers, among others - on almost anything, often in an unorganized and unfocused manner. And extension officers try to put in more ideas. In extension situation, it is unwise to present too many ideas at a time. To be accepted, extension officers require careful planning and teaching of the changes required. No poorly presented lecture, unplanned conference, badly executed demonstration or unattractive exhibit will ever persuade entrepreneurs to act.

Recommended changes must be good; whenever possible, they must avoid too many "ands", "ifs", and "buts". Furthermore, ideas must be reinforced if they are to effect behavioural and attitudinal changes in the entrepreneurs. This means that each newsletter article, conference theme, demonstration, SSI visit, and tours must be chosen and used effectively in the task of promoting desirable action among entrepreneurs. All these extension methods - when skillfully applied - help entrepreneurs focus on a goal and act to achieve it.

2. RECOGNIZING EXTENSION METHODS

Like agricultural extension, industrial extension also employs methods or practical approaches which induce changes and improvements in the SSI entrepreneurs' attitudes, skills, and knowledge. But unlike agricultural extension, industrial extension methods are not immediately recognizable, and may even be unfamiliar to the readers. This does not mean that unique industrial extension methods do not exist. They do. The problem lies in the absence of generic terms that can aptly describe the methods. A case in point is the common service facility (CSF) centre. Housing a set of government procured machinery and equipment - deemed unaffordable by SSIs - the CSF complements an SSI group's traditional facilities with relatively modern ones, thereby expanding their production capacity. This industrial extension infrastructure is simply known as CSFs in the countries, for example, India, Indonesia, Bangladesh, etc., that put them up. The fact that the CSF employs **process demonstration, entrepreneurs' training, exhibition, workers' training, etc.**, for its extension functions is immaterial.

The absence of generic terms, however, did not hinder the use of industrial extension methods in promoting and developing SSIs. For example, countries (the Philippines' Big Brother Program, Indonesia's Foster Father Scheme, and India's Ancillary Firm Development) which aggressively promoted sub-contracting relationships between SSIs and large industries have substantially relied on various industrial extension methods. To generate enthusiasm on the program, they employed **campaigns, radio and television, newsletter and speeches** by politicians, academicians and extension officers. And to sustain the interest, they used **conferences, model SSIs and SSI plant tours**. Moreover, some countries have annually organized a search for and awarded ten or more outstanding SSI entrepreneurs. Popularized as Golden Shell Award in the Philippines, this generically uses the model SSIs extension method, that is outstanding entrepreneurs' success stories become models for others to emulate.

Hence, to facilitate presentation and immediate recognition, industrial extension methods were presented using the agricultural extension's adapted versions.

3. TYPES OF INDUSTRIAL EXTENSION METHODS

This section presents the brief description, preparation, execution, advantages, and limitations of eleven frequently used industrial extension methods^{1/}: (1) SSI Visit, (2) Conference, (3) Roundtables, (4) Process Demonstration, (5) Model SSIs, (6) Campaign, (7) Exhibition, (8) SSI Tours, (9) Newsletter, (10) Radio and Television, and (11) Walk-ins.

^{1/} Training and information transfer - while being powerful extension methods - are discussed in two separate chapters of this Manual. See Chapters 6 and 8 of this volume.

3.1. SSI Visit

3.1.1. Brief Description

Visiting individual entrepreneurs in their own factory or homes is one of the most effective extension methods. Partly because it enables extension officers to handle one specific entrepreneur's problem at a time; partly too, because it demonstrates that the extension officer cares for each entrepreneur he visits; and finally, partly because it is the extension officers' best way to get and remain intimately acquainted with their client entrepreneurs. In a visit, the extension officer and the entrepreneur **converse**. Far from being a casual conversation, the extension officer should have a purpose firmly in mind, and must steer the conversation towards reaching that purpose.

The first step is to **inform** the entrepreneur about some beneficial changes in his SSI management. The second step is to **persuade** the entrepreneur to take action. And the third is to **sustain** the entrepreneur's interest in the changes suggested. There are many "tricks" in handling this conversation. One is the skillful use of a series of questions answerable by "yes". If the entrepreneur says "yes", six or seven times during a conversation, he is most likely to answer "yes" to the extension officers' final plea for improvements. This method is employed by extension officers to : (a) gain the entrepreneur's acquaintance and confidence, (b) discuss the entrepreneur's specific problems, (c) seek out new problems, (d) teach or "extend" new skills, (e) obtain data or give information. Although, a **planned** visit is preferable, extension officers can also use cold call, that is, a visit without prior notice.

3.1.2. Preparation

In preparing for an SSI visit, extension officers should : (a) have a clear and definite purpose, (b) be punctual, that is, the extension officers should never waste the entrepreneurs' time, (c) work out an appointment, and (d) not forget the remote and unfrequented SSI clients.

3.1.3. Execution

While using this method, extension officers should : (a) develop interesting conversation topics, (b) let the entrepreneur do most of the talking, (c) never interrupt the entrepreneur, (d) speak only when the entrepreneur is willing to listen, (e) use natural and easy language - preferably, the entrepreneur's language, (f) be accurate in every statement, (g) not prolong explanations, (h) credit the entrepreneur for good ideas presented, (i) emphathize in learning and teaching, (j) conduct a "quick" tour of the plant, (k) depart as an entrepreneur's friend, (l) record

the visitation date, purpose, accomplishments, commitments and follow up activities required, and (m) if needed, share the extension service unit's brochures, leaflets, calling cards and other technical information without reservation.

3.1.4. Limitations

SSI visits have some limitations, such as : (a) over time, the number of contacts made is limited, (b) concentrated visits to responsive or progressive entrepreneurs may prejudice others against the extension officer, and (c) relatively, individual SSI visit is an expensive method.

3.2. Conference

3.2.1. Brief Description

Organized by extension officers, this is a formal meeting of SSI entrepreneurs within a geographical area or an industry sector where common rather than individual problems are shared for collaborative future action. Those attending know in advance what is to be discussed and will participate only when they are moderately interested. This is employed to : (a) effectively reach out large numbers of entrepreneurs, (b) prepare entrepreneurs for some common undertaking, and (c) obtain entrepreneurs' reactions on certain issues, activities or programs. Moreover, this method is effective in launching a new extension program or presenting an annual extension program, thus ensuring the targetted entrepreneurs' participation.

3.2.2. Preparation

In preparing for a conference, the extension officer should : (a) discuss its purpose and program of activities with the targetted participants, (b) carefully choose an appropriate date, for example, during market slumps, (c) inform targetted participants in advance and remind them shortly before it takes place, (d) secure competent speakers or resource persons, (e) carefully select and prepare the conference site, (f) arrange some social and recreational features, and (g) publicize to ensure wider participation.

3.2.3. Execution

While using this method, extension officers should : (a) promptly start and close the conference, (b) always focus the participants' attention on the conference goals, (c) avoid sharp conflicts, (d) use group psychology to arouse interest and stimulate action, (e) employ appropriate cases and examples, (f) maximize group leaders' participation in key conference activities, (g) always summarize a discussion to remind entrepreneurs on what they have heard and discussed,

(h) acknowledge self-help services, donors, and sponsors, (i) accentuate follow-up activities, (j) arrange exhibitions or film shows, and (k) distribute materials and information kits.

3.2.4. Advantages

Conferences have some advantages in that they (a) reach a large number of entrepreneurs, (b) set the stage for other extension methods, (c) use group psychology in program promotion, (d) assess reactions immediately, (e) develop personal acquaintance, (f) boost participants' prestige, (g) provide an avenue for freewheeling discussion of issues, (h) adopt new methods or products at relatively low cost, and (i) maximize peer learning among participants.

3.2.5. Limitations

Some limitations of this method are : (a) conference sites are not always adequate, (b) scope of discussion is limited and structured, (c) handling of audience is difficult because of the heterogeneity of group's interests, (d) attendance may be reduced by unforeseen and uncontrollable events, such as factions, weather, etc., and (e) intrusion by outsiders cannot be avoided.

3.3. Roundtable

3.3.1. Brief Description

A roundtable is a periodic meeting of a small - usually less than 10 participants - and possibly an informal group of entrepreneurs bound by a common interest in markets, products, processes, problems, etc. The group reaches collective decisions on commonly felt needs through information sharing and structured discussion. Inspired and determined, the group can often resolve more important problems than any external agency. Roundtables permit exchange of experiences and develop each participant's habit of talking, thinking, planning, listening, working cooperatively, and learning together. This method is used in : (a) annual assessment of an industry's performance, (b) setting of objectives, industry directions, etc., (c) collaborative problem solving and decision making, and (d) industry-level extension.

3.3.2. Preparation

To enlist members for a roundtable, the extension officer should locate key entrepreneurs interested in a problem - perhaps through SSI visits (Method 1), or request other entrepreneurs to suggest possible members. Then, the extension officer should : (a) identify possible discussion leader from among the members, (b) meet periodically with the roundtable until a given problem has been resolved,

(c) lead the roundtable's first session, and (d) invite a specialist or a panel when needed. See also sub-section 3.2.2.

3.3.3. Execution

In using this method, the extension officer should : (a) prepare a U-shaped or circular sitting arrangement, (b) ensure that roundtable atmosphere is friendly and informal, (c) begin the discussion with problem identification, (d) not dominate the discussions, (e) recognize the group's problems and stimulate the desire for solution, (f) share all information related to the problem, (g) never condemn the existing or suggested practices, (h) not have pre-conceived notions for group acceptance, (i) encourage shy members to talk and discourage speechmakers, (j) terminate a roundtable with an action program, that is, What will be done?, How will it be done?, Who will do what?, and When will it be done? and (k) undertake a systematic follow up.

3.3.4. Advantages

Roundtables have some advantages : (a) they promote objectivity, (b) every participant enhances his self-confidence after having solved a problem, (c) a group position on debatable issues evolves, (d) leaders, group interests, and problems surface, and (e) they result in group planning and collaborative actions.

3.3.5. Limitations

Roundtables have some limitations, among them : (a) group factions may hinder this method's effectiveness, (b) traditional leaders may block the free exchange of information, and (c) possibility of creating rivalries and unnecessary competition.

3.4. Process Demonstration

3.4.1. Brief Description

The extension methods so far discussed involve mostly verbal communication. Such methods are important but **seeing is believing and learning requires doing**. Along this line, one effective extension method is the process demonstration. Given before a group of entrepreneurs (or SSI workers), process demonstration shows how to carry out a "new" production method or an "old" one in a better way. Implementing an effective demonstration is a complicated task. It involves more than just the extension officer doing the process with the entrepreneurs observing. Process demonstration requires careful explanation and

understanding of the reason for each step. An each observer must do the task himself with the extension officer reinforcing each correct procedure and tactfully correcting each mistake. This trains the muscles and mind until each observer has mastered the process.

Not to be mistaken as an experiment, each demonstration is not concerned about proving a process's worthiness, but how it is done. Normally conducted either in the extension unit's premises or in an SSI, this method is applied when : (a) promoting more productive methods, (b) comparing "traditional" with "new" methods, (c) presenting new machinery, equipment, jigs, and fixtures, and (d) demonstrating in-plant productivity study results.

3.4.2. Preparation

In preparing for a process demonstration, extension officers should : (a) select appropriate topics based on targetted participants' needs, (b) carefully choose - through SSI visits (Method 1), the participants who are capable of absorbing the change, (c) plan the demonstration, considering, among others, introduction, presentation, open forum, reinforcement and stimulation activities, (d) invite a resource person or a panel, if needed, (e) publicize to build interest and secure wider participation, (f) set up the equipment ahead of time, and (g) practise the demonstration several times (see also subsections 3.2.2. and 3.3.2.).

3.4.3. Execution

In using this method, extension officers should : (a) be on the spot early to check equipment and materials, (b) arrange the site to enable all participants an undistracted view of the demonstration, (c) conduct the demonstration step by step and solicit questions at each stage, (d) request individuals to practise the skills acquired and reinforce their learning process, (e) distribute bulletins, brochures and other information related to the demonstration, (f) list the names of participants intending to adopt the method, (g) request group leaders to watch the new method's adoption, (h) use equipment that is available in the area, (i) clear doubts but avoid arguments, and (j) appreciate the entrepreneurs' existing methods.

3.4.4. Advantages

Process demonstration has some advantages : (a) is effective in transferring new skills, (b) stimulates immediate action, (c) builds confidence, (d) publicizes the extension unit, (e) enhances the extension officers' confidence in their dealings with the entrepreneurs, and (f) introduces practical changes at low cost.

3.4.5. Limitations

Process demonstration has some limitations : (a) is not suited for all subject matter, (b) needs considerable preparation, equipment, and extension skills, and (c) causes a setback, if improperly coordinated.

3.5. Model SSIs

3.5.1. Brief Description

This method requires the selection of model SSIs which are willing to adopt a "new" product or process. After fully assisting these SSIs in the adoption process, the extension officer will collect the lessons learned and document the experience. Generally resulting in a case study, this method aims to : (a) prove the worthiness of a "new" process or product, and (b) show that recommended changes are locally appropriate and profitable.

3.5.2. Preparation

In preparing model SSIs, extension officers should : (a) identify the needs of targetted entrepreneurs, (b) with specialists, outline a plan for the changes to be introduced, (c) limit the scope of the change to be introduced, (d) select model SSIs in different areas, avoiding those that have already participated in similar undertakings before, (e) select model SSIs which are frequented by other entrepreneurs, (f) plan the introduction process for the change - it is better to have one effective introduction than a number of half-hearted attempts, (g) discuss thoroughly the plan with the model SSIs' entrepreneurs, (h) plan the case documentation process in advance, (i) prepare the necessary raw materials and equipment for the model SSIs, and (j) publicize the undertaking.

3.5.3. Execution

In using this method, extension officers should : (a) launch model SSIs in the presence of other entrepreneurs, (b) as planned, periodically visit and render assistance to model SSIs, (c) note all observations, (d) summarize, record and establish proofs of the adoption of new process or product, (e) have a written comparison between adopters (the model SSIs) and non-adopters (all others), (f) let the model SSIs' entrepreneurs tell others about their experiences and feelings, (g) show the benefits of adopting changes through tours, publicity, etc., (h) in case of failures, analyse causes, and (i) use successful results in conferences, roundtables, SSI visits, newsletters, case studies, etc.

3.5.4. Advantages

As an extension method, model SSIs has some advantages : (a) effectively introduces a new but beneficial process or product, (b) convinces the still doubting entrepreneurs and workers by "seeing is believing", (c) provides factual data, (d) enhances extension officer's experiences, helping him to recommend with greater conviction and confidence, (e) develops local leadership, and (f) persuades entrepreneurs that extension officers are pragmatic.

3.5.5. Limitations

Model SSIs has some limitations, such as : (a) finding suitable entrepreneurs willing to keep records to results is often difficult - remember! Most of them do not even keep financial records, (b) records may be affected by some uncontrollable and exogenous factors, like flooding of the plant, fire, drastic personnel turnover, etc., (c) unsuccessful results dampen the participants' receptiveness of other proposed changes, (d) it is not suitable for all recommended changes, (e) requires elaborate and thorough preparation - its cost is very high, (f) it sometimes creates rivalries, and (g) model SSIs' entrepreneurs can become potential technological gatekeepers - they can control the dissemination of the "new" product or process.

3.6. Campaign

3.6.1. Brief Description

A campaign is an intensive extension activity undertaken at opportune moments for brief periods. It focuses on a particular problem to stimulate the widest possible interest among SSI entrepreneurs. Campaigns can be used only after a preferred process or product is found acceptable to local entrepreneurs through other extension methods. It is employed to create a conducive psychological climate for introducing an innovation.

3.6.2. Preparation

In preparing for a campaign, extension officers should : (a) find the needs of targetted entrepreneurs, (b) consult local entrepreneurs and agencies, (c) use specialists, (d) ensure the availability of technical services and supplies, (e) publicize, (f) select a suitable period, (g) announce the dates well in advance, and (h) build up enthusiasm among entrepreneurs.

3.6.3. Execution

In using this method, extension officers should : (a) work through leading or progressive entrepreneurs, (b) execute

as planned, (c) observe the campaign closely and throughout, (d) ensure that bottlenecks are eliminated, (e) make individual contacts and monitor reactions, and (f) find the failures to analyse causes.

3.6.4. Advantages

A campaign has some advantages : (a) a large number of entrepreneurs are reached in the shortest time possible, (b) it gives quick results at relatively low cost, (c) successful campaigns create an atmosphere conducive for the adoption of other extension methods, and (d) it expands the demand for extension services.

3.6.5. Limitations

A campaign has some limitations, namely : (a) it is advantageous only when all targetted entrepreneurs cooperate in the campaign, (b) it cannot be adopted when new process or product involves many complicated technicalities, (c) it requires thorough preparation and close coordination with relevant technical agencies, and (d) it is applicable to changes which are only effective when many entrepreneurs use them.

3.7. Exhibition

3.7.1. Brief Description

Exhibition is a graphic display of models, product samples, charts, board diagrams, posters, photographs, 3-dimension layouts, etc., arranged in sequence to deliver a significant message to the viewers. Generally, exhibition arouses interest, creates desire for learning and encourages entrepreneurs to act. It may be effectively applied in some extension topics, notably: productivity improvement, personnel management, safety practices, accident prevention, simple bookkeeping practices, etc. Normally, it is employed to : (a) acquaint entrepreneurs with "new" but better SSI management practices, (b) promote understanding and create goodwill for extension services, (c) influence entrepreneurs to adopt better and more productive methods, (d) take advantage of local festivals and fairs, and (e) effectively use blank walls.

3.7.2. Preparation

In preparing for an exhibition, extension officers should formulate the exhibition concept, considering, among others: the target audience, purpose, exposure, message, and media. Moreover, they should design the exhibition to be simple, understandable, transmitting one message at a time, and using local materials as far as possible.

3.7.3. Execution

In using this method, extension officers should : (a) arrange exhibition materials in sequence and provide appropriate continuity, (b) use few objects, (c) decorate the exhibits to immediately capture the viewers' attention, (d) write texts and labels in local language, legibly and briefly, (e) effectively explain the exhibits, (f) employ action to attract attention and arouse curiosity, (g) distribute literature to reinforce the exhibits' theme, (h) if possible, use multi-media presentation, for example, video cassettes, photographs, slides, etc., and (h) estimate the exhibition's effectiveness by noting attendance, enquiries, requests for additional information and suggestions given.

3.7.4. Advantages

Exhibition has some advantages, viz : (a) publicizes a newly established extension service, (b) is impressive, imaginative and appealing, (c) caters to heterogeneous audience, (d) fits into festive occasions, (e) promotes creativity, (f) stimulates competitiveness when used for that purpose, and (g) creates markets for certain products and services.

3.7.5. Limitations

Exhibition has some limitations : (a) requires much preparation, logistics, and investment, (b) affords limited exposure, (c) cannot handle all topics, (d) cannot present all the phases of the work, and (e) cannot be repeated in the same place without substantial adaptations.

3.8. SSI Tour

3.8.1. Brief Description

An important extension method, SSI tour invites a group of entrepreneur-clients for a half or full-day visit to two or four SSIs (preferably in another geographical area) or to relevant technical institutions to discuss and observe one or more improved practices of managing SSIs. A model SSI, for example, can show the tour participants the results of the changes introduced by extension officers.

But an effective SSI tour, like many other extension methods, requires careful preparation and skillful implementation. Assembling entrepreneurs for the tour requires the same skills as organizing a conference (Method 2) or a roundtable (Method 3). But whereas in conferences and roundtables entrepreneurs sit down and stay in one place, on an SSI tour they are standing and constantly moving about. Usually, it is difficult to capture their attention because they constantly talk among themselves. To emphasize a point,

the extension officer should assemble the tour participants in one place to start a discussion. This implies the significance of detailed planning and definitive programming of tour activities. SSI tour convinces the entrepreneurs by enabling them to see the results of adopting a new process, product or skill.

3.8.2. Preparation

In preparing for an SSI tour, extension officers should :
(a) choose the places to visit, (b) program things to see and learn, (c) select the tour participants, (d) facilitate participants' decision on the dates, time, period, transport, food, etc., (e) encourage the participants to share the responsibility for food, recreation, accounts management, etc., (f) communicate with the places or agencies to be visited, (g) ensure that the group is of manageable size, (h) arrange relevant supplies and services needed, and (i) not make the schedule too tight.

3.8.3. Execution

In using this method, extension officers should : (a) sustain the groups interest, (b) permit everyone to see, hear and discuss, (c) generously allow for open forums and discussions, (d) help tour participants to take notes of interesting topics, (e) provide for recreation, (f) summarize the significant points obtained from the visit, (g) lead their interest to action, (h) recognize and appreciate the quick learners, (i) use the quick learners to teach others, and (j) build up news stories.

3.8.4. Advantages

An SSI tour has some advantages, such as : (a) stimulates entrepreneurs to act, (b) makes participants become active cooperators, (c) promotes closer relationship between extension officers and entrepreneurs, and (d) develops leadership.

3.8.5. Limitations

An SSI tour has some limitations : (a) expensive, (b) difficult to arrange a schedule acceptable to all participants, (c) if badly conducted, leads to frustration, (d) effectiveness declines if other interests overlap with the tour's learning objectives.

3.9. Newsletter

3.9.1. Brief Description

Newsletter is a periodical informing the entrepreneur readers

on the activities of the extension service unit, developments within the SSI community and other SSI promotion and development news. To some extent, newsletter permits the delivery of extension services to a broad mass of audience including policy-makers, teachers, politicians, among others. When regularly published, a newsletter becomes an effective extension method.

3.9.2. Preparation

In preparing a newsletter, extension officers should : (a) define the purpose of the newsletter, (b) design the format of the newsletter, (c) distribute the writing responsibility, not only among the extension officers but also contributing entrepreneurs, (d) encourage wider participation, and (e) effectively manage newsletter-related activities to minimize cost and logistics wastage.

3.9.3. Execution

In using this method, extension officers should : (a) use as much locally generated news materials as possible, (b) make the language clear, concise and understandable by local entrepreneurs, (c) use materials having local appeal, (d) report entrepreneurs' accomplishments which are worthy of emulation, (e) disseminate the newsletter on planned and announced dates, (f) report the schedule of future extension activities, (g) report the progress of on-going extension activities, (h) invite readers to react and write feedback notes, (i) invite guest writers to discuss issues of concern, (j) minimize logistics costs, and (k) have enough copies to pass around.

3.9.4. Advantages

Newsletter has some advantages : (a) reaches mass audience, (b) provides an effective printed channel of communication, and (c) records the accomplishments of the extension officers and the community of entrepreneurs.

3.9.5. Limitations

Newsletter has some limitations : (a) relatively costly, (b) takes a considerable time to be thoroughly accepted, and (c) difficult to sustain, especially during the introduction stage.

3.10. Radio and Television

3.10.1 Brief Description

This method employs radio and television media to communicate en-masse with SSI entrepreneurs. Besides transmitting

interesting messages, this method uses program variations in sustaining the attention and interest of its audience. Program variation may include panel discussions, interviews, lectures, talks, dialogues, dramas, debates, announcements, coverage of extension events, presentation of process demonstration results, etc. Radio and television programs reach a large number of entrepreneurs at a time and provoke listeners' and viewers' thinking about current problems. This can also disseminate information rather quickly. Since radios are more affordable than television, radio programs must be preferred when possible.

3.10.2. Preparation and Execution

In using this method, extension officers should : (a) encourage listeners and viewers to tune in to the programs, (b) motivate the audience to express their likes, needs and opinions to the broadcasting stations, (c) prefer periodic to one-spot programs, (d) announce interesting programs in advance, (e) pool the area's gifted or talented persons and arrange for their participation, and (f) use multi-program variations in presenting extension messages.

3.10.3. Advantages

Radio and television have some advantages : (a) reach many people at low cost, (b) disseminate urgent information immediately, (c) pool and make available a wide range of experience, (d) facilitate learning by talks of experts, and (e) stimulate the development of local talents and abilities.

3.10.4. Limitations

Radio and television have some limitations : (a) lack of receiving sets, (b) feedback is hampered, (c) recommendations may not be universally applicable, and (d) broadcasting stations may not be accessible to extension officers.

3.11. Walk-Ins

3.11.1. Brief Description

Walk-ins happen when an entrepreneur or a group of entrepreneurs visit the extension officer in his office to request for his assistance. Off hand, it may seem strange to discuss walk-in as an extension method since only few extension officers permanently stay in an office. The problem is that when extension officers move about, it is difficult for entrepreneurs with urgent problems to find him. Hence, an extension officer needs to be present at a particular place and time.

An extension "office" need not be elaborately furnished. But it must be a place where the extension officer is regularly present during certain hours on certain days. When the office is conveniently located and the extension officer is consistently present at specified times, entrepreneurs will develop the habit of walking in. Problems may be dealt with there and then. If not, arrangements can be made for an SSI visit (Method 1).

Caution! The extension officer may sit too much of the time in his "office" waiting for entrepreneurs to come rather than him going to them. Two hours, three times a week, or three hours two times a week, are usually enough. But what should he be doing when no entrepreneur shows up? He should be planning his future extension activities, such as preparing for SSI visits, process demonstrations, SSI tours, etc.

Normally, walk-ins are applied to : (a) establish closer contacts with entrepreneurs, (b) build interest of individuals and groups, (c) discuss problems in greater detail, and (d) refer entrepreneurs to other relevant technical institutions.

3.11.2. Preparation and Execution

In using this method, extension officers should : (a) cordially welcome the entrepreneurs, (b) put the entrepreneurs at ease, (c) keep the office attractive with relevant exhibits, (d) provide information, (e) record the visitors and follow-up required, and (f) discreetly discourage unnecessary calls.

3.11.3. Advantages

Walk-ins have some advantages : (a) result in satisfaction of visiting entrepreneurs due to repeated visits, (b) enhance prestige and reputation of extension officers, (c) provide extension officers' insights into their community of SSIs, and (d) open avenues for other extension methods.

3.11.4. Limitations

Walks-ins have some limitations, namely : (a) extension officers cannot and must not be at the office all the time, (b) entrepreneurs in the extension officer's absence may not be satisfied with the information and guidance obtained from others, and (c) certain entrepreneurs might try to gain personal ends through the extension officers.

4. SELECTING THE EXTENSION METHODS

Selecting the appropriate industrial extension methods is not easy. To date, no hard and fast rule exists on the selection of appropriate extension methods. For most part, this is because definite relationships governing human behaviour change do not yet exist. Hence, selection still depends on many factors, the most important of which is the situation at hand. Although still inadequate, extension methods may be selected according to audience and purpose. Depending on the audience, industrial extension methods may be categorized under three classes : individual, group, and mass (see Table 4.1.).

Table 4.1.

INDUSTRIAL EXTENSION METHODS CLASSIFICATION BY AUDIENCE

<u>Audience</u>	<u>Methods</u>
1. Individual	1. SSI Visit 2. Walk Ins 3. Model SSIs
2. Group	1. Roundtable 2. Process Demonstration 3. SSI Tour 4. Model SSIs
3. Mass	1. Conference 2. Campaign 3. Exhibition 4. Newsletter 5. Radio and Television

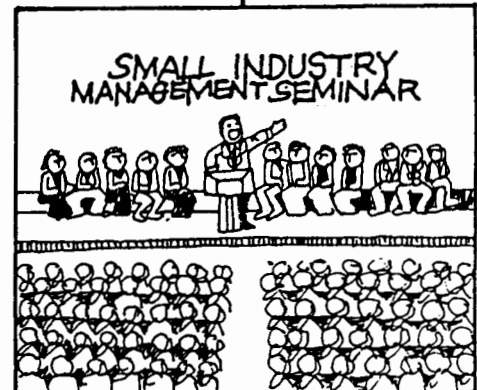
Extension Methods



INDIVIDUAL CONTACT



GROUP CONTACT



MASS CONTACT

Similarly, extension methods may be selected using the purpose of the extension engagement. In terms of purpose, industrial extension methods may be classified under four categories, i.e. to communicate, to demonstrate, to train, and to inform or announce (see Table 4.2.).

Table 4.2.

INDUSTRIAL EXTENSION METHODS CLASSIFICATION
BY PURPOSE

<u>Purpose</u>	<u>Methods</u>
1. To Communicate	1. SSI Visit 2. Conference 3. Roundtable 4. Walk Ins 5. Newsletter 6. Campaign
2. To Demonstrate	1. Process Demonstration 2. Model SSIs 3. Exhibition 4. SSI Tour
3. To Train	1. Roundtable 2. Conference 3. SSI Tour 4. Radio and Television 5. Process Demonstration
4. To Inform or Announce	1. Newsletter 2. Radio and Television

While the eleven extension methods discussed here may be used individually, many extension officers found that combining these methods in an extension activity yields more effective results. This may be explained by the fact that **entrepreneurs** learn by hearing, by seeing and by doing. For example, in the Philippines - a country with more than 7 000 islands, a machinery and equipment floating exhibition for SSIs was brought nationwide to support the industrial extension's productivity improvement drive. Dubbed as Machinotech Project, the exhibition visited major port cities in the country using a naval ship. This elaborate exhibition was backed up by other extension methods, such as continuous process demonstration, a series of productivity conferences, and a productivity improvement campaign held in each port of call. About 4 000 SSI entrepreneurs viewed the exhibits and 500 more attended the conferences. Moreover, process demonstration and campaign stimulated significant productivity improvement interest.

The difficulty of selecting the appropriate extension method is not an excuse for not knowing the methods. Since appropriateness is dictated by the situation, extension officers should always be prepared to apply them skillfully when the situation so warrants. And like many other professional skills, proficiency in the use of industrial extension methods can only be developed by practice, more practice, and more and more practice.

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CHAPTER 5: SETTING UP AND OPERATING AN EXTENSION SERVICE

SUMMARY

1. IDENTIFYING CLIENTS AND THEIR NEEDS
2. CHOICE OF SERVICES
3. THE DELIVERY SYSTEM
4. ORGANIZING THE EXTENSION SERVICE
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 - 4.2. Generalists or Specialists
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5. SELECTION AND TRAINING OF STAFF
6. OPERATING STRATEGIES
 - 6.1. Client Strategies
 - 6.2. Project Strategy
7. PROMOTING THE SERVICE
8. ESTABLISHING AND MAINTAINING CREDIBILITY
9. NETWORKING

10. CLIENT FILES

- 10.1. Planning
- 10.2. Quality Control
- 10.3. Justification for the Service
- 10.4. Use of a Microcomputer

11. PHYSICAL FACILITIES

- 11.1. Office Space
- 11.2. Library
- 11.3. Laboratories, Workshops, Pilot Plants
- 11.4. Photographic Equipment
- 11.5. Photocopy Machine
- 11.6. Duplicating Equipment
- 11.7. Transport
- 11.8. Shared Facilities

12. ISSUES IN MANAGING AN EXTENSION SERVICE

- 12.1. To Charge or Not to Charge
- 12.2. Personnel Turnover
- 12.3. Remuneration of Extension Officers
- 12.4. Marginality
- 12.5. Relationships with Professional Consultants

CHAPTER 5: SETTING UP AND OPERATING AN EXTENSION SERVICE

SUMMARY

This chapter describes how to set up and operate an industrial extension service. Starting with an analysis of the clients and their needs, it covers the selection of services to be offered, the design of the delivery system and the choice of operating strategies. The chapter goes on to discuss organization, selection of staff, promotion of the service, building and maintaining credibility, creating a network and setting up office records. The important issues involved in the management of the service are also described.

1. IDENTIFYING CLIENTS AND THEIR NEEDS

Since an industrial extension service exists to serve the needs of industry, the design of a new extension service starts with a consideration of the SSIs to be served.

Who are they? Of what type and size? Where are they located? What are their real needs?

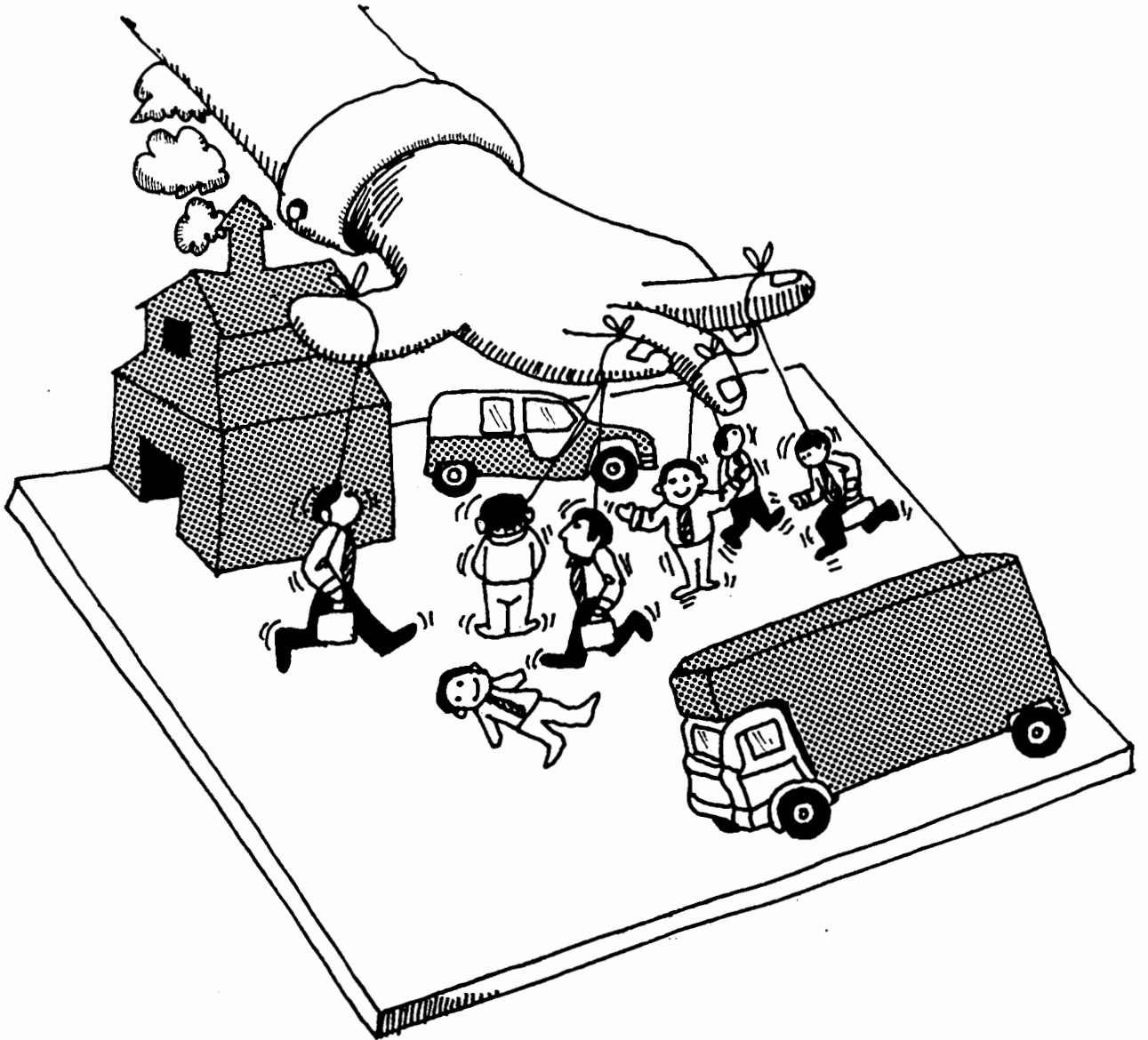
The planners of the new extension service should first gather all available documented information about industries in the regions that the extension service is destined to serve. Such information should include the type of industries, number of employees, markets served, products manufactured, processes employed, etc. Sources of such information include :

- government statistics
- industry associations
- recent economic studies of the region

From a review of this information, it should be possible to form a general picture of the composition of SSIs in the region, and to decide who the target clientele should be. If the service has a mandate to serve all SSIs, then an appropriate definition of "small industry" will be required. Alternatively, one could start by concentrating on only one or two industrial sectors.

Once the target clientele has been decided, their needs, their attitudes and the best means of assisting them must be determined. This is best done by undertaking a survey of a representative sample of the SSIs concerned.

The sample size should be small enough so that the SSIs can be visited individually within a reasonable time period. Statistical accuracy of the sample results is less important than the development of a good "feel" for the SSIs' problems and attitudes.



SETTING UP AND OPERATING AN EXTENSION SERVICE

Data should be collected for each SSI visited regarding its size, type, number of employees, markets served and production processes employed. In addition, the entrepreneur should be encouraged to express their principal concerns and problems.

It should be recognized that problems mentioned by the entrepreneur may be symptoms and not causes. Thus, an entrepreneur who complains of a lack of working capital will not be aided by a loan if the basic cause is inefficient production leading to an inadequate profit margin. Similarly, an SSI with a low sales volume will not be helped by identifying new markets if the product is of poor quality.

Thus, the planners of the new extension service should seek to identify the true causes of the SSI's problems so as to determine the types of assistance most likely to be required among the target clientele.

During the survey, the services that already exist to serve SSIs in the region should be identified and their effectiveness evaluated.

2. CHOICE OF SERVICES

Having identified the target clientele and their needs, the next step is to determine what services the extension service should offer. The following are some of the services to be considered :

- a) **Technical Information**, covering the properties of materials, capacities of machines, sources of supply, standards, etc;
- b) **Technical Assistance**, to help the client design tools, select machines, develop a process, or solve a production problem;
- c) **Marketing Assistance**, to help in identifying new market opportunities;
- d) **Financial Aid**, to arrange for loans or grants;
- e) **Management Assistance**, to analyse problems and design management systems, for example, financial analysis, cost control;
- f) **Training of Client Personnel**, to impart new knowledge or upgrade existing skills, for example, productivity improvement training, quality control program, etc;
- g) **Laboratory and Pilot Plant**, providing specialized manufacturing or testing facilities using processes and equipment that are too advanced or too costly for individual clients to undertake themselves, for example, heat treatment, quality testing;
- h) **Feasibility Studies**, to determine opportunities to manufacture new products or to establish entirely new industries.

Although many urgent needs may have been identified during the sample survey of clients, it is probable that the resources allocated to the extension service will be inadequate to fill them all, so a choice will have to be made regarding which services to provide first. The choice will depend on the identified needs, the resources available and the range of services that already exists.

As a general rule, it is best to start by doing first the things that offer the best chance of achieving some success for a given commitment of resources. The initial services to be offered then should be ones that the clients will accept and that the extension service has the resources to provide.

A good starting point is technical information. It can be provided at relatively low cost and effort, all SSIs need it in some form or another, and it involves widespread contacts. Other services can then be added progressively as the extension service gains experience and additional resources are made available.

Many existing extension services have started in this way and they have found it to be a good strategy to concentrate on one service at a time and to get it to operate satisfactorily before offering another. In this manner they build solid reputations and develop credibility with their SSI clientele.

3. THE DELIVERY SYSTEM

The most important job of any extension agency is to learn how to deliver services to SSIs in an effective manner.

Entrepreneurs will not put their confidence in a service just because it promises to help them. The new extension officers will find that they will have to work hard to build the necessary climate of confidence between themselves and their SSI clients before their offers of assistance are accepted.

Some of the practical implications of creating an effective delivery system are discussed below.

Direct **personal** contact between the donor and the recipient of advice and assistance is essential where SSIs are concerned. This implies that the extension officers must visit their clients frequently enough to become known and stay long enough to be useful.

The **quality** of service offered must be adequate to truly help the entrepreneur and not to cause him to waste valuable time or resources. Thus, the extension officers must possess appropriate qualifications and experience.

The service must have **limits** on what it offers, both in terms of the range of services and the lengths to which it is prepared to go. The service should seek to upgrade the technical and managerial

competence of its SSI clients by helping them to help themselves, with the ultimate aim of helping the entrepreneurs to become self reliant and independent. The extension service should not become a crutch to support ineffective entrepreneurs. This means that the service must establish appropriate policies and operating procedures.

Finally, the service should be reliable. It should be available when needed, and achieve what it promises. Policies and personnel should be stable and not change from day to day.

4. ORGANIZING THE EXTENSION SERVICE

The extension service exists to provide services to SSIs, and the extension officer plays the pivotal role in this activity. Thus, the organization should be structured to provide the maximum of support to the extension officer in carrying out his job.

Some of the factors to be considered in organizing the extension service are the number of extension officers and their functions, the number of regional offices, and the range of different services provided.

4.1. Number of Extension Officers

The number of extension officers required can be calculated by taking into account the number of potential clients, the percentage of SSIs who actually can be helped and the average number of hours per client per year. For example, suppose there are 2 000 SSIs in a region, and past experience shows that 25% of these can be assisted by committing an average of 3 days a year to each. Then, (assuming 250 working days in a year) the number of extension officers required is :
$$(2\ 000 \times .25 \times 3)/250 = 6.$$

Some of these factors are difficult to estimate in advance, so a pilot project in a limited area may be necessary in order to generate the necessary data.

A more serious problem is that few extension services have sufficient resources to enable them to provide a complete coverage anyway.

In practice then, most extension services engage as many extension officers as they can afford, and add personnel as additional resources are made available. The rule of thumb is to keep on hiring additional extension officers as long as the benefit generated by each additional one more than offsets his cost.

4.2. Generalists or Specialists

Extension officers can be either generalists or specialists. A generalist extension officer is one who can serve any SSI, regardless of the type of industry or problem. The use of generalist extension officers is appropriate where the industries are dispersed and relatively unsophisticated and the extension officers are knowledgeable about a wide range of industrial problems. Generalists tend to build up long-term relationships with their clients and to see their problems from a broad perspective.

Specialist extension officers specialize in one particular industrial sector (e.g. foundries) or function (such as quality control). Specialists can be effective where the industries are more concentrated and the technology is somewhat more advanced.

Some of the advantages of both approaches can be realized by using a combination of generalist and specialist extension officers. The generalists provide the continuity of contact and tackle the simpler problems, while the expertise of the specialists is available for the more difficult cases.

4.3. Individual versus Team Approach

Closely linked to the question of specialist or generalist is the issue of an individual versus a team approach.

Some extension services make it a practice of visiting client SSIs in teams of two or more. The advantages are faster problem solving and mutual stimulation between the extension officers. Against these must be weighed the increased cost and the possible negative reaction of the entrepreneur when visited by a team.

For example, one extension service, while undertaking a pilot project, sent extension officers around in teams of two to visit selected industries. The pilot project was completed on schedule with a high rate of impact on the industries in the region.

One obvious application of the team approach is to give new extension officers on-the-job training under the guidance of experienced extension officers.

4.4. Regional Offices

When all the industries to be served are concentrated in one region, a single extension office will suffice. However, if the SSIs are spread around with significant numbers of them located more than a day's journey apart, then regional offices should be considered.

Regional offices should be located so as to minimize travel and to maintain a physical presence in each important region.

The size of each regional office is another consideration. Sociological research shows that six to twelve is the optimum number of co-workers in a small independent unit. Below that range there is a lack of stimulation and underutilization of facilities, while larger numbers require more controls and tend to increase bureaucratic inefficiencies.

Since regional offices are established primarily for client convenience, it is desirable that routine administrative matters such as pay, expense claims, equipment purchases, etc., remain centralized at the headquarters' office, along with the determination of policies and operating procedures. The headquarters' office can also support the regional offices by providing technical information and specialist assistance when required.

As an alternative to establishing regional offices with permanent staff, satellite offices can be established to serve far areas. The satellite offices will have part-time staff and scheduled visiting hours.

4.5. Organization Chart

The lines of authority and responsibility within the extension service should be formalized on an organization chart. For an average size extension service, a three-level hierarchy is recommended : director, regional managers and extension officers.

In cases where specialists from different disciplines are spread among several regional offices, a combination of hierarchical and functional management may be advantageous. A specialist may be under the authority of a regional manager for day-to-day operating matters, but at the same time be answerable to a senior specialist at head office for the technical aspect of his work.

The director and the regional managers should be experienced extension officers themselves, preferably promoted from within. The advantage of promoting from within is that the managers will have an intimate knowledge of the operational activities of the service. It is also desirable that these persons continue in active extension work and undertake their administrative duties on a part-time basis. A "stay at home" manager of an extension unit will quickly lose touch with the realities of the industrial climate and will become less effective as a result.

If the extension service is a unit within a larger organization, the extension service director should be on a level with the other department directors, reporting to the director general of the organization. There should be well developed formal and informal lines of communication between the extension officers and the other departments so that the widest possible range of knowledge is brought to bear on client problems.

Figure 5.1. shows a typical organization chart for an average size extension service.

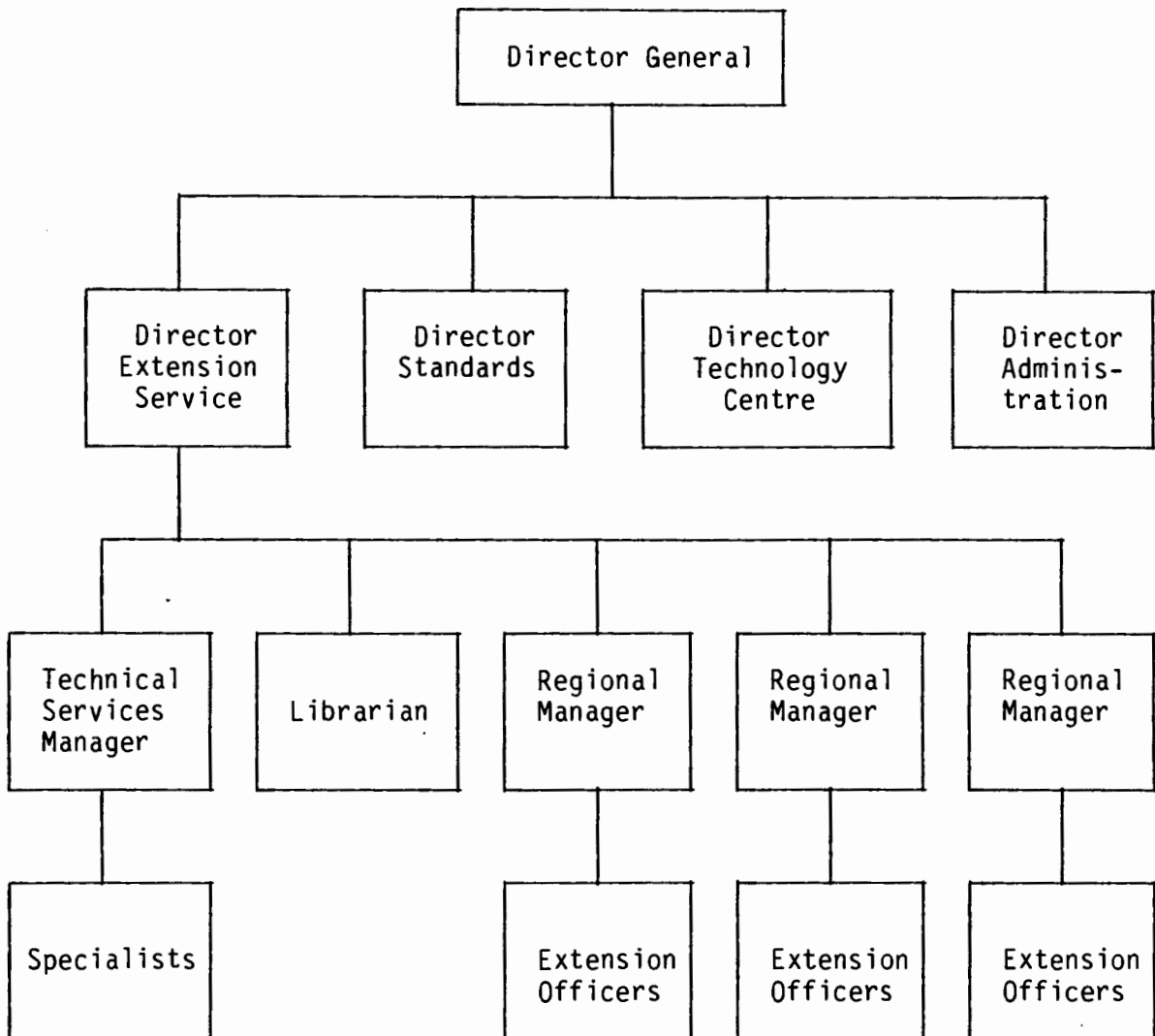


Figure 5.1. Typical Organization Chart of an Extension Service Unit

4.6. Coordinating Activities

Considerable effort will have to be spent in coordinating the activities between the various groups involved in the extension service, such as headquarters and regional office staff, and the different classes of specialists. Frequent personal contacts are desirable, such as visits of head office personnel to regional offices, or vice versa.

An annual conference of all extension officers has been found to be very useful for an exchange of views, updating, policy formulation, planning and case study presentation.

5. SELECTION AND TRAINING OF STAFF

The services offered determine the staff to be hired. However, the relationship is interactive; the personnel that can be hired often influence what services are offered.

For example, an experienced metallurgist applied for a job with one extension service. Although a generalist with a broader background was actually being sought, the metallurgist's qualifications were so impressive that he was hired and a specialist position was created to suit his talents.

The competent extension officer is the embodiment of two separate roles - technician and salesman. As a technician, he needs a firm grasp of the practice of his field of knowledge, and he must be capable of applying it to the analysis and solution of problems in SSIs. As a salesman, he must be able to convince his clients of the soundness of his advice.

The qualities to look for when hiring new extension officers are thus a formal training in an appropriate branch of knowledge, some experience in applying it, and evidence of sales ability.

One extension service in a developed country requires that its candidates have a university degree in engineering or applied science and at least ten years practical experience in industry.

In less developed countries there is seldom such a large pool of experienced talent upon which to draw, and extension services tend to hire recent university graduates. For generalist positions, graduates in industrial engineering are often favoured due to the wide range of industrial management techniques that they have at their disposal.

In some cases, extension services are forced to hire candidates with technical school or secondary school training due to a shortage of more qualified manpower.

In all these cases, formal programs of training are required for the new extension officers in order to bridge the gap between present and required skills. The design of such training programs is covered in Chapter 6.

In addition to any formal training that may be required, a period of apprenticeship under an experienced extension officer has been found to be of great value in preparing the new extension officer for his job.

6. OPERATING STRATEGIES

"Which clients to serve? What projects to undertake? When to stop?" are questions the extension service will have to find answers in a manner consistent with its policy objectives.

There exists a wide range of options to choose from. The service can elect to aid the maximum number of clients during a year and perforce spend minimum time with each. Alternatively, it can undertake a limited number of major projects.

The general rule should be to maximize the total impact of the service. To do this effectively the extension service will have to adopt appropriate strategies with respect to the clients it selects and the project it undertakes.

6.1. Client Strategies

Potential clients come in several categories. At the top end of the spectrum are the SSIs run by dynamic and successful entrepreneurs. They tend to accept assistance readily, but only if they have confidence in the competence of the extension officer. They are intolerant of time wasting activities and theoretical discussions. They are the best clients because they act quickly on sound advice, and the results are readily observable.

At the other end of the spectrum are the outmoded, dying SSIs. Their entrepreneurs are set in their ways and have difficulty in absorbing new ideas. Much time and effort can be wasted on them for little result.

The majority of potential clients, however, fall into some middle ground. They are neither dynamic nor stagnant, but somewhere in between. They represent the real challenge to the extension officer for they can be helped. Their technologies and managerial skills can be upgraded, although often at considerable effort.

An appropriate strategy for maximum impact then, is to concentrate on the progressive SSIs and the more promising of the intermediate category. The stagnant and dying SSIs are best left alone.

For example, one extension service has a deliberate policy of assisting only the top firms in each industrial sector. Their reasoning is that rationalization of the industry is bound to take place and that only the best firms will survive and grow. Thus they feel that it is better to help these firms rather than waste time and effort on industries that are destined to be absorbed or disappear.

In some countries, such as Indonesia, extension officers work with SSI "clusters" rather than individual SSI. In this case, the extension officers will achieve better results if they concentrate on clusters in industrial sectors that are dynamic and growing, rather than those that are stagnant or in decline.

This strategy of dealing only with the best is called "elitism"; it goes against notions of fairness and equality, and may be difficult to implement in some situations. However, the principle of concentrating assistance on those clients who can best profit from it is economically sound and should be followed wherever possible.

6.2. Project Strategy

The number of different projects that can be undertaken in a given period depends on the type of services being offered.

Technical information, for example, by its nature lends itself to a broad coverage. One extension officer specializing in technical information can process several hundred technical enquiries a year. Engineering assistance, on the other hand, may require several days or even weeks per project in order to have any real effect.

For each kind of service then, there is typically a minimum or "threshold" effort that must be committed before any results can be expected. Beyond the threshold, more effort committed to the project will produce proportionally more result, up to the point where the law of diminishing returns starts to take effect. Beyond this point, each additional day spent on the project will yield less and less additional result.

The relationship of result to effort for a project often follows the characteristic "S" curve shown in Figure 5.2.

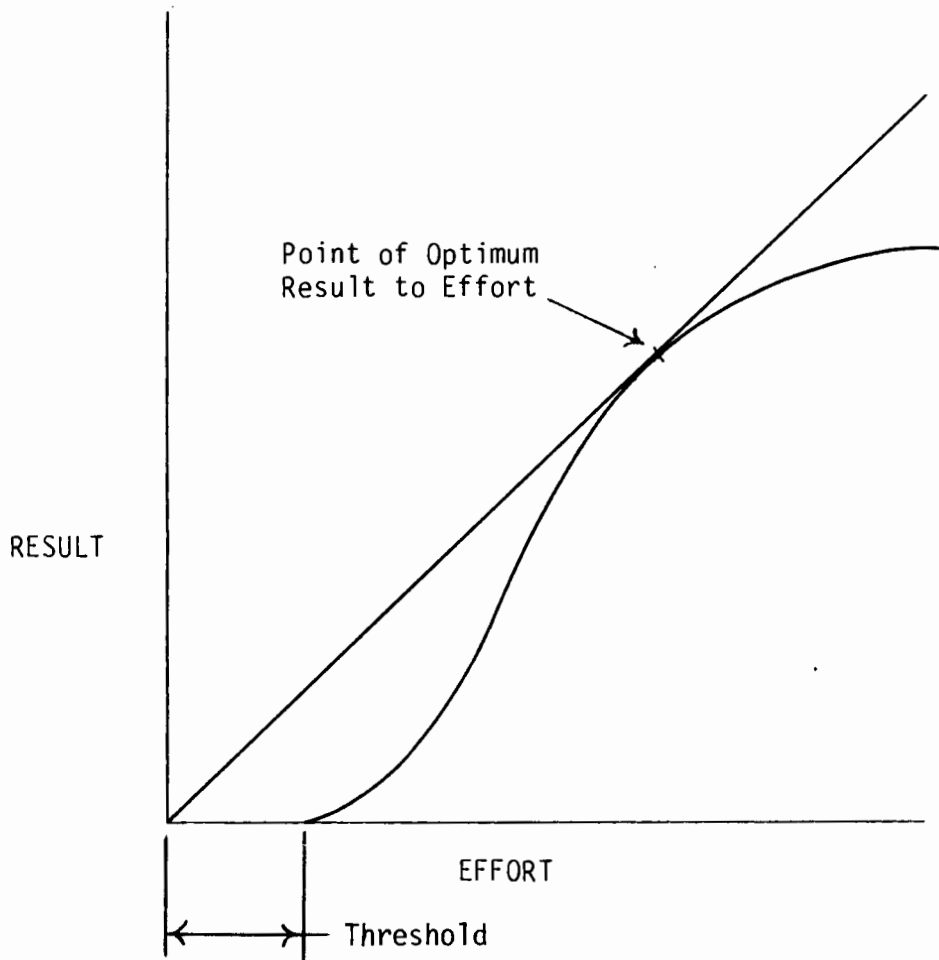


Figure 5.2. Result to Effort Curve for an Extension Project

The most successful projects are those where the threshold effort is low and the subsequent slope of the curve is steep. It should be noted, however, that the optimum result to effort ratio can occur long before the maximum result has been obtained. A high threshold or a flat curve will result in a lowered result to effort ratio.

The key elements then to a successful project strategy are selecting which project to start, and deciding when to stop.

6.2.1. Selection of Projects

Appropriate selection of projects means selecting projects having a good probability of success and a high result to

effort ratio. In practical terms, this means that each project selected should meet the following conditions :

- the project falls within the mandate of the extension service,
- it is of major importance to the client,
- the extension officer has the technical competence required,
- the client is capable of absorbing the proposed assistance,
- the project can be completed in the time allotted.

Projects having the highest probability of success are those undertaken to find an answer to an immediate and costly problem. If an acceptable solution is found, implementation is almost assured.

For example, one SSI had a whole production line shut down and expensive new machinery standing idle due to technical problems in its operation. The extension officers designed appropriate modifications which were immediately put into effect and production was resumed in a matter of days.

Projects that envisage only long-term results with minimal short-term benefits are less likely to receive wholehearted support from the client, and are correspondingly less likely to be successful.

6.2.2. Terminating Projects

Terminating a project can be a difficult decision. In fact there are two kinds of occasions when a project should be considered for termination.

At an early stage in the project, if it becomes evident that the threshold effort will be greater than anticipated, the project should be re-evaluated to see if the extension officer's time can be better spent elsewhere. It must be recognized that there are some projects that will never be successful, and it is a mistake to continue a project just because a certain amount of effort has already been expended on it.

After a project has had considerable success is another occasion to consider terminating it. In this case it may be that the major benefits have already been realized and additional effort is unwarranted.

As a practical matter, it is a good idea to have all projects exceeding a given number of days subjected to periodic reviews by persons other than the extension officers directly involved.

7. PROMOTING THE SERVICE

Promotion of the extension service involves creating and maintaining an awareness of its capabilities so as to encourage potential clients to seek assistance. Promotion will be required during the start up phase and also on a continuous basis during the life of the service.

The backbone of the promotional activities will be regular visits enabling the extension officer to meet the entrepreneur face to face. The visits may be prearranged or unannounced depending upon the cultural environment and the prevalent practices in the region.

During such a visit the extension officer will describe the various services offered by his organization and explain how they can assist the entrepreneur. If possible, a specific problem will be identified, the method of solution, the benefits, the time required and the costs, if any, will be described. The extension officer should leave pamphlets describing the various services to the entrepreneur.

Other promotional methods include :

- meetings with groups of entrepreneurs through the auspices of regional or trade associations,
- direct mailing,
- in-house publications,
- advertising by press, radio or television,
- arranging for favourable publicity in the media,
- "piggy backing", or the use of other organizations already in contact with potential clients (for example, financial institutions) to recommend the extension service.

A very effective means of promotion is by word of mouth. This relies upon clients being very satisfied with the service and having no inhibitions about recommending it to their friends and associates. Thus, it depends more on the service's operational effectiveness than upon deliberate promotional activities.

For example, one garment manufacturing SSI received assistance in plant layout. Within a month the extension officer had received three requests for similar assistance from other garment producing SSIs in the same locality.

8. ESTABLISHING AND MAINTAINING CREDIBILITY

The biggest hurdle that the extension service and the new extension officer himself will have to overcome is a lack of credibility. At their first encounter the industrialist will be justifiably skeptical. He may say to himself, "what help can this new comer possibly be to me, I who have 20 years of experience in running my own business?"

The "credibility gap" will not be overcome by words but by deeds. The extension manager must learn to work in a systematic professional

manner to adhere to certain rules of conduct and above all to be effective in his dealings with his clients. This means that he must tackle problems that are truly significant, and propose solutions that are realistic, acceptable and applicable.

The question of professionalism and its implications for the extension officer are discussed in Chapter 2 of Volume I. Guidelines to assist the extension officer in carrying out an extension project are given in Chapter 4 of this Volume. While it cannot be guaranteed that success will automatically follow from adhering to these guidelines, it can be stated with certainty that the extension officer will significantly increase his chances of doing effective work and of establishing his credibility by adhering to these principles.

9. NETWORKING

There are a number of different kinds of services required by the SSI sector. These include :

- technical assistance
- training
- research, development and testing
- financial services (loans, credits)
- incentives
- legal advice
- promotion programs

It is rare for one organization to provide all these services. It is more common to find several institutions involved in providing the range of services that SSIs require. In particular, financial institutions tend to isolate themselves from the institutional network that supports the SSI sector.

However, the entrepreneurs are usually better off if they can receive an integrated assistance instead of struggling with the question of how to make best use of the various services offered.

How can this be achieved? By virtue of his personal contact with the entrepreneur, the extension officer is often in a unique position to be his main guide through the various extension services and assistance programs.

To play this role effectively, the extension officer will have to concentrate on two main tasks :

- analyse the problems, prospects and possible solutions for the entrepreneur, and
- refer the entrepreneur to the appropriate service (including his own) and act as a go between to ensure that the service is properly rendered and applied.

By the second activity, the extension officer gains a better insight into the functioning and capabilities of other organizations.

By establishing a network of personal and institutional contacts, he builds up a leading role for the extension service within the network in the coordination and programming of activities.

Such a network, of course, can work both ways and to the advantage of everybody concerned. Clients of other organizations are referred to the extension service and the very act of referral saves time and effort, for the new clients are already preconditioned to accept assistance.

Networking is thus an important activity for an extension service. It involves the identification of all the other institutions providing services to SSIs, getting to know their programs and their personnel, making referrals where appropriate, and occasionally working in collaboration with them when problems overlap.

Informal networking at a local level based upon mutual respect for each other's capabilities is often more fruitful than formal institutional cooperation.

For example, a regional manager of ~~one~~ extension service played a leading role in forming an ad hoc committee of representatives of all six institutions providing services to SSIs in the region. The members met informally for lunch once a month to exchange information and ideas. As a result, a number of cooperative projects were undertaken with two or more institutions collaborating in providing assistance to clients.

10. CLIENT FILES

The maintenance of adequate client files is an often neglected aspect of extension work. Such records include up-to-date details of active and potential clients and description of projects undertaken.

The principal reasons for keeping client files are for planning, quality control and to justify the existence of the extension service.

10.1. Planning

Planning which SSIs to visit in a given region and how to approach them is greatly facilitated if the extension officer has access to accurate records of all clients and potential clients together with information on the services they have already received. A good way of doing this is to create a card index by region, one card per SSI. The cards should include details of each SSI together with a list of contacts made and services already provided. A sample client card is illustrated in Figure 5.3.

Company Name		Telephone
		Employees
		T.D. Program
Officials		
Products		
Remarks	Codes	

FRONT

Company			
Date of Call	T.I.S. No	Ans. Sent	Subject

BACK

Figure 5.3. Typical Client Record Card

The cards can be sorted either alphabetically, by type of industry, by length of time since last visit, by client receptiveness, or in any other way that will assist the extension officer in planning his future activities in the region. The cards need to be updated as changes occur and should reflect all the activities of the extension service and its parent organization, not just those of one extension officer.

10.2. Quality Control

In order to exercise quality control on extension work, the activities undertaken and the results achieved need to be recorded in detail. One way of doing this is to assign a number and to open a file for each project undertaken. A project in this sense means an undertaking to provide information or assistance to a client or to a group of clients. All working papers, correspondence, reports, etc., relating to the project will be deposited in the file and the number recorded on the client card. It is important that the benefits realized by the client be identified by follow up visits after the conclusion of the project and reported in the file.

Periodic reviews of the files will enable the extension service to assess the reasons for success or failure and to develop standard approaches and techniques for given situations.

10.3. Justification for the Service

At some point those responsible for managing the extension service will be called upon to provide justification for the continued existence of the service and its attendant costs. The most convincing way to do this is to demonstrate that the extension service generates benefits that are many times the cost of its operation.

Good project files are the key. When cost-benefit justification is needed, the one hundred or so most promising completed projects can be selected from the files and subjected to special scrutiny and follow up in order to evaluate the direct and indirect benefits that have been generated.

10.4. Use of a Microcomputer

As an alternative to client cards, a microcomputer equipped with an appropriate data base program can be used to maintain client files. Such a system will present much quicker sorting and analysis of client records than is possible with manually entered cards. Refer to Chapter 6, Volume 1, for Special Topic 6 - Microcomputers in Small-Scale Industries.

11. PHYSICAL FACILITIES

The most important assets of an extension service are the ability and experience of the extension officers. However, appropriate

facilities will enhance the ability of the extension officers to serve their clients and will save them time and effort. Some of the important facilities to be considered are discussed below.

11.1. Office Space

The majority of the extension work will be done in the clients' factories, however, entrepreneurs will from time to time visit the extension office. It is appropriate then, that the offices occupied by the extension unit be similar in style and appointments to other professional offices serving entrepreneurs such as accountants or engineers. Too lavish surroundings and overgenerous use of space, with private offices for each officer, are counter productive, as they discourage the extension officers from venturing out.

The ideal office for an extension unit is one that has an easily accessible location, has desk space available for each extension officer, and has one or more conference rooms where the entrepreneurs can be interviewed in private.

11.2. Library

A collection of textbooks and references is an essential part of the extension office's facilities. Whether they are available in a formal library or a personal bookshelf is not important. What is important is that the documents are appropriate to the types of work being done and that they are readily accessible.

For a technical-oriented extension service, the collection should include up-to-date texts covering production management techniques, properties of materials and technical details of production processes, published specifications and standards, catalogues of machinery and equipment, trade and technical periodicals, all relating to the type of industries being served.

The purpose of such a library is to make available to the extension officer the standard reference documentation covering the fields in which he is called upon to give assistance. This will help to ensure that his expert advice is founded upon correct principles and up-to-date knowledge.

11.3. Laboratories, Workshops, Pilot Plants

Laboratories, workshops and pilot plants can be very valuable support facilities when they are operated in close collaboration with an extension service. Typical applications for such facilities include :

- quality control testing
- product development

- training client's personnel
- sub-contract manufacturing
- developing and demonstrating new processes

Extension officers, however, must beware of becoming mere salesmen for such facilities to the detriment of the best interests of their clients.

11.4. Photographic Equipment

"A picture is worth a thousand words". Certain types of photographic equipment can be useful to the extension officer for purposes of recording processes, methods or problems for subsequent study and analysis.

An instant camera is the most useful for it enables the photographer to know immediately if his picture has captured the detail required. A regular camera will cost less to operate but the delay in seeing the result is a major disadvantage for this type of application.

A video camera with VTR (video tape recorder) can be used for recording and analysing work methods and is particularly useful in industrial engineering projects. However, it is relatively costly and can be awkward to carry. In addition, it requires expensive facilities to edit the tape.

A Super 8 movie camera makes a better quality motion picture than a video and can be used at surprisingly low light levels. It is considerably cheaper than comparable video equipment and the film is easy to edit. Its disadvantages are the film cost and the limited running time as opposed to video tape which can record continuously for thirty minutes and is reusable.

11.5. Photocopy Machine

The photocopy machine has become an essential item of equipment in the modern office. The most important application in an extension office is making copies of technical information for distribution to clients.

A plain paper type copier is preferable to the kind that requires special treated paper.

11.6. Duplicating Equipment

When there are many copies to be made (over 50), it becomes more economical to make a master and duplicate it rather than photocopy the same original over and over again. Applications that justify the use of a duplicating machine include newsletters, course notes, forms, etc.

11.7. Transport

The "do" part of the extension officer's job takes place face to face with his clients, so the extension officer who does not have the means at his disposal to travel to the client's premises is effectively crippled. The extension service then, should provide the means of transportation for its extension officers. This can take the form of either a car pool (vehicles at the disposal of the extension officers), motorcycles, or of a mileage allowance to reimburse them for using their personal vehicles.

11.8. Shared Facilities

On some occasions, the extension service may find it advantageous to share support facilities with other institutions. These may be a transport pool used by several agencies, a shared library, a shared computer, or common photocopying and duplicating facilities. The advantages claimed for shared facilities are reduced costs to all users; the disadvantages are delays due to lack of exclusive use of the facilities.

12. ISSUES IN MANAGING AN EXTENSION SERVICE

12.1. To Charge or Not to Charge

At some time during its existence, every extension service must face the decision whether to charge for services rendered, and if so, how to charge.

Briefly, the arguments in favour of charging can be summarized as follows :

- a) Charging raises the level of professionalism of the service. Clients who pay demand a higher standard of performance than those who receive services for free.
- b) The service will respond better to the real needs of the clients rather than providing what bureaucrats think they want.
- c) Revenue is generated enabling more services to be provided than would otherwise be the case.

The arguments against charging are :

- a) Ability to pay rather than need becomes the criteria for determining who gets assisted.
- b) Some deserving SSIs may not be able to afford the service.

- c) Billing and collecting cause administrative cost to rise.
- d) Professional consulting firms may object.

Different methods of charging include the following :

- an annual retainer fee entitling the client to a fixed number of days of consultation per year;
- fee for service based on a fixed hourly rate;
- a combination of free and charged service, for example, a free diagnostic survey but a charge for implementation.

Each one of the methods has its advantages and disadvantages. No matter which one is chosen, what is important is to establish clear definitions and to explain them to the clients beforehand. For example, do the hours charged under a fee for service scheme include travel time and outside investigation or only time in the client's plant?

Similarly when offering a combined free and charged service, the limits of the free service must be specified in advance. If these definitions are not made, misunderstanding will arise which could adversely affect the relationship between the client and the extension officer.

12.2. Personnel Turnover

An extension service is an excellent training ground for a young engineer or technician with an ambition to establish his own business or to become a professional consultant or manager. But this can create a problem of high staff turnover for the extension service, particularly in areas where qualified people are in short supply as is the case in many developing countries.

High staff turnover is not in itself a bad thing if the result is a regular stream of trained and experienced engineers and technicians entering the national economy. For the extension service, however, it means hiring and training new recruits on a continuous basis, and problems maintaining the quality and continuity of the service.

Some of the steps that the extension service can take to mitigate the effects of high turnover are :

- develop short but intensive training courses so that new extension officers become productive in the shortest possible time,
- have elements of extension officers' training course introduced into universities and technical schools,

- use contract workers or consultants for certain cases,
- develop career planning for extension officers to encourage the good ones to stay in the service and provide the future cadre of senior personnel.

Every organization needs regular infusions of new personnel with fresh ideas and enthusiasm in order to remain viable, so a very low turnover of personnel can create its own set of problems. An extension service with no turnover runs the risk of stagnating and becoming moribund.

The ideal situation is a personnel turnover of 10 to 20% per year, enough for self renewal and to create opportunities for advancement, but not enough to cause serious disruption in the continuity of service provided.

12.3. Remuneration of Extension Officers

There are significant non-monetary rewards in extension work such as a greater freedom of action and a wider range of experience than are offered by more traditional types of employment. These and a host of other factors need to be considered when establishing pay scales for extension officers.

In general, the remuneration should be fair and equitable taking into account the skill and effort required, the working conditions, the availability of alternative employment, and the salaries paid for similar jobs.

In the final analysis, the market place will be the judge of whether or not the extension officers are treated fairly. If the pay scales are too low, there will be difficulty in hiring and keeping suitable candidates and the service will suffer in consequence.

12.4. Marginality

When an extension service is a subordinate component of a larger institution such as a bank, a research centre or a university, the problem of "marginality" can arise.

From the point of view of the decision makers of the parent institution, industrial extension may be a marginal activity outside the mainstream of the institution's mandate. Attempts may be made to transform the extension officers into salesmen for other branches of the parent institution.

In such situations the director of the extension service must seek to maintain operational independence so that his extension officers are always free to act in the best interests of their SSI clients.

12.5. Relationships with Professional Consultants

An extension service exists to fill a need by providing services to SSIs that would not be available otherwise. Sometimes professional consultants will find that they can provide services for certain kinds of clients and make a profit doing it. When this situation arises, the extension service should remember its reason for existence and refrain from competing unfairly with private and professional consultants - because the extension service is usually subsidized while the consultants have to operate on a cost recovery basis.

The two types of services should be able to co-exist side by side and complement each other with the extension service providing only those services that need to be subsidized because of their nature or the condition of the clients.

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CHAPTER 6: CONDUCTING TRAINING PROGRAMS

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CHAPTER 6: CONDUCTING TRAINING PROGRAMS

SUMMARY

This chapter has two objectives. The first is to provide the extension manager with the know-how of training extension officers and conducting entrepreneurial and management training. The second is to equip the extension manager with the principles of adult learning and the guidelines in operating a training system - from needs analysis, setting objectives, through curriculum design, implementation to evaluation processes. The chapter also describes the experiences and practices of several countries and institutions in the field of industrial extension and entrepreneurial training.

1. THE EXTENSION MANAGER AS TRAINER

The extension manager's role as a trainer underscores a key responsibility of acting as a change agent assisting the extension officers move into new patterns of behaviour. To facilitate this change process, the extension manager must have credibility; he must be recognized and acknowledged as an expert in his job. Being the source, generator and facilitator of change, his credibility and authority greatly determine whether the extension officers will choose to adopt his views or not. Aside from a solid field experience in extension work, the extension manager should be resourceful, dynamic and ethical. He must possess the right attitude and values (e.g. open-mindedness, receptiveness to change and willingness to learn and help). He must develop the following skills needed by a trainer :

a) Technical or professional skills

A good part of the extension manager's credibility comes from his competence as an industrial extension practitioner. He must be both a good preacher and a good doer. He must possess the skills and knowledge required of an extension manager - mastery of extension processes, techniques and tools as well as the facility to apply them in the appropriate setting.

b) Human relations skills

The extension manager must have the ability to relate and deal with people. The extension manager always interacts with the extension officers, clients and other government service agencies.

c) Conceptual skills

The extension manager must have the ability to plan, conceptualize and get a total perspective of the issues relating to his work. He is a think tank who can work out ideas into implementable activities, e.g. new approaches in dealing with extension problems, innovative ideas to evaluate extension effectiveness, etc.



2. INDUSTRIAL EXTENSION TRAINING

Preparing the industrial extension officer for his job requires five phases : selection, orientation and induction, training, on-the-job training and territorial familiarization*. A formal training in extension work will provide a newly recruited extension officer with practical knowledge of extension concepts, processes and approaches, teach him the skills in applying the industrial extension tools and in communicating with the entrepreneurs, and prepare him psychologically to face the industrial extension challenge.

Focusing attention on industrial extension training also finds its significance from the experiences of industrial extension units, many of whom are facing problem of high turnover of extension officers. While it may be unfortunate for the industrial extension unit to lose people who have become proficient in their work, their separation from the service is otherwise a gain to the economy. Hence, the need to continuously train a new core of competent extension officers should form part of the major concerns of industrial extension policy makers and managers.

The design of industrial extension training depends on the new extension officer's qualifications, the roles he is expected to perform, the nature of industrial extension process itself, the characteristics of the target entrepreneurs and the socio-cultural environment. Most of the new recruits have no work experience in industries and are just fresh from the universities, colleges or technical schools. Their young age is compensated only by their motivation and idealism.

A donor agencies' meeting on SSI development suggested some general features concerning the extension officer's qualifications, viz :

- a) knowledge of the local language
- b) communication skills (both delivery and methods)
- c) knowledge of the capabilities of referral agencies and regular updating of the information
- d) practical work experience in industries preferable

Various international programs for training industrial extension officers are currently offered by various institutions. Among these are :

- RVB's (Research Institute for Management Science in Delft, The Netherlands) six-month Industrial Extension Officers Training (see Annex 1),
- the Nagoya (Japan) Training Centre's three-month Small Industry Consultants Advanced Training (SICAT),
- Technonet Asia's six-week Industrial Extension Training Course (INDEXTRAC),

* See Chapter 2, Volume I

- the University of the Philippines Institute for Small-Scale Industries five-month Management Consultancy Course,
- the National Small Industry Extension Training Institute's (in Hyderabad, India) three-month Small Industry Management Consultancy.

Several national programs for training new extension officers are also offered by various local institutions such as LPPM's (Management Training and Development Institute in Jakarta, Indonesia) Small Business Consultants Course (see Annex 2), the Industrial Development Board's (in Sri Lanka) Industrial Extension Training Course (see Annex 3) and the University of the Philippines Institute for Small-Scale Industries' Small Business Consultancy Course (see Annex 4). The ILO has also suggested a framework for training new consultants (see Annex 5).

Despite the variations in length (particularly in the practical in-plant exercises) and content (particularly in the diagnostic tools), most training programs for industrial extension officers cover the functional aspects of management (general management, marketing, production, personnel, finance), concepts of SSI development and diagnostic techniques. Variations would occur in the offering of project feasibility study and in requiring back home action plans. There is general consensus in giving emphasis to practical training in terms of observing factory operations, conducting management audits of SSIs and undergoing practical simulation exercises such as management and business games. There is general agreement towards integrating the theoretical classroom sessions with the fieldwork or practicum so that they reinforce each other. There is also a common thread in the choice of training methodologies - lectures followed by discussions, workshops and exercises, use of case studies, film showing, factory visits and in-plant studies.

All the industrial extension training programs aim to develop management skills, communication skills and diagnostic skills in the participants. These are in addition to familiarity with assistance programs to SSIs and the institutional capabilities of referral agencies. Many national programs are not conducted in-house but industrial extension managers are actively involved in the design and conduct of the programs as consultants, resource persons and evaluators.

3. ADVANCED INDUSTRIAL EXTENSION TRAINING

Even as the industrial extension officer acquires new knowledge and hones his skills from his extension engagements and self-study, the industrial extension manager must continually provide him with continuing education opportunities. The extension manager must plan to provide on-the-job training for the extension officers. His constant interaction with the extension officers as superior and coach - sharing experiences, giving and getting feedback, visiting clients together, etc. - should form part of a planned effort to further develop the extension officers' capabilities.

After some time in their extension career, the extension manager should make provision to upgrade the industrial extension officers' professional growth. In the Philippines, the extension officer is released from his extension duties for the period necessary to complete a master's program (usually in business administration) and is then expected to rejoin his organization for a number of years or a return service. In Bangladesh, the extension officer will follow a master's program on a part-time basis and continue to work in extension for the rest of his time. In Indonesia, a six-week advanced extension training is proposed requiring the existing extension officers to spend four weeks in the home country doing classroom and practical work activities to sharpen their skills and acquire new knowledge. Two weeks will be spent outside the country exposing them to extension practices of other countries.

Advanced extension training can also be conducted in case the extension unit adopts a new or added thrust. Example is when the Small Business Assistance Centres in the Philippines added a new dimension of group consultancy (such as industry associations, industry clusters) to the existing firm-level thrust, several extension officers from various regional units attended a specially designed Industry-Level Consultancy Course where the objective was to provide the extension officers with the skills, tools and knowledge to undertake group consultancy.

Annex 6 presents a course outline on advanced extension training proposed for a national extension agency.

4. INDUSTRIAL EXTENSION TRAINERS' TRAINING

Some development and training institutions have designed programs that are intended to train senior industrial extension practitioners to be trainers. These programs were developed based on the premises that firstly, there is urgent need to train more industrial extension officers; secondly, existing extension practitioners have the ability to train new recruits and other extension officers but in most cases do not possess the basic knowledge and skills in training recruits for extension work; and thirdly, there may be existing qualified trainers and industry specialists who may not have the technical refinements of small industry extension work.

The general objectives of these types of programs are to enable the participants to : (a) apply the theories of adult learning and teaching; (b) demonstrate various training methods at the appropriate setting; (c) design and implement a training program for industrial extension officers; (d) prepare training materials; (e) acquire the personal skills of a trainer; (f) know the industrial extension process and techniques; and (g) understand the concepts of SSI management.

Two important elements of the course can be highlighted :

1. **Micro Lab Sessions** - wherein participants deliver actual training sessions using various teaching methods and are evaluated by a panel of trainers so that areas for improvements can be pinpointed.

2. Back Home Action Plans - wherein participants engage in personal goal setting activity spelling out what they intend to perform in their home environments after attending the course.

Annex 7 presents a sample course outline of an industrial extension trainers' training program.

5. TRAINING THE ENTREPRENEUR

Aside from training extension officers, the extension manager of today is becoming more involved in conducting or sponsoring training programs for the entrepreneurs. Training here is seen as an integral effort of providing extension assistance to the entrepreneurs, a way of multiplying the extension staff's time by simultaneously dealing with groups of entrepreneurs and a means of promoting and getting feedback about the extension service unit.

The extension manager can organize training programs that deal directly with the entrepreneurs' problems. These vary widely ranging from general management and entrepreneurship appreciation seminars through specific functional management seminars (marketing management, production management, financial management, general management), subject-specific training (accounting, bookkeeping, salesmanship), to industry-specific workshops. Training programs vary in duration; some are conducted as full-time activities ranging from one full day to several days; others over the weekend; and still others as part-time activities conducted 2-3 hours in the evenings or over several weekends. Aside from the extension managers and his qualified extension staff, resource persons from private industry and specific technical experts are usually invited to share their expertise with the entrepreneurs.

These types of training programs should be encouraged as they allow face-to-face interaction between the extension staff and the entrepreneurs on one hand, and among the entrepreneurs themselves. Many fruitful transactions have been reported as a result of these encounters. From the participants' group, clients may evolve who need follow-up. This is also an opportunity for the extension unit to gather data, either by questionnaire or discussion, on certain vital issues affecting their operations.

From the point of administering the programs, it is important that a training budget is incorporated in the extension unit's allocation. Considerations to keep these programs at low cost are always topmost. The extension manager can keep his cost low if he can control resource persons' fees, cost of printing training materials, and meals. Whether these training programs should be conducted on a self-liquidating or subsidized basis remains a policy question. For instance, in some developing countries, it is acceptable to charge the entrepreneurs a token fee as an indication of their interest and commitment. The premise is that anything free will not be appreciated. In other developing countries, entrepreneurs even get paid for their attendance to government-sponsored seminars in terms of allowance, free board and accommodation.

6. TRAINING CYCLE

Training should be viewed as a systems approach where the various components in the training cycle form an integrated process. The components are needs assessment, objective setting, program design, implementation and evaluation processes. Two characteristics describe training as a systems model. First is the **closed loop** which shows the essential nature of the interrelationship of the training components. Second is the requirement for **feedback**. Training evaluation, for instance, provides feedback on whether training objectives have been met. This concept is illustrated in Figure 6.1.

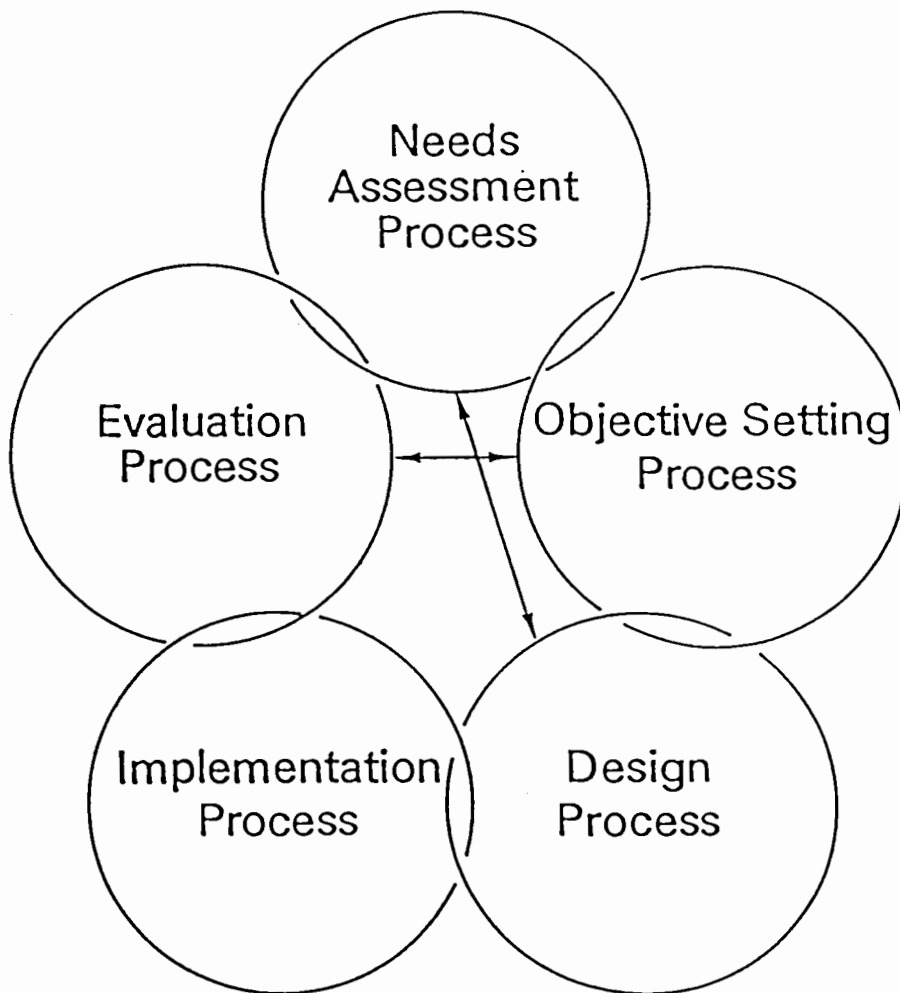


Figure 6.1. Training as a Systems Approach

The training cycle presupposes a condition wherein one component of the system is derived from its preceding component. This does not mean a simplistic, automatic and mechanical process wherein one component is finalized and the next process starts. There is actually a continuous movement backward and forward throughout the system as a specific component is adapted and refined as more information is gathered and analysed.

6.1. Assessing Training Needs

The basis of any training program is the specific needs of target participants. This necessitates identifying those needs that can be satisfied by training. This can be done by conducting job analysis (what the job consists of in terms of tasks) and what the job demands in terms of current and future knowledge, skills and attitude for satisfactory performance) and manpower analysis (what is the manpower profile in terms of job-required knowledge, attitude and skills). With regard to new recruits, the extension manager can gather information about them through questionnaires, tests and interviews. For the existing extension officers, in addition to the above methods, the extension manager can get a good indication of their deficiencies through direct observation, evaluation of their work performance, as well as feedback from the clients and referral agencies. The extension manager can also use the above methods to identify training needs of entrepreneurs. In reality, several methods can be selected so that information is verified and validated. The choice of the methods to be adopted will depend on the extension unit's resources and the extension manager's availability.

By matching the man with the job, the industrial extension manager can begin to identify deficiencies of target participants in terms of attitude, skills and knowledge requirements. He can then classify and rank these deficiencies according to their importance or gravity. The result will be a classification into three priority levels of training inputs :

Priority No. 1 - Must Know - vital, basic information all of which must be put across at all costs; this includes problem-solving or practice exercises considered to be the basic minimum for learning. Includes fundamental facts, data, figures, symbols, etc., without which there can be no understanding whatsoever of the subject.

Priority No. 2 - Should Know - important information which should be put across as much as possible, e.g. a breakdown or elaboration of the basic points in Priority No. 1.

Priority No. 3 - Nice to Know - incidental information which can be put across if time permits - background, historical or related information which is of general interest but not of intrinsic importance to the understanding of the subject.

6.2. Setting Objectives

Training objectives are derived from the results of needs assessment and in turn determine the framework of the program design. Well defined objectives must be **specific** (establish clear and definite goals), **measurable** (against a standard of acceptable performance), **action-oriented** (stated in observable action words), **realistic** (goal is attainable), and **time bound** (specific time period by which performance is measured).

Training objectives are statements that describe what the extension officers or entrepreneurs will be able to do upon completion of the training (terminal objectives) or at any designated points during the training (process objectives).

The extension manager can formulate the types of objectives depending on the specific goals he wants to achieve for the training :

a) **Cognitive Objectives** - which deals with the recognition of knowledge, understanding and the development of intellectual abilities and skills, for example :

- to use industrial extension tools
- to communicate
- to calculate production cost

b) **Affective Objectives** - which pertain to feelings or emotions depicted by words as motivation, appreciation, value, attitude, interest and enthusiasm, for example :

- to demonstrate willingness to help by ...
- to respond to client's requests

c) **Psychomotor Objectives** - which refer to the development of motor or manipulation skills, such as :

- to operate a machine
- to drive a car

6.3. Developing Course Content

Designing the appropriate curriculum to meet training objectives stands at the core of any training activity. Needs may be well identified and defined, objectives clearly established, but if the course content is not properly designed, the training effort will be futile. The course content provides the means to meet training objectives. It covers the following elements :

6.3.1. Training Syllabus

(What is to be learned), broken down into logical sessions or modules (groups of sessions) and indicating the knowledge, skills and attitude to be acquired. The extension manager must give utmost importance to this crucial aspect. This is where his conceptualization skill is

needed most. He analyses the course framework and does constant revisions to ensure that content and emphasis in the course is consistent with the objectives. The extension manager can follow these guidelines in developing the course design :

- a) Examine the results of the training needs analysis and the statements of terminal objectives.
- b) List down the required terminal performance.
- c) List down the corresponding knowledge and skills requirements opposite each performance that will enable the trainee to perform the objective. There may be duplications of some items under some objectives.
- d) Based on the list of the identified knowledge and skills requirements, prepare a rough draft of the outline indicating broad subject areas to be incorporated.
- e) Broaden the outline to include detailed items.
- f) Arrange the course content in the most appropriate sequence.
- g) Have the draft of the content reviewed by qualified persons.
- h) Revise and finalize content.

6.3.2. Training Methodologies

There are various training methods at the disposal of the extension manager. These are lecture, talk, discussion, role play, in-basket, business game, sensitivity training, case study, incident method, exercise and application project. In the training of extension officers, the most common are lectures - discussions, exercises, case studies and application projects. Business game, role play and sensitivity training are becoming popular as they are considered powerful training techniques, but they require specialized trainer skills and extra preparation. Each training method has a specific area of effectiveness (see Annex 8).

The choice of suitable training methods is conditioned by :

- a) Human factors (background of participants, competence of extension manager and resource persons).

- b) Subject area (specific subject of training, whether technical, conceptual and practical inputs).
- c) Training objectives (in terms of forming management skills such as diagnosing problems, communicating, deciding, etc., some teaching methods are more effective than others, see Figure 6.2).

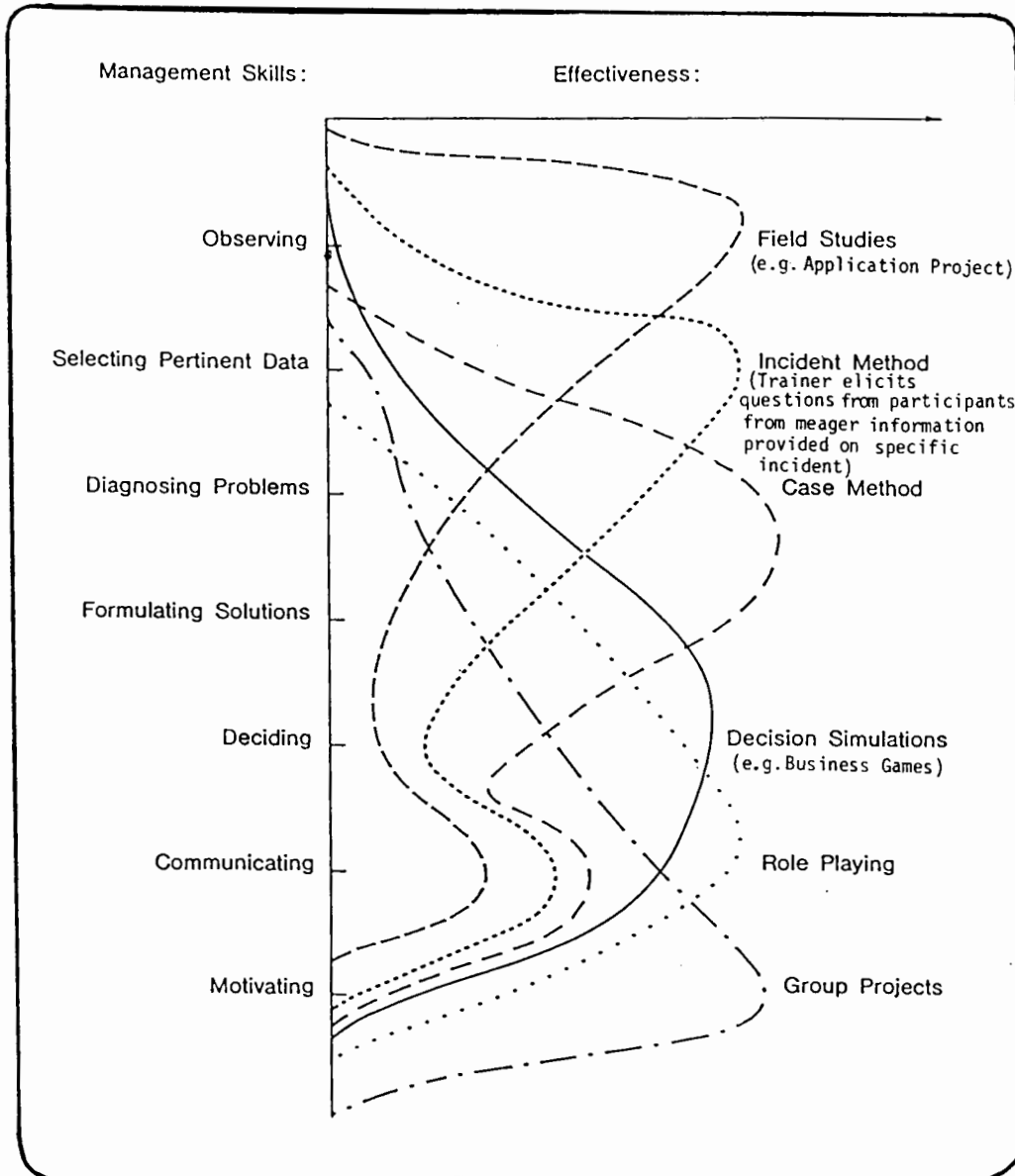


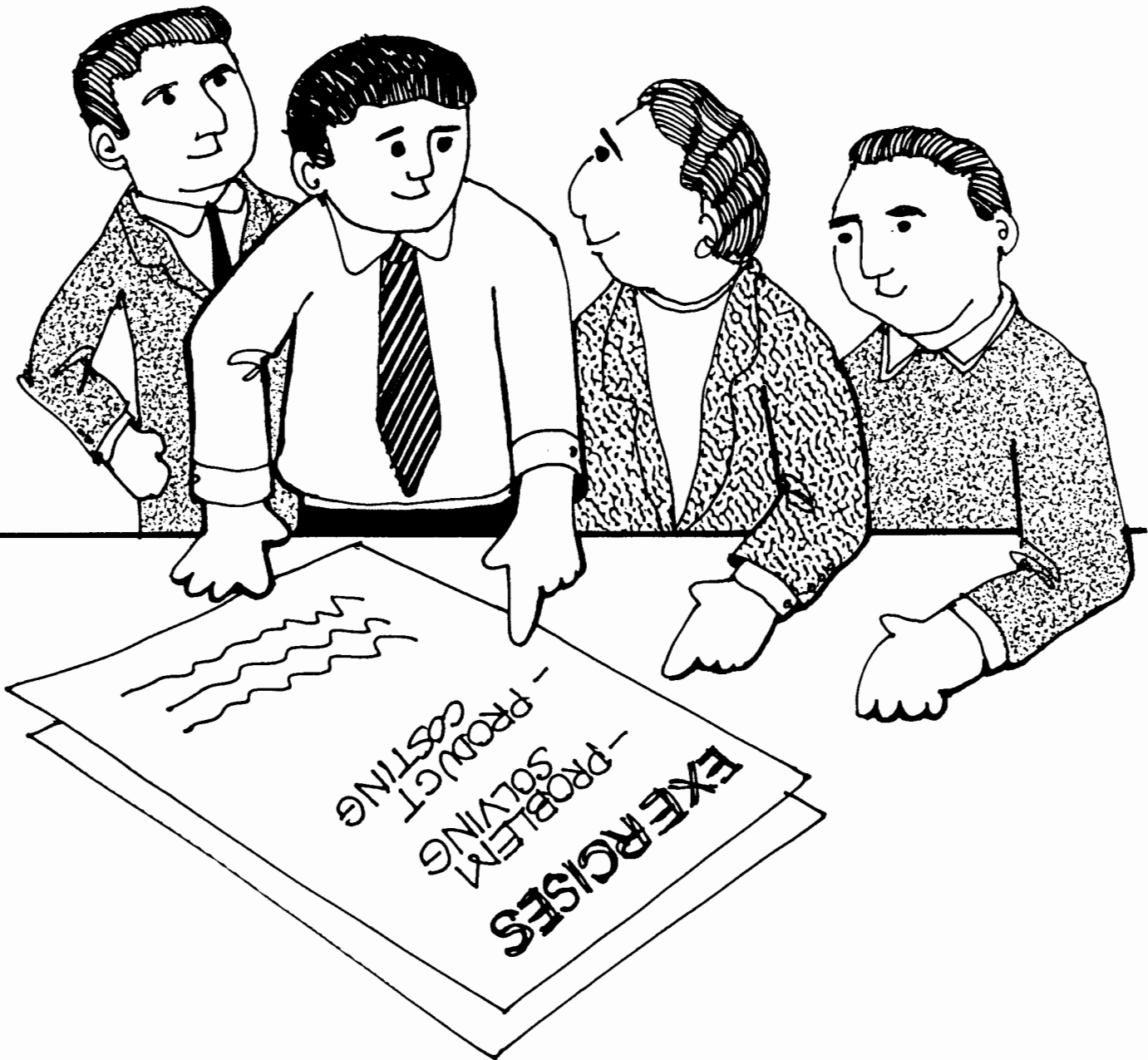
Figure 6.2. Effectiveness of Training Methods in Teaching Management Skills

- d) Time and material factors (length of training, availability of training materials, availability of resource persons, budget and facilities).
- e) Principles of adult learning (guidelines to ensure learning effectiveness, see Annex 9); application of these principles dictates the choice of teaching methods, see Figure 6.3.

Principle	Method	Training on the job	Lecture	Group Discussion	Case Study	Business Game	Role Playing	Application Project	Reading Assignment
Motivation		■	■	■	■	■	■	■	□
Active involvement		■	□	■	■	■	■	■	■
Individual approach		■	□	■	■	■	■	■	■
Sequencing and structuring		■	■	□	■	■	□	■	■
Feedback		■	□	■	■	■	■	■	□
Transfer		■	□	□	■	■	■	■	□

Rating: ■ Good ■ Average □ Weak

Figure 6.3. Application of Some Principles of Learning in Teaching Methods



LEARNING IS AIDED BY ACTIVE PRACTICE
RATHER THAN PASSIVE RECEPTION

6.3.3. Schedule

The extension manager should provide for realism and flexibility in timing the training program and ensure economical but effective use of training resources including resource persons, equipment and facilities. Scheduling must be realistic because : (a) the participants need sufficient time in which to learn, and (b) participants vary in their teaching effectiveness; and (c) conditions under which learning takes place are affected by environment (venue, temperature, time of day, etc).

6.4. Implementing the Training Program

After the course content has been finalized, the extension manager must prepare for its implementation. Implementation can be divided into three major group activities : pre-training, training proper and post training. The tasks to be done under each group activity are :

6.4.1. Pre-Training Activities

- a) Designating the training staff, usually composed of a training manager (who may be the extension manager himself) who will be responsible for the management aspects of the training, and a training assistant who will assist in coordinating and looking into the administrative details and day-to-day activities of the training.
- b) Preparing the budget to include relevant costs, such as :
 - Resource persons' cost - fees, per diem, transportation, accommodation (where applicable).
 - Cost of participation - supplies, books, training materials reproduction, certificates, food, accommodation.
 - Course development cost - preparation of course design and training materials.
 - Cost of administration - administrative support, facilities and equipment, communication, transportation, course documentation.
 - Miscellaneous costs and contingencies.Care should be exercised in budget preparation to anticipate all possible costs.
- c) Inviting/informing the participants.

- d) Finalizing list and profile of participants.
- e) Choosing the resource persons.
- f) Preparing and choosing training materials, training equipment, audio-visual aids, venue and supplies.
- g) Finalizing program schedule.

6.4.2. Training Proper Activities

- a) Monitoring program activities and progress.
- b) Controlling expenses and use of funds.
- c) Liaising with resource persons and participants.
- d) Preparing for day-to-day activities.
- e) Conducting process evaluation, including course content, sessions, lectures, training methods, arrangements.

6.4.3. Post-Training Activities

- a) Conducting terminal evaluation.
- b) Making training completion report, including financial report.
- c) Following up participants.
- d) Conducting impact evaluation.

6.5. Evaluating the Training Program

The extension manager wants to know the results of training. He therefore, conducts terminal evaluation to obtain feedback of the effectiveness of the training as against stated objectives. The more precise the objectives, the more precisely can training be evaluated. Evaluation serves as a learning process and provides information on how future programs can be improved and what further actions can be taken to ensure training effectiveness. The extension manager can apply four levels of evaluation, viz :

- a) evaluating **reaction** of participants
- b) evaluating **learning** acquired
- c) evaluating **behavioural change**
- d) evaluating the **functioning results**

Evaluation of the reaction of the participants is used to determine their opinions relating to the course in general and certain specific features of it, e.g. sessions they like most, relevance

of the training program to their work situation, etc. Reaction data can be gathered by interview and structural instruments, usually a questionnaire and probably answered anonymously by each participant. This kind of evaluation tends to be subjective.

Evaluation of learning provides a more objective measure of the success of the training - what the participants learn and how much they have learned. Evaluation of learning can be categorized in terms of the type of objectives set - cognitive, affective or psychomotor skill objective. An ideal procedure is to measure the skills of the participants before they enter the training process and at the end measure what has been learned with the use of detailed objective tests.

Evaluation of behavioural change is more difficult and is concerned with the long-term effects of the training. This goes beyond learning and more into the application of the learning acquired. It is possible for the trainee to "learn" some body of knowledge (in the sense of passing a test) but still not be able to apply it in a practical situation or on the job. Approaches used to conduct this type of evaluation include measurement of on-the-job performance before participation and after using co-workers' and supervisors' judgements, use of tests assessing the trainee's problem solving or decision making abilities, and follow-up questionnaires conducted perhaps six months to a year after the end of the course.

The extension manager can use a five-point scale to indicate the participants' answers to a series of single statements, like :

- 1 - really outstanding
- 2 - very satisfactory
- 3 - average
- 4 - just acceptable
- 5 - needs improvement

Evaluation of the functioning result consists of any attempt to measure aspects of the effects of the participants' job behaviour - in the case of the entrepreneur, whether on the productivity or efficiency of the SSI, or on the morale of his subordinates as expressed by absentee rates or labour turnover rates. Any index of functioning which is related to the training objectives can be used. The main difficulty of this type of evaluation is determining to what extent changes are the result of the training rather than of other factors. If the objectives of training have been very precisely defined (for instance, if the entrepreneurs are being trained in quality control specifically with a view to reducing the percentage-reject rate in their SSIs) it may be possible to evaluate at this level.

The use of a control group can provide a strictly scientific approach to this type of evaluation. It is necessary to have a control group which does not undergo training, but is carefully matched with the trainee group in respect to all other factors. One can then compare changes in the trainee group with changes in the control group, and so isolate the effects of training.

In conclusion to this chapter, it is important to re-emphasize that the extension manager should treat training as just one aspect of the total approach to developing the extension officer and the entrepreneur and that not all deficiencies can be corrected by training alone. The extension manager must employ complementary means of developing his staff such as territorial familiarization, more supervision, promotion, etc. It is also important to consider the by-products of the training which are not anticipated in the framing of objectives. For instance, in an entrepreneurs' training, the social value of putting the entrepreneurs in contact with one another resulting in successful business transactions may outweigh the direct benefits of the training.

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RVB MODEL OF INDUSTRIAL EXTENSION TRAINING

Since the late 70's, RVB (Research Institute voor Bedrijfswetenschappen*) has been conducting an international Industrial Extension Officers Training (IEOT) program with a substantial number of participants coming from the developing countries in Asia. The objective of the training is to expand the capability of management and staff of industrial extension offices to assist existing and prospective small and medium industries in analysing and solving their internal and external problems. The course runs for six months. The program is also used as basis in designing longer and shorter (6-7 weeks) IEOTs at the national level in a few African and Latin American countries.

The structure of the training program consists of the following elements :

1. Orientation about the environment in which the small business and the extension officer operate
2. Promotion of services : the extension officer selling his activities to the entrepreneur
3. Observation techniques : the extension officer observing who/what his client is
4. Establishing contracts : the extension officer and the entrepreneur reaching an agreement
5. Diagnosing the enterprise and subsequent reporting
6. Formulation of the plan of action
7. Implementation of the plan of action
8. Referral activities to bring the enterprise in contact with other services
9. Evaluation and follow-up

The program was structured based on a typology that relates the industrial extension phases with their main activities to the skills required by the extension officer. See Figure 6.4.

* Research Institute for Management Science, Delft, The Netherlands

Phase	Main Activity	Required Skills
1. Contact phase and promotion	Indirect and direct promotion	Communication techniques (media, individual)
2. Contact phase	Building up confidence	Communication techniques, practical experience
3. Diagnosis	Integrated plant survey, strong and weak points analysis	Functional management skills
4. Plan formulation stage	Need assessment, business planning	Functional management and communications
5. Planning supplementary services	Environmental scanning	Information and interaction collection techniques
6. Implementation	Implementation of plans and follow-up	Communication techniques
7. Evaluation and follow-up	Monitoring and control	Functional management skills, information appraisal techniques

Figure 6.4. Industrial Extension Phases, Main Activity and Required Skills

RVB also conducted assessment surveys in developing countries in Africa, Latin America and Asia to find out the state of the art in industrial extension. As a result, the following list of requirements was drafted as basic guidelines for new extension officers :

- a) The extension officer is supposed to understand and master the techniques and methods to promote his services. This promotion could be in a direct way through personal visits, or an indirect way through delivering recommendable work.
- b) The extension officer must possess the skills to gain the confidence of the small entrepreneur in a relatively short period. This probably is the most difficult task of the extension officer. Small entrepreneurs normally are very practical persons with a down-to-earth mentality, with a built-in mistrust and a negative attitude towards public services and with little time to spend on other activities. Gaining confidence thus requires the skill of showing that you can

do something for the entrepreneur, that you are of his kind, and that you know how to communicate with him.

- c) The extension officer must master the techniques to analyse the functioning of a small enterprise in limited periods of time under circumstances where little formal information could be at hand. The extension officer is then supposed to absorb and interpret the only information available, translate this and analyse strong and weak points, problems and prospects and to make this information understandable to the client. This requires a control of the functional management theories at advanced level and the communicative technique to make such theories acceptable to the small entrepreneur.
- d) The extension officer must know how to communicate with the small entrepreneur under normal conditions, i.e., given the fact that communication often takes place at plant level (with many distortions) and with entrepreneurs, the greater number of whom have not completed an advanced training or education.
- e) The extension officer is supposed to know and understand sufficiently the functioning of the enterprises existing within their environment and the developments in that environment which might have an impact on the small enterprise.
- f) The extension officer must know what other services can be rendered to the client by other organizations and how to bring his client into contact with such services, without such knowledge his work would be only limited.

Based on the typology and the conclusions derived from the assessment surveys, a course structure consisting of five pillars was developed.

- 1) functional management for small industries
- 2) environmental scanning
- 3) extension methods and consultancy techniques
- 4) organization of extension services
- 5) training of trainees

Each pillar forms a module of approximately three to four weeks. From these pillars, a trained industrial extension officer is expected to demonstrate communication and consultancy skills and to master business diagnostic techniques, environmental analysis as well as reporting and planning techniques.

In the national programs, the basic outline of the training module based on the classroom sessions and field exposure is shown in Figure 6.5. The classroom sessions require a total of approximately 21 working days. The field exposure follows the outline adopted for classroom sessions with continuous feedback and absorbs approximately 11 working days. Total duration is 6-7 weeks.

Classroom	(Days) indicative time	Field Exposure	(Days) indicative time
1. Introduction/orientation The environment of small industry problems and prospects of small industries	3		
2. Promotion	1	In-plant observation and promotion	1
3. Environmental scanning information on assistance programs	2		
4. Diagnosis	5	In-plant survey : strong & weak points analysis	2
5. Consultancy skills and communication	5	Panel/seminar	1
6. Plan design and formulation	2	Presentation of plan	5
7. Follow-up and monitoring, communication	3	Consultancy and extension in practice	
		Reporting	2
Total	21		11

Figure 6.5. Outline of Industrial Extension Training Course
for Peru and Costa Rica

Source : Klaas, Molenaar, Training for Industrial Extension Officer, A
Practice Oriented Approach, RVB Newsletter and Research Papers,
Vol. IV, No. 2, RVB, Delft, The Netherlands, 1984.

LPPM MODEL OF INDUSTRIAL EXTENSION TRAINING

LPPM (Lembaga Pendidikan dan Pembinaan Manajemen*) is a private foundation that provides training and consulting services. It conducts a one-year Small Business Consultants Course. The training program is structured to allocate 10% of the participant's time to lectures, about 20% to classroom exercises and tests, with the remaining 70% devoted to practical work in small businesses. This is in consonance of LPPM's 'Practice First, Theory Second' philosophy. The objective is to create practical utilitarian skills in the participants. Small entrepreneurs cannot afford the luxury of theoretical discussion with small business consultants. Money taken today has to be used tomorrow. There is opportunity cost in idle discussions. On the other hand, the entrepreneurs cannot afford wrong decisions and results can be disastrous to the SSI.

The course activities follow this sequence. The participants who qualify only after passing the rigid selection procedures are taken to a mountain resort for a 3-day T-Group 'Who-Am-I' exercise to enhance their sense of initiative and community involvement. The participants then go to a classroom setting where they receive lectures on the Indonesian small business situation and business loan economics, during which they are taught to make rapid calculations on a pre-programmed electronic calculator. They are taught how to conduct small business surveys and use interview techniques. The next ten weeks are devoted to interviewing entrepreneurs, and each participant will visit about 100 SSIs and conduct 35 interviews with the use of a standard form containing 90 items of information.

The process of constantly visiting businesses and politely soliciting detailed information as well as the form filling and provocative interrogation by the trainers quickly enable the participants to detect a healthy business or one in need of help.

Once they can do this they are ready for another technical classroom session. They are taught to analyse the forms and draft sector profile reports and shortlist businesses that have development potential. This is followed by some basic instruction on accounting, marketing and organization, and then participants receive briefing on how to carry out integrated management audits.

The integrated management audit consists of two parts; the first part determines the financial situation of the enterprise, and the second part provides the information required to diagnose the technical and managerial inputs necessary to exploit favourable circumstances or assist the survival of an unhealthy business. Using pre-prepared forms (a kind of programmed instruction approach) and under close guidance and control, trainees work in teams to list all assets and liabilities. All accounts receivable and accounts payable are totalled, although very often these

* Management Training and Development Institute, Jakarta, Indonesia

may be nothing more than pieces of paper in the owner's pockets. The search for data to substantiate values is frequently difficult and time consuming, for very often items of equipment have been purchased second-hand without receipts, and normally assets have to be re-evaluated to determine their market value; but the techniques used permit the collection of sophisticated information that allows the construction of fairly reliable balance sheets, and usually this is the first balance sheet in the life of the business. Using other pre-prepared forms, the trainees record how articles are bought and sold, the customer and supplier credit terms, the condition of the stock and premises, the technical and business know-how of the entrepreneur, any concrete short or long term plans the owner has, and information on investment and training, required to carry out the plans.

Over a period of about four months, trainees usually carry out about seven or eight audits, each one in a different kind of enterprise. At least once, each participant will be the team leader, responsible for organizing the collection of data, the balance sheet and writing the audit report. By the time participants have finished this phase of training they really begin to understand the anatomy of small business. After the management audit exercises, they return to the classroom for a month and are taught a few vital business principles and techniques through practical exercises. The participants then return to some of the enterprises and apply the techniques they have begun to master.

One of the major skills of a consultant is the ability to draft succinct memoranda which explain complex and technical issue in words a layman can understand. After each exercise or field activity, each participant has to write a one or two page memorandum describing the reason for the activity, the findings, conclusions, and when relevant, recommendations.

Usually a consultant is given little time by the entrepreneur to show him possible contributions the consultant might make. Therefore another major skill is the ability to explain clearly and precisely important issues, summarized in the same manner as memoranda. Participants undergo very special training in this technique, with each participant presenting to the group several cases, and with each presentation being rated by members of the group for the quality of its 'Content' and 'Diction', and the technique of the actual 'Presentation'. A video recorder is used to play-back presentations. Each memorandum has to be properly laid out and typed, and by the end of the course participants are able to draft complicated memoranda speedily, and with professional skill.

This special 'Writing and Speech' training, linked to the 'T' group exercise, strengthens the character of participants. They gain confidence in themselves and in their ability while realizing their own limitations, and they are, therefore, able to handle themselves well in public and create a favourable impression.

The penultimate phase of LPPM's one year small business consultants course is a one day seminar. This is a social as well as a technical occasion. All the owners of businesses that have been audited are invited to attend this seminar. The most interesting technical assistance case histories are presented, with the selected participants limiting their presentations

to ten minutes. Participants make their own charts and demonstration aids, the institute provides a camera and pays for the development and printing of films, if required.

During the last two weeks of this course, participants sit through a series of exams. Their papers are evaluated and included in their overall performance and the grades they obtain are recorded in their graduation certificates.

Source : A Winoto Doeriat, **Training of Small Business Consultants** (Indonesian Experiences), in **Small-Scale Industry Promotion in Developing Countries**, RVB, Delft, The Netherlands, 1983.

COURSE OUTLINE
Industrial Extension Training
Industrial Development Board
Sri Lanka

1. SSIs, An Overview

- 1.1. Introduction to Small Scale Industries (SSIs)
- 1.2. SSIs in Sri Lanka
- 1.3. SSI Identification and Development
- 1.4. SSI Programming Concepts
- 1.5. SSI Fiscal Incentives

2. Total Approach

- 2.1. Small Business Management - An Overview
 - Marketing
 - Organization and Personnel
 - Management Guidance
- 2.2. Planning, Analysis and Control of Production Systems
- 2.3. Financial Evaluation and Appraisal

3. Cost Reduction & Profit Maximization Tools

- 3.1. Cost Control Techniques
- 3.2. Materials Management and Inventory Control
- 3.3. Value Engineering
- 3.4. Methods Engineering
- 3.5. Work Sampling & Production Study
- 3.6. Fundamentals of Quality Control
- 3.7. Industrial Safety Regulation and Hygiene

4. Technological Development

- 4.1. Framework of Technological Development
- 4.2. Low Cost Automation Technology
- 4.3. Rational Problem Solving Techniques
- 4.4. Diagnostic Techniques
- 4.5. Technology Audit
- 4.6. Practical Strategies for Extension Work

5. Industrial Extension Education

- 5.1. Extension Strategy
- 5.2. Philosophy, Principles and Processes
- 5.3. Extension Methods and Tools
- 5.4. Communication - Its Relevance to Extension Service

- 5.5. Extension in Practice - Certain Models
- 5.6. Methods of Conducting Studies
- 5.7. Sources of Scientific and Technological Information
- 5.8. Role of Extension Agent

6. Field Work Orientation

- 6.1. Briefing
- 6.2. Meeting the Coaches
- 6.3. Actual Fieldwork
- 6.4. Presentation of Report
- 6.5. Evaluation of Report

7. Recommendation of Action Program for the
Development of SSIs in Sri Lanka

COURSE OUTLINE
Small Business Consultancy Course
University of the Philippines Institute for Small-Scale Industries

1. Introduction

- 1.1. Course Introduction
- 1.2. Group Dynamics

2. Philippine Business Environment

- 2.1. Philippine Business Environment
- 2.2. Development Prospects

3. Enterprise Management

- 3.1. The Process of Management
- 3.2. Organizational & Human Resource Management
- 3.3. Marketing Management in Small Business
- 3.4. Production Management in Small Business
- 3.5. Financial Management in Small Business
- 3.6. Crisis and Growth Management
- 3.7. Business Policy

4. Philippine Small Business Consultancy

- 4.1. Overview of Small Business Consulting
- 4.2. Consulting in Organizational Management
- 4.3. Case Study in Organizational Management Consultancy
- 4.4. Presentation of Case Study on Organizational Management
- 4.5. Consulting in Marketing Management
- 4.6. Plant Visit I
- 4.7. Discussion of Plant Visit I
- 4.8. - 4.10. Consulting in Production Management
- 4.11. Plant Visit II
- 4.12. Discussion of Plant Visit II
- 4.13. Consulting in Financial Management
- 4.14. Case Study on Financial Management
- 4.15. Presentation of Case Study on Financial Management Audit
- 4.16. Environmental Analysis
- 4.17. Information Generation
- 4.18. Data Analysis
- 4.19. - 4.20. Forecasting
- 4.21. - 4.23. Business Strategy Formulation (BSF)
- 4.24. - 4.28. BSF Workshop
- 4.29. - 4.30. Technical Writing
- 4.31. Developing and Packaging Proposals
- 4.32. Workshop
- 4.33. Presentation of Workshop Outputs

- 4.34. Facilitating Change
- 4.35. Implementation of Proposals, Maintenance, Control and Disengagement

5. Practicum on Business Strategy Formulation and Consultancy Practice (BSF/CP)

- 5.1. - 5.2. Introduction to Practicum on Business Strategy Formulation and Consultancy Practice
- 5.3. BSF Fieldwork*

6. Final Seminar

- 6.1. - 6.5. Dialogue With Small Industry Consultants
- 6.6. - 6.12. Presentation/Evaluation of Practicum Reports
- 6.13. Introduction to Consultancy Practice
- 6.14. - 6.24. Repackaging of Practicum Reports/Workshops
- 6.25. - 6.27. Business Game
- 6.28. - 6.47. Engagement Period
- 6.48. Sharing of Experiences

TRAINING OF NEW CONSULTANTS

By and large, the initial training of management consultants is geared to the enhancement of knowledge and skills in four subject areas :

- 1) Orientation to Consulting
- 2) Investigation and Problem-solving Techniques
- 3) Communication and Change
- 4) Theory and Practice of Management

1) Orientation to Consulting

- the nature, purpose and history of consulting;
- specialization, functions, organization, and management of consulting units;
- public relations, contacts, preliminary surveys, types of operating assignments, consulting terms of reference;
- the consultant's basic roles and personal characteristics;
- relationships between various consulting functions (operating, supervising, diagnosing, etc.);
- consultant-client relationships;
- professional behaviour and the code of conduct;
- administration and financial control in a consulting unit.

2) Investigation and Problem-solving Techniques

- systematic approach to problem solving;
- defining the problem, diagnosing organizations;
- assignment planning and scheduling;
- obtaining the facts, methods and techniques, work study, interviewing and other techniques;
- examination of facts, methods and techniques of fact analysis;
- developing proposals, evaluation and choice of alternatives, demonstration of benefits;
- presenting proposals,
- specifying solutions, design of working systems and procedures, form design;
- implementation, preparations, tactics and control, training the client's staff, evaluation of final benefits;
- maintenance and control, measures to prevent backsliding, preservation of standards, controls, follow-up service.

3) Communication and Change

- introduction to behavioural sciences and their findings about communication and change in organizations;
- oral communication, effective speaking and listening, investigational and other interviewing;
- group leading and control, meetings, presentations;

- persuasion;
- written communication, the message and its medium, report writing;
- the process of change in organizations and in people;
- strategies and tactics for implementing change;
- the role of change agent.

4) Theory and Practice of Management

- economic, social and other environments (national and international) and their impact on management;
- principal management functions and basic concepts of managing organizations;
- general management;
- financial management and accounting;
- marketing management;
- production and supply management;
- research and development management;
- personnel management;
- operations research and other quantitative techniques applied to management;
- office and records management;
- management information systems and computer applications in management.

The proportions between these areas may differ from case to case. A rough guide for structuring the central training course is given in the table below :

Subject Area	Share of time in %
Orientation to Consulting	15
Investigation and Problem Solving	40
Communication and Change	20
Theory and Practice of Management	25
Total Course	100

The list of subject areas given above also includes some aspects that were listed under the personal characteristics, or qualities, of a good consultant. Both the central course and the field component of training should provide opportunities and time for improving characteristics such as good judgement, analytical and problem-solving ability, skill in inter-personal relationships and ability to communicate and persuade. The training programs will also aim at improving other qualities such as self-confidence, integrity and independence. These, however, cannot be the subject of a particular session or exercise, but an overriding objective of the trainers' and trainees' common efforts. It should

be noted too that the demands on the initial training program must not be unrealistic : most young consultants will need several years of experience to acquire fully the qualities that characterize a competent member of the profession.

Source : Mr Kubr (ed). **Management Consulting : A Guide to the Profession.**
Geneva , ILO, 1982.

COURSE OUTLINE
Advanced Extension Training

1. Objectives

On completion of the course, the participants will be able to :

- a) Review the general concepts, functions and tools for conducting extension services to small-scale industries (SSIs).
- b) Understand the processes (marketing, production services, maintenance, administration, personnel and financial aspects) of managing common service facilities for SSIs.
- c) Observe and analyse the applicability of extension approaches to SSI development, particularly in improving design and engineering (D & E) and process technology.

2. Curriculum

The course will be composed of six modules, viz :

- a) Review of Extension Concepts - this will discuss the principles, functions, tools of extension services for SSIs.
- b) Management of Common Service Facilities - a common service facility centre is equipped with machinery and equipment to complement SSIs' processes. As a service unit, it provides production services (renting out of M & E at nominal cost), quality testing, product design, training and demonstration functions. The participants must acquire know-how on :
 - 1) Marketing of CSF Services (Market Plan, Sales Forecasts, etc.)
 - 2) Operations of the CSF (Production Function, Maintenance Management, Production Planning and Control, Quality Control of CSF Services, Work Distribution, etc.)
 - 3) Administration (Personnel Management, etc.)
 - 4) Financial Aspects (Budgeting, Cash Flow, Cost Recovery, Income & Loss and Balance Sheet).
- c) Design and Engineering - this will describe the process of absorbing new and modified products on the part of SSIs, i.e. from working drawings to final production. Inter alia, this will include : preparation of engineering drawings, value analysis, parts standardization, metrology, matching the product and process capacities, engineering phase (jigs, fixtures, methods, etc.), adaptation (pilot production trial shipment) and extension approaches.
- d) Process Technology - this will be based on the course's sectoral orientation and will describe the various processes in manufacturing a product. Process will start with raw materials up to the final quality control check. Various technology levels available per process should likewise be discussed.

- e) Special Topics - this will inject flexibility in the course design. Each topic as well as emphasis will be suggested by the national extension agency prior to course implementation. Some of the special topics include : Standardization, Sub-contracting, Quality Control, Modernization of SSIs, Mechanization, Mini-Industrial Estates, etc.
- f) Fieldwork Module - this module will provide the opportunity to observe and analyse the various SSI extension approaches in other countries of comparable economic level. The fieldwork module will be executed in line with the agency's sectoral specialization. In this module, activities will include SSI and institutional visits.

COURSE OUTLINE
Industrial Extension Trainers' Training
for
DP/DJIK* Industrial Extension Officers

<u>Session No.</u>	<u>Sessions</u>
1	Introduction
2 - 13	Group Dynamics/Entrepreneurial Motivation Training
14 - 15	National Development Plan and the Role of SSIs
16 - 17	Nature and Characteristics of SSIs in Indonesia
18 - 19	The Role of Industrial Extension Services in SSI Development
20 - 22	Technical Resource Information and SSI Development
23 - 28	Plant Visits
29 - 30	Management Aspect of SSIs in Indonesia
31 - 32	Marketing Aspect of SSIs in Indonesia
33 - 35	Production Aspect of SSIs in Indonesia
36 - 38	Financial Aspect of SSIs in Indonesia
39	Technical Report Writing Techniques
40 - 41	Diagnostic Techniques
42 - 43	Project Feasibility Study Preparation
44 - 45	Project Evaluation
46 - 47	Management of Industrial Extension Centre
48 - 49	Educational Psychology
50 - 61	Plant Visits (4 days)
62 - 63	Personal Skills of a Trainer
64 - 67	Teaching/Learning Principles in Adult Education
68 - 69	Planning and Designing Training Programs
70 - 77	Training Methodologies and Teaching
78 - 79	Aids in Training
80 - 82	Workshop in Planning and Designing of Training Programs for SSI Development in Indonesia
83 - 84	Planning and Designing of a Session
85 - 87	Workshop in Planning and Designing of a Session
88 - 89	Managing and Administering the Training Function
90 - 99	Practicum (Actual Feedback Practice)
100 - 110	Back Home Action Plan
111	Integration
112	Evaluation

* Directorate General of Small-Scale Industries under the Ministry of Industry, Indonesia

A BRIEF GUIDE TO TEACHING AND TRAINING METHODS

WHAT IT IS	WHAT IT WILL ACHIEVE	POINTS TO WATCH
<p><u>Lecture</u></p> <p>A talk given without much, if any, participation in the form of questions or discussion on the part of the trainees.</p>	<p>Suitable for large audiences where participation of the trainee is not possible because of numbers. The information to be put over can be exactly worked out beforehand - even to the precise word. The timing can be accurately worked out.</p>	<p>The lack of participation on the part of the audience means that unless the whole of it, from beginning to end, is fully understood and assimilated the sense will be lost.</p>
<p><u>Talk</u></p> <p>A talk incorporating a variety of techniques, and allowing for participation by the trainees. The participation may be in the form of questions asked of trainees, their questions to the speaker, or brief periods of discussion during the currency of the session.</p>	<p>Suitable for putting across information to groups of not more than twenty trainees. Participation by the trainees keeps their interest and helps them to learn.</p>	<p>The trainees have the opportunity to participate but may not wish to do so. The communication will then be all one way and the session will be little different from a lecture.</p>
<p><u>Discussion</u></p> <p>Knowledge, ideas and opinions on a particular subject are freely exchanged among the trainees and the instructor.</p>	<p>Suitable where the application of information is a matter of opinion. Also when attitudes need to be induced or changed. Trainees are more likely to change attitudes after discussion than they would if they were told during a talk that their attitude should be changed. Also suitable as a means of obtaining feedback to the instructor about the way in which trainees may apply the knowledge learned.</p>	<p>The trainees may stray from the subject matter or fail to discuss it usefully. The whole session may be blurred and woolly. Trainees may become entrenched about their attitudes rather than be prepared to change them.</p>
<p><u>Role Play</u></p> <p>Trainees are asked to enact, in the training situation, the role they will be called upon to play in their job of work. Used mainly for the practice of dealing with face-to-face situations (i.e. where people come together in the work situation).</p>	<p>Suitable where the subject is one where a near-to-life practice in the training situation is helpful to the trainees. The trainees can practise and receive expert advice or criticism and opinions of their colleagues in a "protected" training situation. This gives confidence as well as offering guidelines. The trainees get the feel of the pressures of the real life situation.</p>	<p>Trainees may be embarrassed and their confidence sapped rather than built up. It can also be regarded as 'a bit of a lark' and not taken seriously.</p>

WHAT IT IS	WHAT IT WILL ACHIEVE	POINTS TO WATCH
<u>Case Study</u>		
<p>A history of some event or set of circumstances, with the relevant details, is examined by the trainees. Case studies fall into two broad categories:</p> <p>(a) Those in which the trainees diagnose the causes of a particular problem.</p> <p>(b) Those in which the trainees set out to solve a particular problem.</p>	<p>Suitable where a cool look at the problem or set of circumstances, free from the pressures of the actual event, is beneficial. It provides opportunities for exchange of ideas and consideration of possible solutions to problems the trainees will face in the work situation.</p>	<p>Trainees may get the wrong impression of the real work situation. They may fail to realise that decisions taken in the training situation are different from those which have to be made on-the-spot in a live situation.</p>
<u>Exercise</u>		
<p>Trainees are asked to undertake a particular task, leading to a required result, following lines laid down by the trainers. It is usually a practice or a test of knowledge put over prior to the exercise.</p> <p>Exercises may be used to discover trainees' existing knowledge or ideas before further information or new ideas are introduced.</p> <p>Exercises may be posed for individuals or for groups.</p>	<p>Suitable for any situation where the trainees need to practise following a particular pattern or formula to reach a required objective. The trainees are to some extent 'on their own'. This is a highly active form of learning. Exercises are frequently used instead of formal tests to find out how much the trainee has assimilated. There is a lot of scope in this method for the imaginative trainer.</p>	<p>The exercise must be realistic and the expected result reasonably attainable by all trainees or the trainees will lose confidence and experience frustration.</p>
<u>Application Project</u>		
<p>Similar to an exercise but giving the trainee much greater opportunity for the display of initiative and creative ideas. The particular task is laid down by the trainer but the lines to be followed to achieve the objectives are left to the trainee to decide.</p> <p>Like exercises, projects may be set for either individuals or groups.</p>	<p>Suitable where initiative and creativity need stimulating or testing. Projects provide feedback on a range of personal qualities of trainees as well as their range of knowledge and attitude to the job.</p> <p>Like exercises, projects may be used instead of formal tests.</p> <p>Again there is a lot of scope for the imaginative trainer.</p>	<p>It is essential that the project is undertaken with the trainee's full interest and co-operation. It must also be seen by the trainee to be directly relevant to his needs.</p> <p>If the trainee fails, or feels he has failed the project there will be severe loss of confidence on his part and possible antagonism towards the trainer.</p> <p>Trainees are often hyper-sensitive to criticism of project work.</p>

WHAT IT IS	WHAT IT WILL ACHIEVE	POINTS TO WATCH
<p><u>In-Basket (In-Tray)</u></p> <p>Trainees are given a series of files, papers and letters similar to those they will be required to deal with at the place of work (i.e. the typical content of a desk-worker's in-tray).</p> <p>Trainees take action on each piece of work. The results are marked or compared one with another.</p>	<p>Suitable for giving trainee desk-workers a clear understanding of the real-life problems and their solutions.</p> <p>The simulation of the real situation aids the transfer of learning from the training to the work situation.</p> <p>A valuable way of obtaining feedback on the trainees' progress.</p> <p>Also useful for developing attitudes towards the work, e.g. priorities, customers' complaints, superiors, etc.</p>	<p>It is important that the contents of the in-tray are realistic. The aim should be to provide trainees with a typical in-tray.</p> <p>The marking or comparison of results must be done in a way which will not sap the confidence of the weaker trainee.</p>
<p><u>Business Games</u></p> <p>Trainees are presented with information about a company - financial position, products, markets, etc.</p> <p>They are given different management roles to perform. One group may be concerned with sales, another with production and so on.</p> <p>These groups then 'run' the company. Decisions are made and actions are taken. The probable result of these decisions in terms of profitability is then calculated.</p>	<p>Suitable for giving trainee managers practice in dealing with management problems.</p> <p>The simulation of the real-life situation not only aids the transfer of learning but is necessary because a trainee manager applying only broad theoretical knowledge to the work situation could cause major problems.</p> <p>Also a valuable way of assessing the potential and performance of trainees.</p> <p>It helps considerably in developing many aspects of a manager's role.</p>	<p>The main difficulty is in assessing the probable results of the decisions made. Sometimes a computer is used for this purpose.</p> <p>The trainees may reject the whole of the learning if they feel the assessment of the probable outcome of their decisions is unrealistic.</p> <p>There is also a risk that the trainees may not take the training situation seriously.</p>
<p><u>Sensitivity Training (Group Dynamics)</u></p> <p>Trainees are put into situations in which:</p> <p>(a) the behaviour of each individual in the group is subject to examination and comment by the other trainees;</p> <p>(b) the behaviour of the group (or groups) as a whole is examined.</p> <p>(The trainer is a psychologist, sociologist or a person who has himself received special training).</p>	<p>A vivid way for the trainee to learn of the effect of his behaviour on other people and the effect of their behaviour upon him.</p> <p>It increases knowledge of how and why people at work behave as they do. It increases skill at working with other people and of getting work done through other people.</p> <p>A valuable way of learning the skill of communication.</p>	<p>Difficulties can arise if what the trainee learns about himself is distasteful to him.</p> <p>Trainees may 'opt-out' if they feel put off by the searching examination of motives.</p> <p>It is important that problems arising within the group are resolved before the group breaks up.</p>

TEN SIMPLE RULES OF LEARNING

1. The capacities of learners are important in determining what can be learned and how long it will take

The implication of this principle is that trainers should know their audiences. Bright people can grasp a complex message that is over the heads of the less bright ones. And they grasp significance of a simple message in less time.

2. The order or presentation of materials to be learned is very important

Points presented at the beginning and end of the message are remembered better than those in the middle. Thus, if four reasons "why" are given in a series of copy, the two most important points should be given first and last.

3. Showing errors in how to do something can lead to increases in learning

The effectiveness of a demonstration might be increased by showing not only "what to do" but also "what not to do". Thus, to show how not to use a product and also how to use a product may be very useful.

4. The rate of forgetting tends to be very rapid immediately after learning

Accordingly, the continuing repetition of the training message is desirable. It usually takes a lot of repetition in the early weeks of a program to overcome rapid forgetting.

5. Repetition of identical materials is often as effective in getting things remembered as repeating the same story but with variations

Psychologists term this identical versus varied repetition. Using training films, they have failed to find significant differences in learning, after employing a lot of different examples versus repeating the same few over again.

6. Knowledge of results leads to increases in learning

If you are interested in teaching a given amount of material to people, knowledge of how well they are doing as they are learning leads to greater learning gains.

7. Learning is aided by active practice rather than passive reception

This point is of great importance. If you can get your audience to "participate" in your presentation, they are much more likely to remember your points.

8. A message is more easily learned and accepted if it does not interfere with earlier habits

Thus, a training theme which draws on prior experiences of the audience will help the learning of the message.

9. The mere repetition of a situation does not necessarily lead to learning. Two things are necessary - "belongingness" and "satisfaction"

Belongingness means that the elements to be learned must seem to belong together, must show some form of relationship or sequence.

Satisfaction results from real or symbolic rewards, as distinguished from annoying consequences that may be present in the learning process.

10. Learning something new can interfere with the remembering of something learned earlier

This is most important when the learner is being asked to change his habits or methods of work. For example, if you study French for an hour and then study Italian for an hour, your ability to recall the French will probably be less than it would have been had you substituted an hour's interval of rest in place of the hour's study of Italian.

Source : ILO, Teaching and Training Methods for Management Development, Geneva, 1975.

CHAPTER 7: ENTREPRENEURSHIP DEVELOPMENT

SUMMARY

1. INTRODUCTION
2. ENTREPRENEURSHIP DEVELOPMENT : AN INTEGRATED APPROACH
3. ENTREPRENEURSHIP DEVELOPMENT : THE TRAINING APPROACH
 - 3.1. Achievement Motivation Training (AMT)
 - 3.2. Management Skills Training
4. EVALUATING ENTREPRENEURSHIP DEVELOPMENT PROGRAMS

ANNEXES

1. Entrepreneurship Development Program Curriculum - Bangladesh
2. Entrepreneurship Development Program Curriculum - Indonesia
3. Entrepreneurship Development Program Curriculum - Malaysia
4. Entrepreneurship Development Program Curriculum - Philippines
5. Entrepreneurship Development Program Curriculum - Thailand
6. Entrepreneurship Development Program (Gujarat Model) - India
7. Summary Matrix of Selection Criteria for Entrepreneurship Development Programs in Five Asian Countries

CHAPTER 7: ENTREPRENEURSHIP DEVELOPMENT

SUMMARY

Entrepreneurship development as a term is so popular nowadays that it has almost become a cliché, and perhaps also unduly abused. This chapter discusses the salient points in entrepreneurship development concepts and processes which the extension manager has to know since SSI development is invariably linked with entrepreneurship development. The implication of this to the extension manager is that he can play a crucial role in the potential entrepreneurs' entry into the business world by providing them with the necessary support and guidance.

1. INTRODUCTION

Being an active agent in stimulating entrepreneurial spirit, extension managers must be familiar with entrepreneurship development approaches.

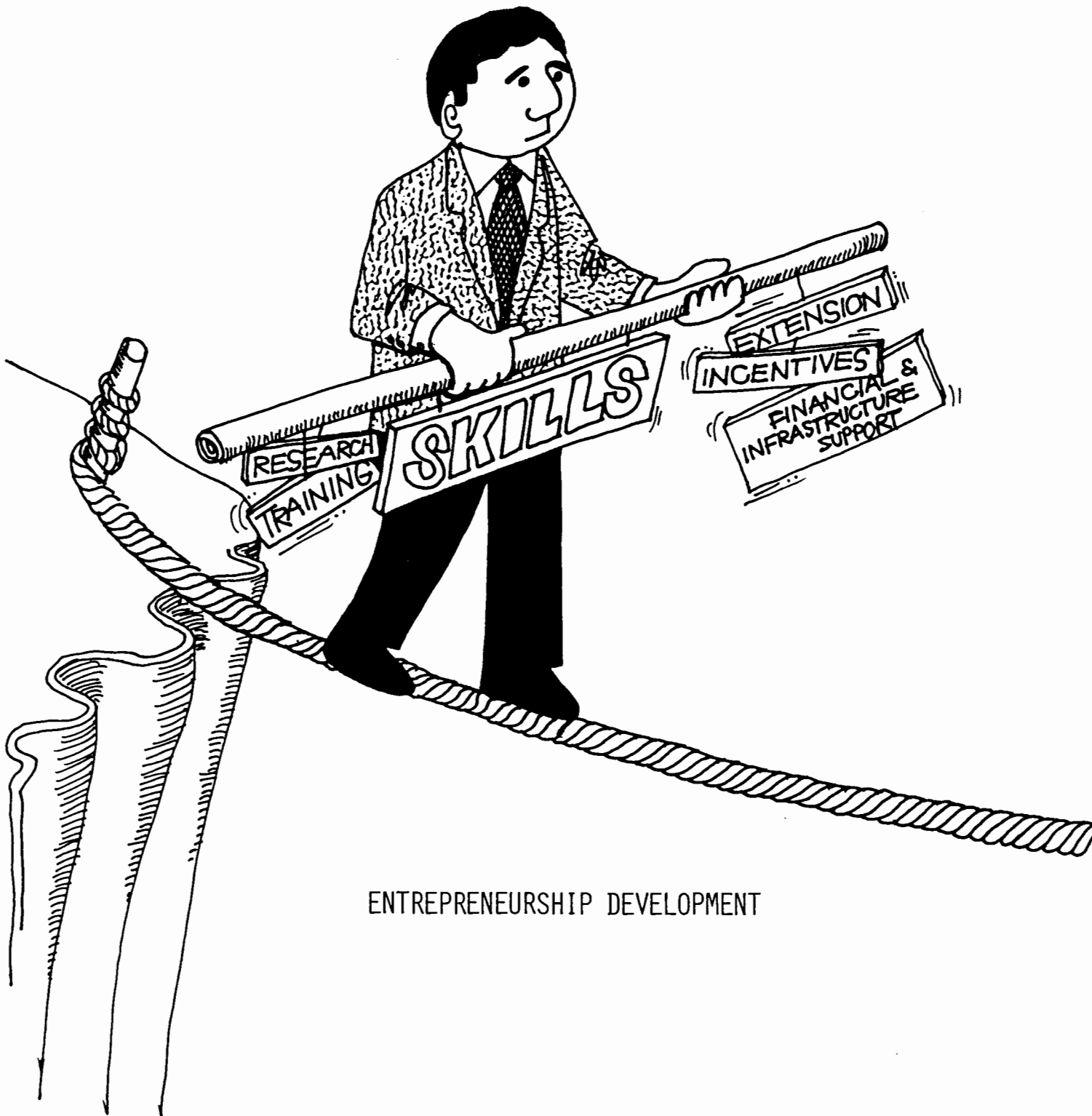
Entrepreneurship development can be viewed from its broader and restricted concepts. The broader concept defines entrepreneurship development as an integrated approach in stimulating and promoting small enterprises where the common elements include training, research, extension, government incentives, financial and infrastructure support.

In its restricted sense, entrepreneurship development is the process of motivating prospective entrepreneurs to start their own SSIs and provide them with managerial skills to successfully operate these businesses. It covers the programs designed to reinforce and sustain the achievement motive of existing entrepreneurs and upgrade their managerial skills. Both definitions will be treated here.

The concept of entrepreneurship development is indispensably linked with SSIs promotion as it has been widely accepted that the natural habitat of entrepreneurs is the SSI.

2. ENTREPRENEURSHIP DEVELOPMENT : AN INTEGRATED APPROACH

The immediate goal of entrepreneurship development programs is to induce entrepreneurial behaviour which is a product jointly of personality and external factors. Personal qualities which lead to entrepreneurial success include willingness to take calculated risks, initiative and drive, foresight and adaptability to changing conditions in the environment. However, even the most strongly motivated individual possessing the above qualities will fail if the environmental opportunities and resources do not support successful entrepreneurial endeavours. These external factors are discussed in Chapter 2 of this Volume.



ENTREPRENEURSHIP DEVELOPMENT

A multi-country research study^{1/} funded by the International Development Research Centre (IDRC) of Canada formulated an entrepreneurship development model categorizing the various inputs into three broad classifications, namely :

- 1) Stimulatory activities - These refer to efforts which promote, create and foster entrepreneurship in the society. Examples are entrepreneurial motivation training, identification of business opportunities for the entrepreneurs, matching of potential entrepreneurs with business opportunities, etc.
- 2) Support activities - These refer to all such efforts that help entrepreneurs in organizing and running their SSIs. Examples are industrial extension service during the pre-operating and operational stages of the SSI, liberal financial assistance scheme, provision of common facilities, marketing assistance, etc.
- 3) Sustaining activities - These refer to all such activities which help to ensure continued, efficient and profitable operation of the SSI. Examples are management consultancy for the improvement, modernization and diversification of the SSI, technical assistance for full capacity utilization, market expansion, etc.

The components of each classification are presented in Figure 7.1.

In the experience of selected Asian countries, entrepreneurship is developed by selective, shotgun or multiplier methods. The selective method involves systematic identification and selection of individuals with latent potentials and appropriate attitudes towards entrepreneurial careers. The shotgun method refers to a multi-dimensional approach but may be lacking in coordination and integration of efforts, such as in the case of conflicting or duplicating assistance programs by different agencies. The multiplier method uses intermediaries or change agents - trainers, extension officers, consultants, among others - to bring about a multiplier effect in entrepreneurship development. Figure 7.2 presents a summary matrix of the various approaches adopted by different Asian countries.

^{1/} S.V. Sharma, Small Entrepreneurial Development in Some Asian Countries, A Comparative Study, New Delhi : Light and Life Publishers, 1979.

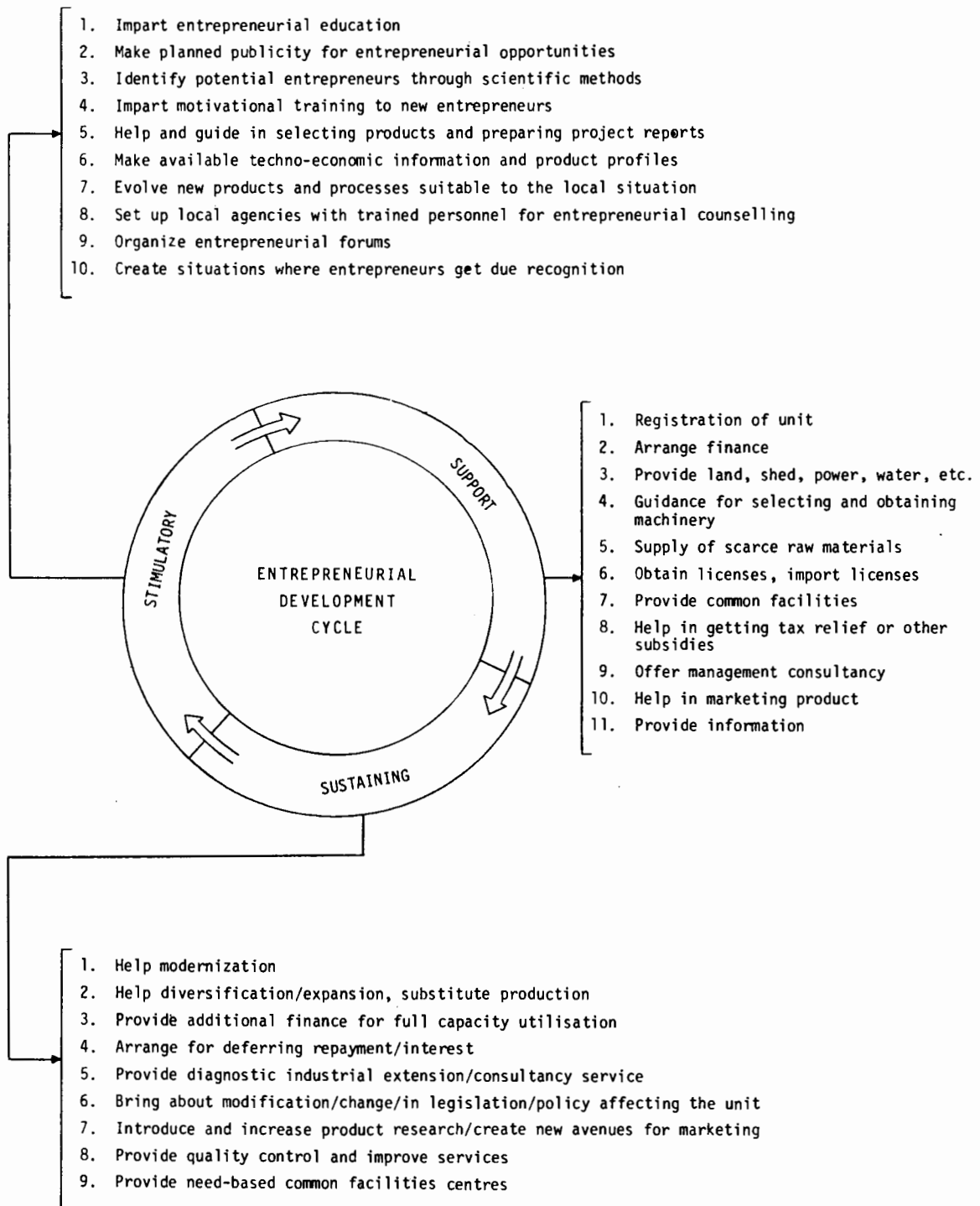


Figure 7.1. Entrepreneurial Development Cycle

COUNTRIES	BANGLADESH	HONG KONG	INDONESIA	SOUTH KOREA	MALAYSIA	PHILIPPINES	SINGAPORE	SRI LANKA	THAILAND	FIJI
APPROACHES										
A. Methods in Promoting Entrepreneurship										
a. Selective
b. Shotgun
c. Multiplier
B. Interventions in Promoting Entrepreneurship										
a. Training										
1. Awareness development
2. Achievement motivation
3. Management skills development
4. Attachment training
5. Training of trainers
b. Consultancy										
1. Technical
2. Marketing
3. Financial
4. Personnel
5. Pre-feasibility studies
c. Sectoral Development			
d. Provision of Incentives										
1. Social
2. Economic
3. Technological
e. Educational System						.				

Figure 7.2. Approaches to Entrepreneurship Development

Certain prerequisites must be present in order to create a climate conducive to entrepreneurship development. These are :

- 1) **an open and competitive social structure** - an individual must have the desire to excel over his peers or competitors in the society and his social and economic advancement must be achieved as a result of his own efforts and not status or social privilege.
- 2) **the development of the appropriate attitude and behaviour among the individuals in the society** - entrepreneurship thrives in an environment where individuals are creative, innovative, risk takers, ambitious and achievement-oriented.
- 3) **the provision and extension of adequate support programs to the enterprise and the entrepreneur** - support programs which are available and accessible nurture entrepreneurial initiatives and provide the needed impetus and encouragement to potential entrepreneurs.
- 4) **the presence of a stable and good government** - good government inspires entrepreneurial undertakings as individuals can be motivated to take calculated risks on their investments and to expect rational and supportive political decisions affecting the economy.

3. ENTREPRENEURSHIP DEVELOPMENT : THE TRAINING APPROACH

The restricted meaning of entrepreneurship development refers to the training programs that are specifically designed to create new entrepreneurs and further develop existing ones. The first objective is based on the premise that entrepreneurs can be created and stimulated although at a reasonable cost^{2/}. The second objective seeks to reinforce the achievement motive of existing entrepreneurs and improve their managerial competence.

Entrepreneurship training in the Asian countries commonly covers :

- 1) **awareness development** - by which the role of entrepreneurship in economic development is emphasized and by which the public gains a better understanding of the business environment and opportunities surrounding them through appreciation seminars and mass media promotion. Examples are the one-day Pre-Business and Industry Preparatory Course of Majlis Amanah Rakyat (MARA) in Malaysia, and the Appreciation Course on Entrepreneurship (ACE) of the University of the Philippines Institute for Small-Scale Industries (UP ISSI).

^{2/} Robert B. Buchele, "The Development of Small-Scale Enterprises", Technology and Development Institute, East-West Center, Honolulu, September 1972.

- 2) achievement motivation - aimed at increasing the level of confidence and achievement motive of the participants. Examples are the Achievement Motivation Training (AMT) of MARA, UP ISSI, the Directorate General for Small-Scale Industries (DJIK) in Indonesia, and the Industrial Service Institute (ISI) in Thailand.
- 3) management skills development - designed to provide the participants with the necessary managerial skills in running their SSIs, mostly covering the functional areas of SSI management (marketing, finance, production, personnel and general management) such as the EDPs of UP ISSI in the Philippines and ISI in Thailand.
- 4) on-the-job or attachment training - wherein the participants acquire experience in the actual situation and operations of the business enterprise, such as the EDP conducted by the Bangladesh Management Development Centre and MARA.

While many Asian developing countries have clearcut policies and programs on entrepreneurship development training, their localized orientation has resulted in differing course content, duration, methodology and selection procedures. See Annexes 1-5 for the course outline of the EDPs in selected Asian countries. Two modules which stand out in striking commonality are :

- Motivation Training (commonly referred to as Achievement Motivation Training or AMT), and
- Management Skills Training (also known as Business or Enterprise Management Training).

Variations occur in the inclusion or exclusion of specialized topics such as the actual preparation of project feasibility studies, an integrating module that focus on success stories of rag-to-riches entrepreneurs and entrepreneurship in the local setting.

Entrepreneurship Development Programs in India, where McClelland conducted much of his achievement motivation researches and formulated his n Ach theory, are extensively conducted by various government and voluntary organizations. The impetus for this type of training was initiated by the Small Industries Development Organization in the sixties through the Small Industries and Extension Training Institute (SIET) in Hyderabad, followed by the Small Industries Services Institute (SISI) in the various states, the engineering colleges and the financial institutions. Real thrust to EDP activity was given by the Gujarat Centre for Entrepreneurship Development (CED) set up in 1979 by the State, Government and the State-owned Development Financial Institution (DFI). The EDP Gujarat model is found in Annex 6.

The EDP is characterized by a rigid selection scheme in order to effectively select and identify individuals with potentials for success in entrepreneurship. The criteria are grouped into three categories : personality traits, socio-economic background and entrepreneurial readiness (see Annex 7).

Most schemes focus on criteria which evaluate applicants as to their readiness for the entrepreneurial role. These criteria include knowledgeability of applicants on their proposed business, adequate exposure or background in business, and extent of planning or action done in business goals. A study of selection schemes for EDP in Bangladesh, Indonesia, Malaysia, Philippines and Thailand indicated the use of five techniques in screening applicants : 1) role playing, 2) written tests, 3) seminar/symposium, 4) application form/questionnaire, and 5) interviews. Figure 7.3. presents a summary matrix of selection techniques used in the above countries. The result of a research study on the validation of selection schemes point out the need to limit the criteria to the significant few (e.g. risk taking, decision making ability and personal commitment) that have the most predictive value to entrepreneurial behaviour.

Selection Technique	BANGLADESH	INDONESIA	MALAYSIA	PHILIPPINES	THAILAND
Role Playing			*		
Written Tests	*		*	*	*
Seminar/Symposium			**	***	***
Application Form/ Questionnaire	**	***	*	*	*
Interviews	***	**	*	*	*

* These are scored.

** These are administered but are not scored, yet are used as basis for certain selection decisions.

*** These are conducted but are not used as basis for selection decisions.

Figure 7.3. Techniques Used in EDP Selection

3.1. Achievement Motivation Training (AMT)

Most motivation training used in EDPs is based on David McClelland's theory of need for Achievement (n Ach) or achievement motive. From his research, he concluded that n Ach is a key factor to economic growth and that, considering its high association with entrepreneurial behaviour, n Ach was the explanation for the apparently strange economic indifference of many, and the responsiveness of a few, to environmental opportunities^{3/}. AMT aims at providing the participants with the proper psychological set with the view of developing the desirable attitude and behaviour towards business undertakings. The training, mostly residential and lasting from 3-5 full days including evenings, uncovers the personal characteristics - the strengths and weaknesses - of the participants. Figure 7.4. shows a comparison of the duration and mode of conduct of AMTs in selected countries and McClelland's studies.

^{3/} This subject is extensively discussed in the books he wrote and co-authored : The Achieving Society and Motivating Economic Achievement, respectively.

	McClelland	Philippines	Indonesia	Malaysia	Singapore
Duration :					
No. of Days	6 to 18	4	4½	5	3
No. of Hours	48 to 144	34 to 42	30-45-54	40-50	25
Mode of Conduct	live-in	live-in	live-in	live-in	live-in

Figure 7.4. Duration and Mode of Conduct of Achievement Motivation Training

The training inputs of AMT may be grouped under four main categories, namely :

- 1) **Achievement Syndrome** - teaching the participants to think and act in the achievement-oriented way by recognizing and producing n Ach fantasies and by receiving positive reinforcements for n Ach behaviours;
- 2) **Self-study** - allowing the participants to examine themselves and to receive feedback from others on their typical behaviour under "business-like" situations, as well as on their values in life;
- 3) **Goal Setting** - helping the participants to define more precisely n Ach-related goals in life, and how to go about measuring progress toward these goals; and
- 4) **Interpersonal Support** - making the participants feel emotionally and rationally supported in their attempts at self-change by their colleagues.

Figure 7.5. presents a comparison of selected Asian AMTs with McClelland's in terms of methodology.

Input	Objective	McClelland AMT	Philippines	Indonesia	Malaysia	Thailand
Achievement Syndrome	For participants to clearly conceptualize n Ach	Thematic Apperception Test and workshops in recognizing achievement imagery	Thematic Apperception Test and workshops in recognizing achievement imagery	Thematic Apperception Test and workshops in recognizing achievement imagery Three social motives Maslow's hierarchy of needs	Thematic Apperception Test	Entrepreneurial characteristics (lecture)
	For participants to link n Ach to related business activities	Business game, Case studies of entrepreneurs	Achievement game, Competition game, Risk-taking game, Communication game, Creativity game, Simulation game	Business game Case studies of entrepreneurs Risk-taking game Superior-subordinate relationships Cooperation game	Risk-taking and Decision making	Achievement game, Cooperation game, Communication game, Leadership game, Competition game, Risk Taking game, Creativity game, Self and other awareness exercise
Self-Study	To make individual believe that he can, will, or should develop a motive because it is demanded by his career and life situation	Who Am I Silent Group meditation, Individual Counselling	Who Am I	Who am I, Self-concept (introversion - extroversion strengths and weaknesses), Johari Window	Who are You	Self and other awareness
	To experience n Ach as consistent with self-image, with prevailing cultural values and norms	Value analysis Discussion on the roots and effects of values	Analysis of personal values	Analysis of social values	Discussion of roots and effects of values	Analysis of personal values
Goal-Setting	For participants to commit themselves to concrete life goals related to n Ach	Goal-setting (General life goals and specific for 6 months)	Goal-setting (General life goals and specific for 6 months)	Goal-setting (General life goals and specific for 5 years, 1 year, 6 months and 1 month)	Your house in 10 years, Logo designs	
Inter-personal supports	To provide an atmosphere where participants feel honestly accepted as individuals worthy of respect	Residential training Resort setting Warm trainer-trainee relationships	Residential training Learning contract Warm trainer-trainee relationships	Residential training Learning contract Warm trainer-trainee relationships	Learning contract Residential training Resort training	Residential training Resort setting Warm trainer-trainee relationships
	Develop in-group feeling in a continuing reference group	Individual counselling	Individual counselling Inviting trusted persons	Individual counselling	Individual counselling	Individual counselling

Figure 7.5. Comparison of Asian AMTs with the McClelland AMT (EXERCISES/GAMES)

3.2. Management Skills Training

The primary cause of failure among SSIs has been commonly found to be management weakness or incompetence. For an entrepreneur, it is one thing to start a business and another to operate and expand the business. Oftentimes there is an unbalanced managerial skill on the part of the entrepreneur due to his previous work experience or educational background, hence there is need to equip him with adequate and balanced management know-how. He may be strong in selling but weak in overall marketing management; or strong in production but weak in financial management.

The functional areas of management, namely general management and personnel, marketing, production, and finance are treated in varying depths and emphasis in the various EDPs of many Asian countries depending on the educational level and experience of the participants. In most EDP course design, this training module or component takes about one-third to two-thirds of the total training sessions with duration ranging from one to six weeks. While lecture-discussions are commonly used, these are supplemented by games, exercises, case studies, film showing and factory visits.

4. EVALUATING ENTREPRENEURSHIP DEVELOPMENT PROGRAMS

Evaluating EDP as a total approach to promoting SSI development would be treading on dangerous ground. This could lead to making judgements on which country or countries have the best package of assistance programs and will certainly create much controversy. Various country experiences such as those of India, Korea and Japan have been cited as possible models for developing countries. There are many reservations regarding this issue. What seems to be more acceptable is for a developing country to search from various options an optimum mix of policies and assistance programs for the SSI sector appropriate to its local physical and social milieu. There are also indicators that government's good intentions may not always be appreciated or even wanted by the entrepreneurs. In several country researches, the common finding was a plea from entrepreneurs to the government to leave them alone. There is also increasing recognition of the importance of non-financial incentives (e.g. extension service, infrastructure support, information delivery) in promoting the SSI sector.

Evaluating the effectiveness of EDP as a training approach to stimulating entrepreneurship has been attempted by various institutions worldwide. The first key question is : "are the EDPs really effective in motivating the participants (supposedly prospective entrepreneurs) to venture into a successful entrepreneurial career (meaning starting and successfully managing a small enterprise)?" The premise is that it is not enough that these trained entrepreneurs have actually succeeded in starting businesses but that these businesses are profitable. M. Harper cited a research investigation at Cranfield

which identified almost 100 EDP activities throughout the world and found that approximately one-third of these programs were unable to state what proportion of their 'graduates' had actually succeeded in starting businesses. The second key question is : "are the EDPs really effective in inducing positive behavioural changes among existing entrepreneurs?" The premise is that such behavioural changes would make them more motivated and more skillful in managing and expanding their existing businesses or in setting up new ones.

It is rather difficult to measure EDP effectiveness due firstly, to the difficulty of choosing the appropriate criteria to be used for evaluation (although what are commonly used now include profitability, productivity, value added, employment, taxes paid and foreign exchange savings/generation), secondly, to the difficulty of isolating the EDP training as the factor in the entrepreneurial and business success; and thirdly, EDPs have a mixed clientele (e.g. existing and potential entrepreneurs). In some countries, only prospective entrepreneurs (out-of school youths, technicians, civil servants, professionals, among others) are the target of EDP intervention. In other countries (e.g. Indonesia), only existing entrepreneurs are accepted. Still in other countries, the EDP caters to a mixed group of existing entrepreneurs, traders, civil servants, professionals and military personnel. For the new entrepreneurs, evaluation criteria include number of businesses set up, and the financial condition of the entrepreneurs and the businesses as well as quantifiable economic contributions to the economy. For the existing entrepreneurs, evaluation measures may revolve around the status of their firms (e.g. profitability, productivity, technology level, market and product diversification/expansion) and number of new SSIs established.

Evaluations, however, have been conducted in the past by several Asian countries. Bangladesh, India, Indonesia and the Philippines claim to have a success factor of 50-60%. Despite these earlier attempts there remains a continuing need to develop a more practical yet scientific methodology of evaluating EDPs something that will have significant validity. Finally, despite these deficiencies and as refinements evolve in the process, there will be a constant demand for coming out at least with tentative indicators of the EDP effectiveness to justify the cost and efforts of conducting them and to make improvements based on these feedback.

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ENTREPRENEURSHIP DEVELOPMENT PROGRAM CURRICULUM
(BANGLADESH)*

Orientation

Small and Cottage Industries

Business Concepts and Management

Institutional Framework Supporting Business and Industry

Technological and Investment Aspects of Handloom Factory, Fisheries, and Engineering Workshops

Field Visits, Data Collection and Data Processing

Production, Inventory, Sales Management, Office Management and Human Relations

Business Environment

Accounting Concepts and Principles

Insurance and Banking : Principles and Formalities

Legal Aspects of Industry and Business

Assessment of Taxes

Finance and Investment Decision

After-Training Tests

Preparation of 3 Viable Projects (with 7-year budgeted cash flows, income statements and balance sheets)

Duration : 5 weeks

* Bangladesh Management Development Centre (BMDC)

ENTREPRENEURSHIP DEVELOPMENT PROGRAM CURRICULUM
(INDONESIA)*

<u>Module</u>	<u>Sessions</u>	<u>No. of Sessions</u>
I	<u>Achievement Motivation Training</u> Orientation and Leveling of Expectations Baseline Measures of n Ach Baseline Measures of Extroversive-Introversive Tendencies Baseline Measures of Individual Strengths and Weaknesses Self-Awareness Baseline Measures of Attitudes to Superiors/ Subordinates Risk Taking Use of Feedback Taking Personal Responsibility Learning Inventory Training Process Entrepreneurial Behaviour Openmindedness Working in Groups Maslow's Hierarchy of Needs Three Basic Social Motives Scoring TAT Stories Nature and Characteristics of Successful Entrepreneurs Entrepreneurial Behaviour Extroversion-Introversion Work Relationships Setting Targets Final Measures of n Ach Goal Setting Win-Win Competition	23
II	Industrial Information	8
	Indonesian Way of Life	2

* Directorate General of Small-Scale Industries, Department of Industry

<u>Module</u>	<u>Sessions</u>	<u>No. of Sessions</u>
III	<u>Business Operation and Management</u>	18
	Organization and Management	
	Personnel Management	
	Marketing Management	
	Production Management	
	Financial Management	
IV	Feasibility Study and Project Investment	4
V	Plant Visits and Project Development	19
VI	Final Seminar	6
	Total	<hr/> 80 sessions
	Duration	20 days

ENTREPRENEURSHIP DEVELOPMENT PROGRAM CURRICULUM
(MALAYSIA)*

<u>Module</u>	<u>Sessions</u>	<u>Duration (days)</u>
I	<u>Entrepreneurship</u> Entrepreneurship : What? Why? How? Who is the Entrepreneur? Characteristics of an Entrepreneur Small Business : Factors Contributing to Success and Failure Business Opportunities and Ideas : What? and Where? Own Entrepreneurship Plan	2
II	<u>Achievement Motivation</u> Introductory Session Writing of Imaginative Stories Unfreezing Self and Other Awareness Risk Taking and Decision Making Who Am I? Recognizing Achievement Imagery Achievement Acting Value Classification Giving and Receiving Feedback Leadership Competition Goal Setting	5
III	<u>Launching a Project</u> Planning a Business Organization Business Operation and Forms of Business Organization Starting a Business Merging of Sources Sources of Inputs Case Studies of Entrepreneurs	1

* Majlis Amanah Rakyat (MARA) - Council of Trust for Indigenous People

<u>Module</u>	<u>Sessions</u>	<u>Duration (days)</u>
IV	<u>Enterprise Management</u> General Management Procurement/Supplies Salesmanship Sources of Assistance Marketing Basics of Accounting Financial Analysis, Capital Estimates, Cash Flows	1½
V	<u>Selection of Business Project</u> Market Research Practical and Project Tour Project Evaluation and Investigation Evaluation/Discussion	1
VI	<u>Business Project</u> Project Selection : Preparation and Working Paper Financial Sources/Aids Cases	4
VII	<u>Pre-Business Launching</u> Preparation of Working Papers Project Presentation	1
VIII	<u>Management Planning for Expansion</u> Success Factors	1

ENTREPRENEURSHIP DEVELOPMENT PROGRAM CURRICULUM
(PHILIPPINES)*

<u>Module</u>	<u>Sessions</u>	<u>No. of Sessions</u>
I	<u>Entrepreneurship : Philippine Setting</u> Entrepreneurship and Economic Development Opportunity Identification Project Selection Forms and Sources of Assistance	5
II	<u>Achievement Motivation Training</u> Self-Concept Values Thematic Apperception Test and Achievement Imagery Risk Taking Use of Feedback Taking of Personal Responsibility Communication and Leadership Creativity and Innovativeness Competition Achievement Game Goal Setting	8
III	<u>Essentials of Management</u> Personnel Management Human Relations Effective Communications Leadership Problem Solving and Decision Making Marketing Mix Product Planning and Development Channels of Distribution Pricing Promotions Sales Forecasting	30

* University of the Philippines Institute for Small-Scale Industries

<u>Module</u>	<u>Sessions</u>	<u>No. of Sessions</u>
	Production Systems and Functions Plant Location and Layout Production Planning and Control Materials Handling Quality Control Work Simplification Principles of Financial Management Accounting Records and Systems Cost Accounting Cost-Volume-Profit Analysis Financial Analysis Budgeting and Budgetary Control Cash Management Cost for Decision Making	
IV	<u>Fundamentals of Project Feasibility Study Preparation</u> Overview of Project Feasibility Study Technical Information Sources and Services Economic and Market Feasibility Technical Feasibility Financial Feasibility	8
V	<u>Organizing the Business</u> Legal Forms of Business Business Laws and Taxes Hiring and Training of Personnel Checklist for Going into Business	4
VI	<u>Integration</u> Success Stories Plant Visits Business Game	12

Duration : 35 days

ENTREPRENEURSHIP DEVELOPMENT PROGRAM CURRICULUM
(THAILAND)*

<u>Module</u>	<u>Sessions</u>	<u>Duration</u>
I. Introduction to Entrepreneurship	Entrepreneurship and Economic Development	2 hours
	Factors Affecting Entrepreneurship Development	2 hours
	Entrepreneurial Behaviour	2 hours
	The Role and Need of the Entrepreneur	2 hours
II. Achievement Motivation Training	Initial Expectation	3 days live-in
	Self and Other Awareness	
	Values	
	The Achievement Motive and Recognizing Achievement Imagery	
	Competition	
	Intergroup Communication	
	Decision Making	
III. Management Skills Training	<u>Organization and General Management</u>	4 hours
	Principles of Organization Leadership Decision Making Problem Solving	

* Industrial Service Institute, Department of Industrial Promotion,
Ministry of Industry

<u>Module</u>	<u>Sessions</u>	<u>Duration</u>
	<u>Marketing Management</u>	4 hours
	Product Planning and Development Marketing Forecast Channels of Distribution Market Survey and Research Promotion	
	<u>Financial Management</u>	6 hours
	Financial Analysis Budget Planning and Control Cost Accounting Purchasing and Inventory Control Financial Management Cost for Decision Making	
	<u>Production Management</u>	6 hours
	Production Systems and Function Production Planning and Control Materials Handling Plant Location and Layout Work Simplification and Cost Reduction Quality Control	
IV. Project Feasibility Study	<u>Introduction to Project Feasibility Study</u>	9 hours
	Organization Aspects Marketing Aspects Technical Aspects Financial Aspects Social Aspects Back Home Action Plan	20 hours
V. Organizing the Business	Government Incentives and Protection	1 hour
	How to Set Up a Business	1 hour
	Government Policies	1 hour
	Factory Control Regulation and Law	1 hour
VI. Field Trip		5 days

ENTREPRENEURSHIP DEVELOPMENT PROGRAM
(GUJARAT MODEL)

The Program Package

The task of developing entrepreneurs has been defined by Gujarat trainers as that of (a) identifying and carefully selecting those who could be trained as entrepreneurs, (b) developing their entrepreneurial capabilities, (c) ensuring that each potential entrepreneur (trainee) has a viable industrial project, (d) equipping them with basic managerial understanding, and (e) helping them to secure necessary financial, infrastructure and related assistance so that an industrial venture materializes within the shortest time possible.

Selecting Potential Entrepreneurs

In formulating the entrepreneur identification tests which precede the training, the Gujarat EDP makes the following assumptions :

- 1) That all persons cannot be entrepreneurs but they (entrepreneurs) must have certain traits to be successful entrepreneurs.
- 2) Such traits are identifiable (and measurable) through psychological tests and social indices.
- 3) People possessing these traits and social indices at a certain level will be more successful than those not reaching that level.
- 4) Persons possessing these traits or showing evidence of these traits (entrepreneurial aptitude) can be trained to develop all necessary dimensions of entrepreneurship.

This has led to a three stage process which begins with preliminary screening of applications with a specially devised form (stage 1) which screens out those with only a casual interest in the program. This is followed by an assessment of candidate's entrepreneurial abilities by applying behavioural science techniques (stage 2) and oral interviews for overall assessment about the candidate's suitability to undertake manufacturing activities and about his need for training (stage 3).

The entrepreneurial traits assessed in the behaviour tests include : the need to achieve, risk taking, positive self-concept, initiative and independence, problem solving, hope of the future and goal setting under time bound condition.

Source : S. M. Palia. **Managerial Training and Extension Services for Small-Scale Industry (Indian Experiences)** in Small-Scale Industry Promotion in Developing Countries, RVB, Delft, The Netherlands, 1983.

Development Inputs

For the (industrially) experienced group, a program of 90 days in the evening is offered. For the (inexperienced) young engineers, graduates and educated unemployed, there is full day, 6-month program so that work experience for an extended period can be given in the day time. The training inputs to develop the selected trainees into well-rounded, competent entrepreneurs include the following :

- 1) Achievement motivation
- 2) Product selection and project report
- 3) Business management guidance
- 4) Practical training and work experience
- 5) Validation of training inputs

Organization and Administrative Flexibility

A full time project leader in charge of the training centre is the backbone of EDP. He acts as 'a father, priest, guide and psychiatrist' looking after individual trainee's development needs and progress towards project report and subsequent factory emergence. He organizes and administers the programs and is responsible for the entire training process. His is a demanding multidimensional role of an administrator, liaison officer, training manager, trainer, counsellor and technical adviser. Special tests have been developed for selecting such project leaders.

Post Training Support

Ready factory sheds and industrial plots with power, water, roads, drainage, are given on priority basis to the trained entrepreneurs. The industrial agencies with a direct stake in the EDP are getting better clients for their loans and infrastructure facilities.

It is in EDP that all the development banking innovations are fully integrated. The program ensures the removal of the infrastructure and financial bottlenecks as well as psychological and motivational handicaps. Close coordination among the industrial agencies is one of the remarkable features of the Gujarat program.

Fee for Training

A token fee is charged and a deposit is taken to ensure commitment of participants. But the training cost is highly subsidized. It is considered as a developmental expenditure with high yields in terms of competent entrepreneurs with good projects to perform well, hence reducing the risk of failures.

SUMMARY MATRIX OF SELECTION CRITERIA
FOR ENTREPRENEURSHIP DEVELOPMENT PROGRAMS
IN FIVE ASIAN COUNTRIES

	BANGLADESH	INDONESIA	MALAYSIA	PHILIPPINES	THAILAND
a) <u>Personality Traits</u>					
Propensity to take risk	T	I		T	
Responsibility		I			
Reaction to failure		I			
Long-term career aspirations		I			
Creativity/innovativeness			R		
Achievement motivation			T		
Interests	A		A,I	I	
Self-confidence			A,I,R		
Intelligence				T	
Persistence				T	
Inquisitiveness				T	
Optimism	T				
Motives				I	I
Boldness				T	
Decisiveness				A,I	
Credibility				A,I	
Endurance				A,I	
b) <u>Socio-cultural Background</u>					
Cultural/ethnic group			A		
Family background				A,I	
Sibling Position				I	I
Civil/marital status	A			A	
Parents'/grandparents' occupation	A				
Spouse's occupation/education/position					A
c) <u>Entrepreneurial Readiness</u>					
Common sense (relevant to field of business)	T				
Age	A				
Educational qualification/background	A		A	A	A
Employment status	A	I			
Managerial skills/abilities			R		I

	BANGLADESH	INDONESIA	MALAYSIA	PHILIPPINES	THAILAND
Economic status	A				
Business knowledge	T,I				
Training/seminars attended				A	A
Business exposure/ experience			A	A,I	A,I
Age at which first thought of business	A			I	I
Support				A,I	A,I
Action taken on plan					A,I
Concreteness of business plan				A,I	A,I
Specificity of business plan				A,I	A,I
Viability of business plan				A,I	A,I
source of fund				A,I	A,I
managerial persistence					I
equipment					A
place to set up business				A	A
type of business				A	A
labour utilization				A	A
equity				A	A
market					A
encouragement				I	I
Work experience	A			A,I	
Willingness of attend EDP				I	

Note : Entries reflect the techniques used in assessing candidates on the criteria.

Legend : A = Application form/Bio-data
 I = Interview
 R = Role play
 T = Scored questionnaire or Psychological test

CHAPTER 8: TECHNICAL INFORMATION AND EXTENSION

SUMMARY

1. TECHNOLOGY AND INFORMATION

- 1.1. Technology
- 1.2. Role of Technology
- 1.3. Components of Technology
- 1.4. Means of Technological Progress
- 1.5. Steps in Technology Transfer
- 1.6. Role of Information
- 1.7. Documents and Information

2. DESIGN OF INFORMATION SYSTEMS

- 2.1. Factors in Design
- 2.2. Types of Information Requests

3. INFORMATION RETRIEVAL SYSTEMS

- 3.1. Information Examination
- 3.2. Document Classification
- 3.3. Indexing
- 3.4. Storage
- 3.5. Searching
- 3.6. Information Dissemination
- 3.7. Limitations of Information Retrieval Systems

4. INFORMATION FOR SMALL-SCALE INDUSTRIES

- 4.1. Information Needs
- 4.2. Asking the Right Questions
- 4.3. Sources of Technical Information

- 4.4. Matching Needs with Sources
- 4.5. Strategy for Researching Information
- 4.6. Know When to Stop

5. TECHNICAL INFORMATION SERVICES

- 5.1. The Need
- 5.2. Essential Features
- 5.3. Services Provided
- 5.4. Role of the Extension Officer

CHAPTER 8: TECHNICAL INFORMATION AND EXTENSION

SUMMARY

This chapter is about technical information. It covers the role of technical information in industrial progress, the design of information systems, the information needs of SSIs and how to fulfill them. It also describes how to operate a technical information service. The importance of technical information as a primary component of an industrial extension service is stressed.

1. TECHNOLOGY AND INFORMATION

1.1. Technology

Technology is that systematic, rational knowledge that makes possible the production of goods and services. It is know-how applied to making things work.

Technology is not the same as science. Science investigates natural phenomena. It seeks to know why things happen. Technology makes things happen. Carnot promulgated theories about thermodynamics. That was science. James Watt built a steam engine. That was technology.

1.2. Role of Technology

Technology is an essential component of a production system. As illustrated in Figure 6.1, labour, material and capital are consumed in varying amounts in the system to produce an output. Management and technology govern the operation of the system and determine its effectiveness. They are not consumed and therefore are considered intangible inputs. They are the catalysts of the system.

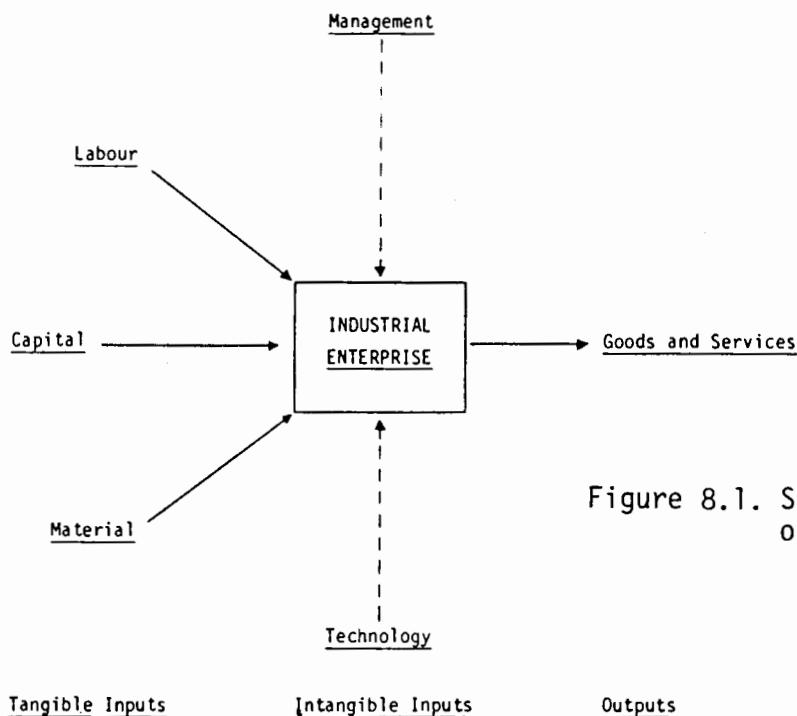


Figure 8.1. Schematic Representation of a Production System

The importance of technology was highlighted by a study of the sources of productivity gains in American industry over several decades before 1970.* The relative importance of the various factors accounting for productivity gains is shown in the table below. *

Table 8.1. Sources of Productivity Gains

. Labour	15%
. Capital	25%
. TECHNOLOGY	38%
. Economies of Scale	13%
. Others	9%

1.3. Components of Technology

At the heart of technology are two components : information and skill. The information component consists of the accumulated data, the formulae and the procedures that underlie the know-how. Included are all those elements that are quantifiable, reproduceable and printable. Information can be recorded and transmitted by the normal rules of communication.

Skill means the human capacity to perform. Skill is not so readily communicated by the written or spoken word, if it were we could all become super athletes just by reading a book. Real skill needs to be developed by training and practice.

To acquire and use a technology then, one must have both pertinent information and the necessary skills. Neither is sufficient without the other.

An extension service that hopes to upgrade the technological capacity of its clients must take steps to provide both these components of technology. This chapter is specifically concerned with organizing the technical information necessary for technological progress.

1.4. Means of Technological Progress

Technological progress takes place in one of two ways : (1) through the development of new technology, and (2) by the adaptation of existing technology to new situations (technology transfer).

In the first case new data are discovered through research and development, while in the second existing information is used. In both cases skill is required to put the information to use.

The normal process for technological growth within a society is technology transfer. This is particularly true in the

case of developing countries where by definition the general level of technology is lower than in the advanced nations. Only when a critical combination of various factors occurs does indigenous technological capability flourish and manifest itself by new inventions.

1.5. Steps in Technology Transfer

The process of technology transfer takes place in five distinct steps.

- 1) **Awareness** - The phase when the potential user first hears of technology but lacks full information about it.
- 2) **Interest** - The stage when he deliberately seeks out the missing information.
- 3) **Evaluation** - When he mentally considers the use of the technology and makes the decision to try it.
- 4) **Trial** - The practical small-scale test to assess the value of the technology to his present and future situation.
- 5) **Adoption** - The phase when the trial is extended to full use of the technology.

The process holds true whether it be for an entirely new technology or for an incremental improvement to a technology already in use.

1.6. Role of Information

The role of information varies at different stages in the technology transfer process. During the early stages the user needs information about the general characteristics of the technology, its potential applications and its advantages. In the intermediate stages he needs to know about the equipment, materials and skills required, their availability and cost. During the trial and adoption phases he needs detailed information on standards, operating procedures and solutions to specific problems.

The ability to absorb and use technical information differs widely among the various groups involved with technology. Consider the scientist, the engineer and the entrepreneur.

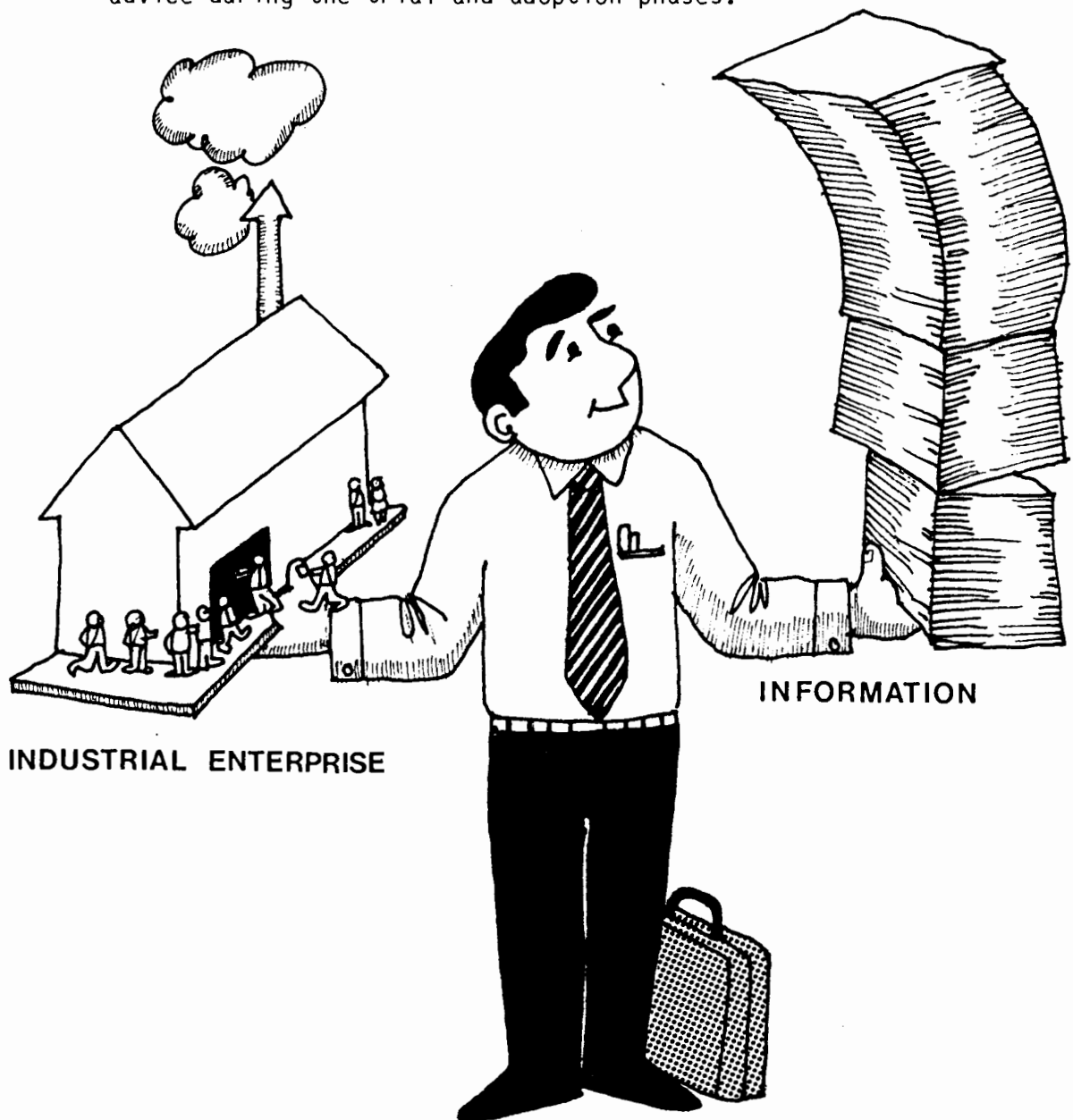
Scientists have been trained to communicate information so that other scientists can build on the results of their predecessors. The scientist normally obtains his information through scientific journals, books, symposia and private communication with his peers.

Engineers use information as a tool to achieve an end. They are heavy users of data books, standards, catalogues, design

manuals and handbooks. Both engineers and scientists have the capability to assess information for quality and relevance.

When entrepreneurs need technical information, they want specific answers to specific questions. They do not want a mass of information that might contain the data required, rather they need capsule information or advice from a technical expert which they can apply directly to an immediate difficulty.

Industrial extension officers are well positioned to play the role of technical information providers to entrepreneurs. If the information systems backing them up are properly conceived, they can make the entrepreneurs aware of new technological advances and arouse their interest. Later they can assist them with more detailed information and advice during the trial and adoption phases.



THE EXTENSION OFFICER AS INFORMATION SUPPLIER

1.7. Documents and Information

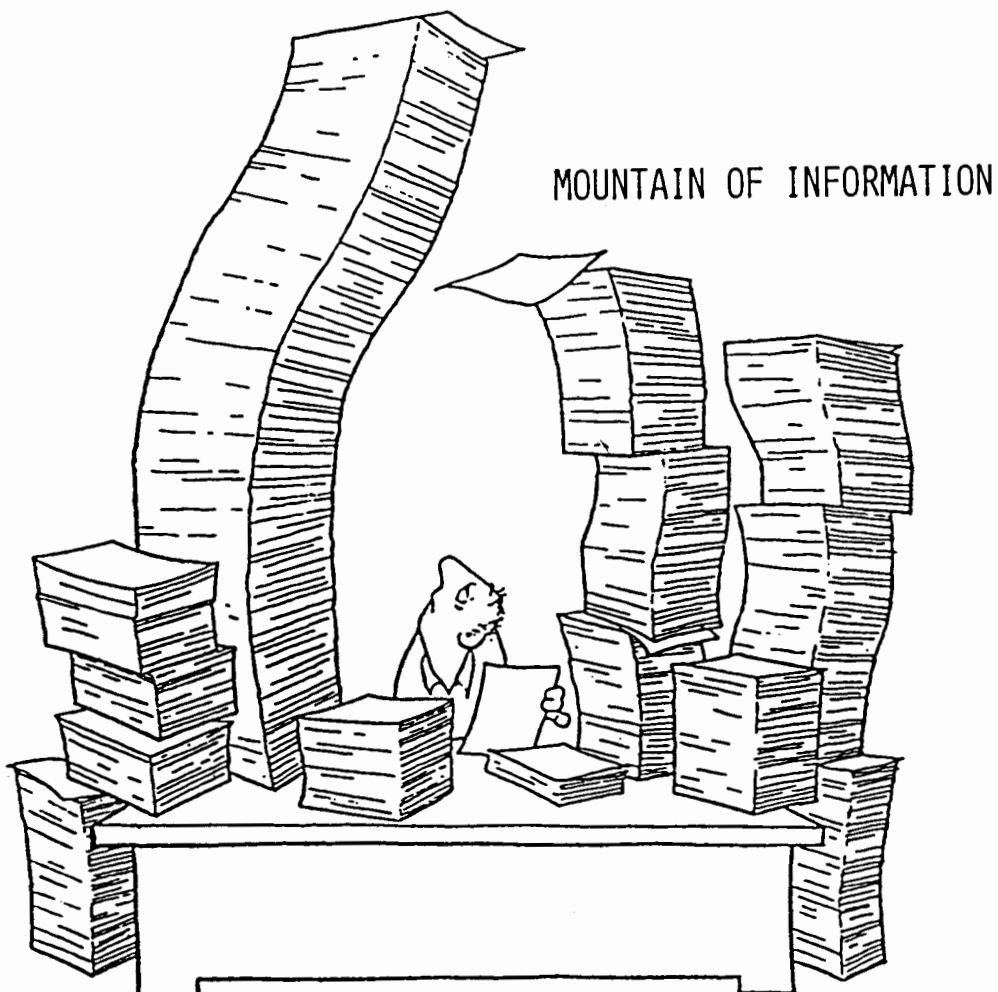
Documents are an important source of information, although they are not information per se.

Documents can be broadly classified into two types : formal literature and shadow literature.

Formal literature comprises all those books, periodicals, patents and reports, etc., which are published, indexed, catalogued, and sold or made available for the asking. Shadow literature consists of private correspondence, unpublished reports and internal documents. Much of this shadow literature is proprietary literature, not in the public domain and thus is not readily obtainable. A great deal of the most useful technical information is contained in this shadow literature.

Formal literature can be further broken down into **primary** sources which reflect original contributions, and **secondary** sources such as handbooks and encyclopedias which provide summary information on a whole range of subjects.

The volume of published scientific and technical literature has been doubling every eight to ten years, creating a vast and growing mountain of potential information.



2. DESIGN OF INFORMATION SYSTEMS

An information system is a system designed to furnish information to a clientele of users. Thus, a technical information service for SSIs is a system for providing technical information to SSIs. Note that such a system need not be limited to providing documents and pieces of paper, but can also include verbal communication.

2.1. Factors in Design

The most important factor in the design of an information system is the identification of the users of the information. Who are they? What type of questions do they need answered? What do they do with the answers? In what form will the needed information be most useful? An effective information system cannot be designed unless the users and the users' questions have been identified.

Another factor is the choice of the appropriate mechanism to deliver the information to the user. An effective delivery system implies adequate communication facilities including direct contact, mail, telephone, as well as supporting services such as reproduction facilities.

Person to person communication is a major characteristic of any successful information system. Therefore, information system designers should provide for the human interface between the system and the user.

An effective information system enables the user to find pertinent information when he has a problem. The user can approach the system with his question expressed in his terminology, and be confident that the system will provide him with the pertinent, and only the pertinent information he requires.

2.2. Types of Information Requests

The needs of users of information systems fall into two broad categories :

- 1) The need to obtain a copy of a particular document for which the author or title is known. This is referred to as a "known item need".
- 2) The need to locate information dealing with a particular subject or capable of answering a particular question. This is known as a "subject need".

Subject needs fall into two main types :

- 1) Information on new developments in a particular field of specialization.

- 2) The need for information to aid in the solution of a particular problem.

The former is usually referred to as a "current awareness need", and the second as a need for problem solving information. In practice, this type of need can often be satisfied by a search through past literature, or "retrospective search".

Problem solving information needs may themselves be divided into a number of types :

- 1) The need for a single item of factual data. For example, the correct heating temperature to attain a given hardness. This is the typical "quick reference" type of enquiry. Although documents may be involved, the enquirer does not necessarily have to receive any documents - the answer may be given verbally.
- 2) The need for information discussing a particular subject, but less than the total information available on that subject. For example, a selection of texts and articles on heat treatment.
- 3) The need for a comprehensive search that retrieves as much as possible the literature published on that subject.

3. INFORMATION RETRIEVAL SYSTEMS

Information retrieval is the term applied to the formal, structured systems which collect, store and retrieve information in the form of documents. Ordinarily such information is not altered once it has been entered into the information storage and retrieval system.

The process of information retrieval follows a logical pattern. The basic steps are described in the following paragraphs.

3.1. Information Examination

In order to ensure complete coverage of the subject areas assigned to an information retrieval system, it may be necessary to examine many documents and periodicals. To avoid cluttering up the system with irrelevant or superfluous information, all incoming materials should be examined carefully and only those pertinent to the subject areas covered should be allowed to enter the system.

3.2. Document Classification

Once entered, the documents need to be classified according to the subject or subjects they pertain to.

"Closed" subject classification schemes group together similar concepts and separate dissimilar concepts according to a hierarchy of predetermined subject headings. In the example given in Figure 8.2, pumps are broken into sub-classes according to their features or applications, thus an article on electric grease pumps would fall in class 1.33. A classification scheme like this works well as long as the amount of information to be handled is relatively small and the classes are broadly defined. It becomes cumbersome if the volume of information to be handled is large and complex in nature so that it becomes difficult to classify any piece of information into one logical class.

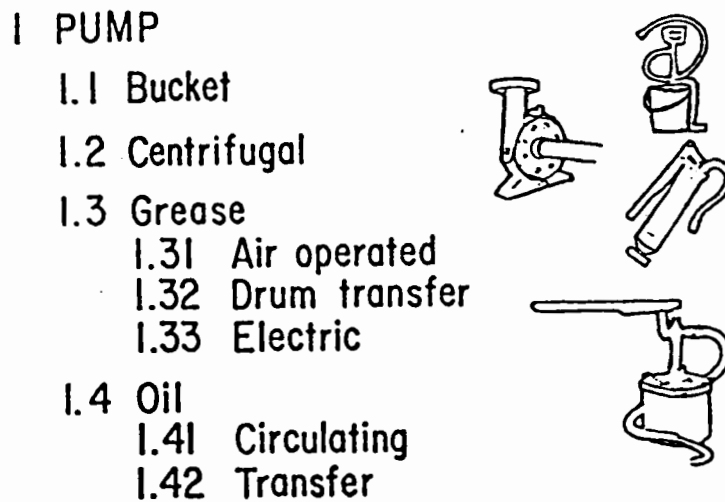


Figure 8.2. Closed Subject Classification

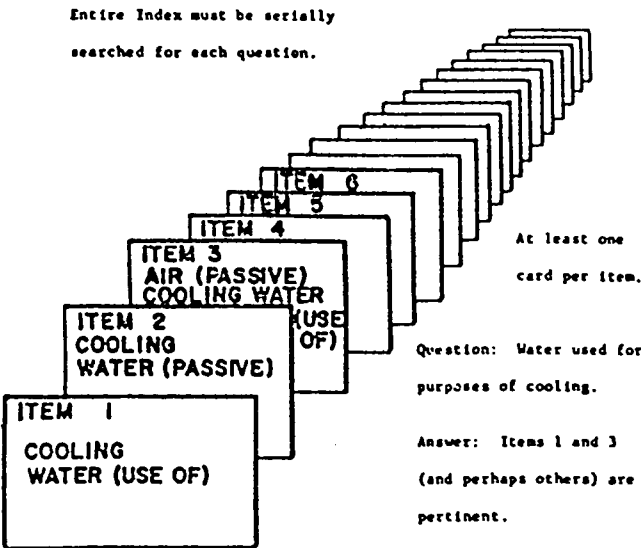
A more flexible way of classifying information is called "open" subject classification. This is a method by which the pertinent information contained in a document is described by a series of key words, as many as necessary. Our article on electric grease pumps would be described by the key words "pump", "grease" and "electric", but we could also add other key words such as "maintenance" to fully describe the contents of the article.

When we come to search for information later, we will use combinations of key words to locate the documents covering the pertinent subjects. This method permits classification in much greater detail and permits an almost unlimited number of subjects to be handled.

3.3. Indexing

The result of the classification procedure is that each document is identified by key words or subject headings. Indexing involves arranging these key words in an orderly fashion. The index can be established in either a conventional grouping or an inverted grouping.

CONVENTIONAL GROUPING



INVERTED GROUPING

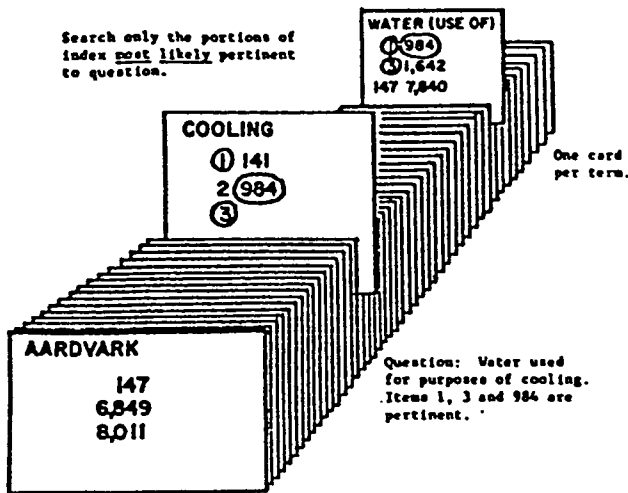


Figure 8.3. Conventional and Inverted Indices

In a conventional grouping, there is one file card or section of computer tape for each document on which the subjects or key words are listed. If there are 10 000 documents in the system, there will be 10 000 file cards.

In the inverted method of grouping, there is a card for each subject or key word rather than for each movement. The card lists all the documents having reference to that subject. If we were looking for information on maintenance of electric pumps, we would look at the cards for "pump", "electric" and "maintenance", and note any articles that appeared on all three.

In general, systems that use the inverted approach are faster on output, easier to browse, and are more flexible in vocabulary. Systems that use the conventional approach have lower initial cost and are easier to update when more than one copy of the index is used.

A special form of the inverted approach is the KWIC (Key Word In Context) index (Figure 8.4). Each document must first be provided with a reference number and an "enriched" title that describes its contents unambiguously. The titles are then sorted by computer to reproduce key words in alphabetical order. The user can search the KWIC list for words of interest and request the document numbers which correspond to the selected key words.

3.4. Storage

The documents must then be stored in a fashion that will facilitate their retrieval at a later time. In most cases the index and the storage of the documents are organized differently and separated physically. The index is designed for ease of manipulation as described above, and the storage is arranged for economy of space.

3.5. Searching

Searching comprises those operations necessary to identify the specific information required to meet a user's request and the location of this information in the information storage and retrieval system.

3.6. Information Dissemination

This final step consists of directing the required information to the point of use. The information may be in the form of hard copy, visual display, extracts, resumes, verbal or telephone communication.

FAPING: CONCEPT OF BICLOGICAL	PROTECTION CF CACR FROM FFCST DAMAG	18 E83011
ESTRUCTION & DISCLOSURE =SECURITY	PROTECTION CF INFORMATION AGAINST D	98 E83101
ROM ICE DAMAGE	PROTECTION CF OFFSHORE STRUCTURES F	96 E83177
=CATMODIC CORRECTION	PROTECTION CF OFFSHORE WELL CASINGS	37 E83074
INE SHIPS	PROTECTION PREVENT CORROSION CF WAR	37 E83179
ELECTRONIC CIRCUIT FOR OVER-HEATING	PROTECTION USES THERISTOR	66 E83130
=UPDATE CN	PROTECTIVE AIRCRAFT COATINGS	26 E83192
TIC SENSITIVE ELECTRONIC PARTS IN	PROTECTIVE BAGS =PACKAGING CF STA	38 E83172
LIZING	PROTECTIVE CHROME BY DIFFUSION META	34 E83015
LEM OF HEAT RESISTANT FABRICS FOR	PROTECTIVE CLOTHING =SAFETY:REV	96 E83157
RS=SAFETY-DEVELOPMENT CF IMPROVED	PROTECTIVE CLOTHING FOR FIRE FIGHTE	96 E83166
=OVERVIEW OF	PROTECTIVE COATING PAINTS	36 E83026
RED GLASS MIRRORS	PROTECTIVE COATINGS FOR SOLAR SILVE	08 E83002
=CURRENT LIMITING	PROTECTOR FOR ELECTRICAL EQUIPMENT	64 E83028
=SAFETY:LINEAR FIRE DETECTOR	PROTECTS ELECTRIC HEATING TAPE	96 E83146
AVIATION	PROTECTS MARINE SHIP & VALVE FROM C	36 E83158
ENCAPSULATED CORROSION INHIBITOR	PROTECTS METAL SURFACE =CCATING:	34 E83113
=ELECTROPHORETIC COATING	PROTECTS MOTOR MAGNETS	64 E83017
RUCTION=COOLING THERMOSYPHCN PILE	PROTECTS PERMAFROST IN ARCTIC CONST	88 E83078
ETV: ELECTRIC GROUND FAULT SYSTEM	PROTECTS UNDERWATER OCEAN DIVER=SAF	96 E83021
REEN COLOR OF SUNFLOWER EXTRACTED	PRCTEIN =FGOD PROCESS PREVENTS G	20 E83142
OF ISOELECTRIC FOCUSING FOR FOOD	PRCTEIN ANALYSIS =GVERVIEW	20 E83062
=PPPERTIES & USES OF RAPISEED	PRCTEIN CONCENTRATE IN FCCO	20 E83007
S =FOOD BYPRODUCTS: BONE & PLASMA	PROTEIN EXTRACTS AS MEAT SUBSTITUTE	20 E83041
Y WASTE	PROTEIN FOOD POWDER FROM CHEESE WHE	20 E83048
=UNFLAVORED	PRCTEIN QUALITY	18 E83058
ATMOSPHERE USED TO MAINTAIN FISH	PROTEIN RECOVERY FROM SWEET WHEY	20 E83041
=DAIRY: MAXIMIZING	PROTEINS FROM DAIRY WHEY WASTE	94 E83193
=RECOVERY OF	PRCTEINS FROM SOLUTIONS	04 E83072
=FOAM SEPARATION CF DNA &	PRCTOPLAST =HIGH YIELD REGENE	20 E83154
RAIION OF FARM TOMATO PLANTS FROM	PRCTOTYPING CF ZINC DIE CASTINGS	24 E83167
=FOUNDARY: GRAPHITE MOLD	PRGVIDE HIGH PERFORMANCE IN ELECTFI	70 E83040
CALLY HOSTILE AREAS =FIBRE OPTICS	PROVIDES HCT WATER CN SHIP FROM ENG	44 E83132
INE COOLING WATER	PROVIDES SHIPBOARD FRESH WATER =CC	22 E83178
IMPACT REVERSE GSMESIS DESALINATOR	PROVIDES SIMPLE FLUID FLOW-METER	50 E83092
=VARIABLE ANNULAR CRIFICE	PROXIMITY MEASUREMENTS IN AIR	74 E83167
=ULTRASONIC SENSOR FOR DISTANCE &	PTC THERMISTOR FOR TEMPERATURE CONT	66 E83032
ROL	PUBLISHING =INK JET LAB	80 E83099
EL PRINTING SAVES TIME & MONEY IN	PUBLISHING =PRINTING:PFC	80 E83142
GRESS IN COMPUTER-AIDED EDITING &	PULP =FFESTRY SALVAGE: E	10 E83046
URNED FOREST CONVERTED INTO PRIME	PULP & PAPER INDUSTRY=ULTRASCNIC I	74 E83094
SPECTION OF FIBER SUSPENSIONS FOR	PULP & PAPER: IMPROVED ACILER PERF	12 E83040
RMANCE USING A DISPERSER	PULP BLEACHING	12 E83072
=OVERVIEW OF CHLORINE FREE PAPER	PULP BLEACHING =EFFICIE	12 E83072
NT QUALITY CHLORINE DICXIDE PAPER	PULP CAUSTICIZATION: FILTER REMOVES	12 E83036
DREGS & REDUCES MAINTENANCE	PULP DIGESTERS =ELECTRC ANDCID C	12 E83173
ORRGSON PROTECTION OF CONTINUOUS	PULP FROM WINDBREAK-GROWN TREES	12 E83063
=UNBLEACHED KRAFT	PULP PAPERMAKING PROCESS REDUCES WA	12 E83087
TER POLLUTION	PULP USING ROTATING DRUM FILTERS UN	12 E83174
OER PRESSURE	PULP WASTE SLUDGE	12 E83173
=RECOVERY OF ANIMAL FEED FROM	PULP-PAPER INDUSTRY =OVERVIEW: WCCO	22 E83174
GASIFICATION FOR FURNACE FUEL IN	PULP, ETC =BEVERAGES: ENZYME LIQU	20 E83174
EFACTION OF WHOLE FRUIT TC JUICE,	PULP,FARMING WASTES & FUELS	44 E83163
=STEAM DRYING CF WOOD	PULSE ENERGYIZATION IN ELECTROSTAT:C	22 E83027
DUST COLLECTION	PULSE-FLATTING GENERATORS, WAVIFORMS	34 E83062
=USE CF	PULSED CURRENT ELECTRO-PLATING =P	34 E83181
=LIMITATIONS	PULSED LASER SPECTROSCOPY	70 E83097
PENTIAL CF MAGNETICALLY ENHANCED	PULSED LASER TREATMENT OF PLASMA SP	24 E83098
=ELECTRO-OPTICS: INEXPENSIVE	PULSED-FLOW AIR CLASSIFIER RECOVERS	94 E83166
COATINGS	PULTRUDED COMPOSITE STRUCTURES	32 E83023
FROM MUNICIPAL SOLID WASTE	PULTRUDED PLASTIC COMPOSITE FRAMEC	88 E83186
WIND BONDED END FASTENER FOR	PULTRUSION MOLDING OF PLASTICS	06 E83165
IN TEN BUILDING	PUMP =HEAT RECOVERY FROM T	44 E83192
=IMPROVED EPOXY RESINS FOR	PUMP =PRESSURE TRANSDUCER MCNT	50 E83033
ATILE DYING WASTE WATER BY HEAT	PUMP AND MIXER ELIMINATES LONG AND	48 E83159
RES CAVITATION NOISE IN HYDRAULIC	PUMP DISCHARGE =FARMING: SIMPLE ME	44 E83086
MESSY JOB=CHEMICAL:COMBINATION OF	PUMP DRIVEN BY WATER TURBINE & USIN	44 E83127
MEASUREMENTS CF FLOW THROUGH PIPE &	PUMP FOR AUTO VEHICLE HEATING & CCC	48 E83003
G FLOWING WATER HEAT =HYDRIC HEAT	PUMP FOR HANDLING CHEMICALS, FCCO,	48 E83015
TING	PUMP FOR HANDLING FISH & DELICATE F	44 E83127
=METAL HYDRIDE HEAT	PUMP GENERATES PROCESS STEAM IN PAP	44 E83132
=EASILY MAINTAINED INERTIA-	PUMP PROVIDES HCT WATER CN SHIP FFC	52 E83119
OOD & CHEMICALS=SCREW CENTRIFUGAL	PUMP,URBEL,MOTOR,SWITCH,DRIVES	44 E83105
ER MILL	PUMP	59 E83051
=ELECTRIC HEAT		
N ENGINE COOLING WATER		
MAGNETIC COUPLINGS FOR UNDERWATER		
ON MAINTENANCE CF WATER TREATMENT		
CONVERSION: STirling ENGINE HEAT		

Figure 8.4. KWIC Index

An information dissemination system of considerable interest is SDI, or selective dissemination of information. In this system key words are used to describe both the contents of documents and the specific interests of users. In essence, user interest profiles are created by asking users what subject areas they are interested in.

Periodically the key words which are part of the users interest profile are matched against the key words comprising the document profile (Figure 8.5). When the two profiles match to a given degree, the user is sent a notice of the availability of matching documents.

The system works reasonably well as long as interests are fairly consistent and constant over a period of time. The service is particularly valuable in that it automatically keeps the user abreast of developments in areas in which he is interested.

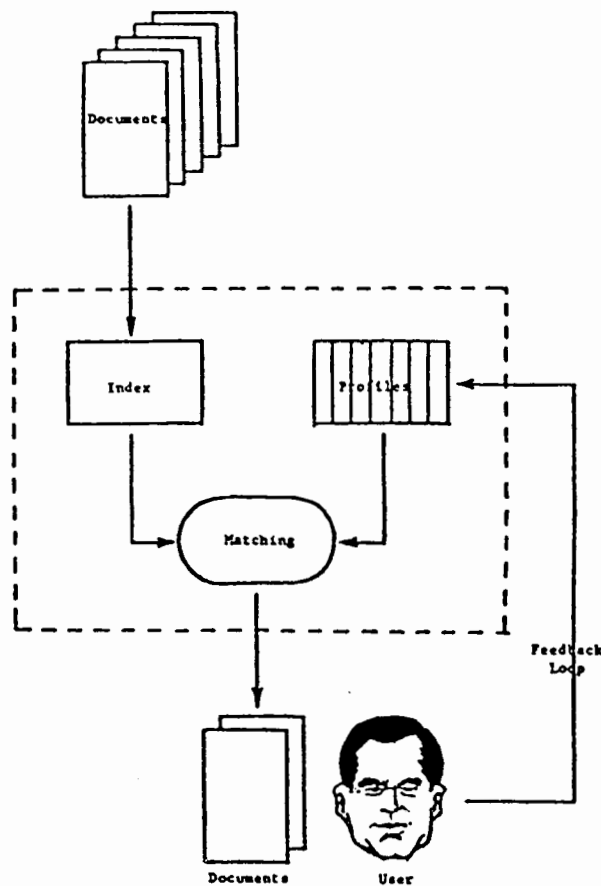


Figure 8.5. Selective Dissemination of Information

3.7. Limitations of Information Retrieval Systems

Information retrieval systems can work well in the case of formal documents, reports, texts and articles. They are thus particularly useful for engineers, scientists, extension officers and other sophisticated information users.

For the entrepreneur who is looking for specific answers rather than technical data, such systems are less immediately useful. The information he needs is either not available in the conventional literature, or else it requires expert interpretation to convert the generalized data therein into a solution tailored to his requirements.

4. INFORMATION FOR SMALL-SCALE INDUSTRIES

4.1. Information Needs

Some of the areas and fields of information which are required by SSIs are :

- 1) Market information in the broadest sense;
- 2) Information on manufacturing processes, machinery, standards and testing procedures;
- 3) Information on raw materials and semi-finished goods;
- 4) Infrastructure information, including availability and costs of energy, transportation, labour, etc;
- 5) Information on the industrial environment, services, research facilities, industrial legislation, financial incentives, etc.

When entrepreneurs need strictly technical information, the data they seek may range from standards or specifications for products, to alternative sources for raw materials, the functioning of equipment or details of new production processes. They wish to get capsule advice which they can apply directly to an immediate problem. They do not want a mass of information that might contain the data required, rather they want specific answers to specific questions.

In one institution in a developing country, less than one sixth of the enquiries received from SSIs required a large reference library, and the questions of this type were largely about published specifications for products. The remainder were for capsule information or advice from a technical expert which he could supply either from his past experience or from his small reference collection.

Technical information for SSIs can be broken down into five kinds of elementary questions :

- 1) Where to obtain a product or service
- 2) Specifications or requirements to be met
- 3) Properties or applications of materials, machines, processes
- 4) Details of a procedure or process
- 5) How to correct something that has gone wrong

Most technical information needs are in reality a series of questions in these different categories, for example, how to operate a new process, where to obtain the equipment, and what standards to observe.

Entrepreneurs are, in many cases, unaware of all the possibilities for technological improvement in their operations, and so they cannot always be counted upon to initiate their own information requests. Thus, the skilled intervention of the extension officer is a necessary step, firstly to ensure that the correct series of questions are formulated, and secondly to provide answers based on a synthesis of available knowledge - answers that are usable by the SSI at its existing level of technological development.

4.2. Asking the Right Questions

When a technical information need has been identified, it is important that correct and appropriate questions are formulated. As management theorist Peter Drucker has said, "the important and difficult job is not to find the right answer, it is to find the right question, for there are few things as useless as the right answer to the wrong question".

Some of the important factors for the extension officer to consider in deciding how to formulate the "right questions" are discussed below.

- 1) **Who needs the information?** The identity of the person needing the information is an integral part of the question itself and affects the form that the answer will take. For example, to frame a proper response to the question, "what is new in solar energy?", one should know whether the enquirer is an engineer or has had only a primary education, how much background he has had in the subject, and what is the extent of his knowledge of the current state of the art.

- 2) What is he trying to achieve? Understanding what the user is trying to achieve is essential to formulating appropriate and meaningful questions. Otherwise the question may be posed based on the immediate problem observed without considering how more fundamental changes could alter the solution.

For example, one extension officer was observing the assembly of rattan trays and noticed that there was a considerable delay in the process due to waiting for the glue to set. His first impulse was to determine whether a faster setting glue was available. After some reflection, he decided that a more appropriate question in the light of what the manufacturer was trying to achieve would be : "what is the best way to design the tray for ease of assembly in large quantities?". This was subsequently broken down into the following elemental questions :

- "What are the requirements of the customers?"
- "What are the alternative ways of assembling the trays?"
- "What different kinds of fastening devices could be used?"
- "What are the properties and costs of each?"
- "Where can they be obtained?"

Note that by restating the problem in this manner, the extension officer gave himself far more latitude to develop useful answers.

- 3) What is the potential value of the information? The extension officer should make a rough estimate of the potential value of the information to the user before deciding how much effort to put into seeking an answer. If the recipient can make no use of the information for whatever reason, then that information has no value, no matter how much it costs to obtain.

In fact, the value of any given piece of information bears no relationship to the cost of obtaining it. However, the effectiveness of an information service as a whole is measured by the benefits obtained for the costs incurred. The lesson then for the extension officer is to concentrate on providing technical information where there is a high probability of positive results, rather than to get involved in complex but academic questions.

- 4) What steps have been taken so far? When considering a technical enquiry, the user should always be asked what steps he has taken so far to find an answer. This has a three-fold purpose : a) to eliminate costly duplication of effort; b) to determine how important the user himself considers the question; and c) to determine how difficult it has been to obtain the sought after information.

- 5) What must be done in order to answer the question? A question is meaningful only if it is possible to work out what must be done in order to answer it. For example, consider the question, "how do I achieve a steel hardness of Rockwell C 50?". To arrive at an answer, one would look up the properties of various steel and recommend an appropriate steel and heat treating process.

The question, "where is the best site to locate a new factory?" provides another example. If an unspoken condition limits the choice to only a few sites, then the question is meaningful. Each of the possibilities can be evaluated. But if the new site could be anywhere in the world, an infinite number of sites would be eligible, and it would be necessary to compare all these sites with each other. Not even a computer could guarantee the best possible choice because weighting all the factors for an infinite number of sites would present an impossible task. In these circumstances, the question as stated is no longer meaningful.

Once the information need has been analysed in this manner, by considering who is asking, what it is he is trying to achieve, the potential value of the information, the steps taken so far, and what must be done in order to find an answer, it should be possible to state the problem clearly and concisely.

For instance, going after "everything the extension officer can find on automation" is unrealistic, because there are reams of material on a subject of that breadth - and most of it will not help him. Instead, the extension officer can try to isolate the real information needs, putting them into questions such as : "what automatic equipment can we apply to the manufacture of these plastic parts? or "what handling devices are best suited to these components?". Once he has limited the scope of his search, he can keep it limited and specific.

An example of a Query Analysis form, designed to assist the extension officer to define precisely a need for technical information, is given as an example in Figure 8.6.

QUERY ANALYSIS SHEET

Name of industry_____

Address_____ No. of Employees_____

Industrial Sector_____

ENQUIRY SUBJECT:_____

Who is asking? Position, level of education?

What is he trying to achieve? Why that?

What is the potential value of the information?

What steps has he taken so far?

What must be done to answer the question?

Extension Officer_____

Date_____

Figure 8.6. Query Analysis Sheet

4.3. Sources of Technical Information

The sources of technical and near technical information are many and varied. The more important sources together with the kinds of information that they provide are discussed below.

- 1) **Technical Books** - Technical books, including handbooks and texts, are sources for properties of materials, production methods, procedures, process descriptions, formulae, etc. Certain industries are better served with high quality technical books than others. For example, the metal working industry is far better documented than the clothing industry.
- 2) **Periodicals** - Technical and trade magazines usually publish news of suppliers, competitors, equipment, government programs, new trends and economic developments. The advertisements and announcements are potentially as informative as the articles. Some magazines publish annual encyclopedia issues (for example, "Modern Plastics", "Modern Packaging") which are veritable goldmines of information, containing buyers' guides, details of production processes and technical properties of materials.
- 3) **Standards and Specifications** - These are important sources of information affecting the design of products and the operation of production systems. They may be mandatory or advisory, and they may be international or national in scope, industry wide or internal company standards.
- 4) **Trade Associations and Trade Shows** - These are excellent sources of information regarding new products, new equipment and trends in the industry.
- 5) **Suppliers Catalogues** - Catalogues often contain the detailed performance information needed for selecting machinery, equipment and supplies.
- 6) **Knowledgeable Experts** - Colleagues having specialized knowledge, university professors, consulting engineers, technical representatives, among others, can all be good sources of advice and aid in solving difficult problems or in indicating where to find answers.
- 7) **Research and Testing Laboratories** - These institutions, if they do not already have the answers can often develop solutions to a particular technical problem.
- 8) **Patents** - Patents can be a useful source of information and ideas.
- 9) **Instruction Manuals** - Such manuals describe the appropriate procedures for operating, troubleshooting and repair of

specific equipment. Such manuals are usually supplied when the equipment is purchased, and should be the first documents consulted when operating problems arise. The sign over a sophisticated piece of machinery in one engineering laboratory says: "when all else fails, read the instructions!".

4.4. Matching Needs with Sources

If the need for technical information has been properly broken down into its elemental questions as described above, then the search for answers will be greatly simplified.

For the questions about where to obtain a product or service, reference should be made to suppliers' catalogues, trade magazines, classified telephone directory, trade shows, and buyers' guides.

Details of specifications or requirements are often covered in published standards.

For properties, applications and processes, one would search appropriate technical books and periodicals.

The correction of something that has gone wrong represents the most difficult type of technical information need, for in this instance more than straightforward data or facts are required, possible variations in the process concerned have to be sought as well. If the particular problem and solution are not covered in an appropriate instruction manual, an on-site investigation will be required, and the advice of a technical expert may need to be sought.

For example, one extension officer was asked to solve the problem of electrostatic painting equipment which was not performing according to expectations, although when originally bought it had worked perfectly. Rummaging around the installation, he found a dusty, unused instruction manual. He noted that the attaching hooks were thickly coated with an accumulation of paint, although the manual specified that they should be cleaned daily to ensure good electrical contact. He arranged to have this done and the problem was solved.

4.5. Strategy for Researching Information

The first step is to gather information from sources within the extension officer's immediate reach. These might include :

- books and documents in his personal file or institution library;
- his quick reference files, if he keeps them;
- the telephone;
- his co-extension officers;
- known specialists.

Good quick reference files can be an invaluable storehouse of instant information. A good advice to the extension officer is to keep a pair of scissors or a ruler close by when you read periodicals and clip articles and announcements of interest, or mark them for copying later. File them by subject matter. For example, you might keep quick reference files on welding, painting techniques, quality control and other common subjects.

Other sources that should be kept close at hand include handbooks, encyclopedias, telephone directories, year books and almanacs.

If these do not produce the results desired, the extension officer should go farther afield. He can contact universities, government bodies, public and private research institutions, other libraries, etc.

If he has to do a library search, he must go about it in a systematic manner, to ensure he gets the most out of his time.

He can try the index first to find out what books are immediately available. He can check reference sets such as business and general encyclopedias. He can also investigate reference books in special fields for more specialized articles.

To keep research time to a minimum, he must learn to quickly examine tables of contents, prefaces, indices and chapter headings. Then, he must know how to skim through a page or two, or a chapter to see whether or not the book or article is worth his time. He can check the bibliographies at the end of each article or chapter as possible sources of additional information.

Records should be kept of where he found the information, the title of the book, its author, publisher and page numbers. This can save many hours in case he has to verify or elaborate on the information later. If certain trade magazines seem to have articles related to his problem, but not exactly on target, he must write to the editor - who may be able to help, or refer him to an authority who can.

If the required information cannot be found using the local and national resources described above, as a last resort an enquiry may be referred to international sources of information.

4.6. Know When to Stop

Information research has been called the "endless frontier". Once the extension officer has probed in-house, local, national and international information sources, he may find that he has unleashed a chain reaction of investigation.

The question then becomes how to bring it to an end. While it is important to go deep enough to get a true picture of the situation, it is equally important to know when to terminate the investigation.

Since every investigation is different, the only general advice to the extension officer is : when you feel you have an adequate answer to the question or problem, and additional research just backs it up, then it is time to stop and take action with the information on hand.

5. TECHNICAL INFORMATION SERVICES

5.1. The Need

As described in section 1.2 of this chapter, technology plays the dominant role in industrial progress, and technical information is a key component of technology. Thus SSIs need technical information in order to survive and prosper.

5.2. Essential Features

An information service for SSIs (as opposed to an information service for scientists) needs to incorporate several essential features if it is to fulfill adequately the needs of its clientele.

The service needs to be based on personal contact. By observing for himself, the extension officer can help to identify information needs and ensure that questions are properly formulated. Moreover, entrepreneurs are used to receiving their information verbally rather than by reading reports.

A quick response time is imperative. Most SSIs' problems are pressing and cannot wait for lengthy investigations. The extension officer should have ready access to standard texts and quick reference files containing current articles and information on common and recurring problems.

Facts and data alone usually do not provide a complete answer to a technical information need. They need to be supplemented by expert advice on how to apply them to a given situation. Extension officers then should have a familiarity with industrial problems. More importantly, they need access to informed judgement on a variety of subjects through a network of contacts both within and outside their own institution.

5.3. Services Provided

The most important services to provide to SSIs as part of the technical information activity are described below.

- 1) **Question and Answer** - The basic service should be a "question and answer" service, designed to find appropriate answers to specific technical problems. This service should actively seek out information needs rather than wait passively for enquiries to be directed to it.
- 2) **Current Awareness** - Current awareness scans and collects articles and information pertinent to SSIs' needs and groups them by subject or industrial sector application. Lists are prepared and circulated to potential users who are thus made aware of the availability of such information. Such lists can include industrial reference guides listing the important texts, journals, and centres of expertise relating to industrial sectors, such as foundries or industrial processes such as painting. Entrepreneurs are encouraged to help themselves by developing their own in-house sources of technical information based on these lists. A selective dissemination of information (SDI) system can be operated as part of the current awareness service to direct the information to the most likely users.
- 3) **Library** - The library provides the core support for the technical information activities. The library need not be extensive, but should contain the basic texts, periodicals, standards, catalogues, etc., pertinent to the industrial sectors being served.

5.4. Role of the Extension Officer

As indicated above, extension officers can play a key role in providing technical information to SSIs by acting as the link between them and the many sources of information available. Moreover, the extension officer should ensure from the start that each SSI with which he deals possesses the technical know-how necessary to produce an acceptable product, otherwise any marketing, management or financial aid that he may provide will be wasted effort.

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CHAPTER 9: EVALUATING INDUSTRIAL EXTENSION PROGRAMS

SUMMARY

1. CONCEPT OF EVALUATION
2. RATIONALE OF INDUSTRIAL EXTENSION PROGRAM EVALUATION
3. EVALUATION PROCESSES
4. INDUSTRIAL EXTENSION EVALUATION METHODS
 - 4.1. Addressing Evaluation Issues
 - 4.2. Defining Evaluation Tasks
 - 4.3. Gathering Data
 - 4.4. Processing Data
 - 4.5. Analysing Data
 - 4.6. Using Evaluation Results

ANNEXES

- Annex 1 Client Survey Form (Assisted Clients)
- Annex 2 Client Survey Form (Non-Assisted Clients)

CHAPTER 9: EVALUATING INDUSTRIAL EXTENSION PROGRAMS

SUMMARY

The chapter defines evaluation and differentiates it from monitoring and appraisal. It gives the rationale of extension program evaluation as well as suggests a workable framework for evaluating extension initiatives. Finally, it outlines and illustrates the steps in conducting an extension program evaluation.

1. CONCEPT OF EVALUATION

Despite the many who agree on an evaluation's purpose - to improve efficiency and effectiveness of current and future activities - some still disagree as to what evaluation is. To some, evaluation is detailing what happened in a program. To others, evaluation is either (a) measuring accomplishments against targets, (b) analysing the reasons for outcomes, or (c) identifying what has been done and what else could be done, etc. Oftentimes the uninitiated confuses evaluating with auditing or monitoring.

Auditing appraises programs in terms of compliance or non-compliance with pre-established managerial procedures and controls. While it uncovers implementation inefficiencies, auditing does not challenge a program's objectives, approaches, choice of beneficiary, etc. On the other hand, monitoring watches the day-to-day procurement, delivery and deployment of program inputs, production of outputs and generation of accomplishments. Evaluating is more than auditing or monitoring, since it examines the relevance of the program's objectives, inputs, implementing mechanisms, accomplishments, targets, etc., often resulting in program modification. With auditing and monitoring results, however, evaluating can be greatly simplified.

2. RATIONALE OF INDUSTRIAL EXTENSION PROGRAM EVALUATION

Since evaluating closes the industrial extension program management cycle of planning, organizing, executing and controlling, it aids extension program managers to : (a) fine-tune the program's goals, missions and thrusts; (b) verify continuity or discontinuity of all or some activities; (c) improve practices and procedures; (d) add or drop approaches, techniques and tools; (e) replicate similar activities elsewhere; (f) reallocate limited resources to competing activities; (g) accept or reject a program thrust; (h) generate alternative courses of actions; (i) gather lessons from past activities to improve planning and implementing capabilities; and (j) assess impact on target beneficiaries.

3. EVALUATION PROCESSES

As a program, industrial extension consists of inputs, transformation processes, outputs, effects and conditions. Briefly, these are :

- 1) Inputs - What goes into the extension program. Normally stated in both qualitative and financial terms - for example, kind and cost of personnel, equipment, information resources, etc. - inputs get the program moving toward its mission.
- 2) Transformation Processes - Extension programs transform, through a series of decisions, inputs to yield outputs in a manner consistent with its mission. SSI's participation in setting industrial extension priorities and resource allocation is within the transformation domain.
- 3) Outputs - What comes out of the extension program. Being the more common focus of most evaluation exercises, outputs deal with such issues as : "how many extension contacts were made?" "how many SSIs were actually funded by development banks?" and the like. Outputs focus on activities that affect, change, increase or decrease, etc., the extension program's target beneficiaries.
- 4) Effects - Effects concentrate on changes that happen to the beneficiaries or some other unintended groups resulting from the extension program's outputs. Outputs and effects are different in that the former relates to performance in the program; the latter, of the program.
- 5) Conditions - These spell out the provisos in evaluation exercises by asking : "under what external and internal conditions can the extension program operate to ensure success or effectiveness?"

4. INDUSTRIAL EXTENSION EVALUATION METHODS

Within the industrial extension's context, evaluation must address the issue of generalizability, that is, given the industrial extension program inputs; $I_1, I_2, I_3, \dots, I_n$, operating under conditions; $C_1, C_2, C_3, \dots, C_n$ and using prescribed transformation processes; $P_1, P_2, P_3, \dots, P_n$, the following outputs; $O_1, O_2, O_3, \dots, O_n$ and effects; $E_1, E_2, E_3, \dots, E_n$, on SSI beneficiaries; $B_1, B_2, B_3, \dots, B_n$ are highly probable".

There are six steps in evaluating industrial extension programs, namely : (a) addressing evaluation issues, (b) defining evaluation tasks, (c) gathering data, (d) data processing, (e) analysing data, and (f) using evaluation results.

4.1. Addressing Evaluation Issues

At the start, industrial extension program management should confront the issues that evaluation exercise will address. A sampling of these issues are :

- a) Who are the target beneficiaries? This defines the industrial extension's real target clientele, that is, their operating characteristics, location, employment size, asset size, etc. Refining this issue yields : "who should be benefitted but were not?" or "who should not be benefitted but were?"
- b) What really is the industrial extension's mission? Industrial extension missions are normally stated in vague, general and often unrealistic terms, such as, "to develop SSIs within an area", "catalyze regional development", "maximize employment generation", etc. While being pleasing to the ear, they mask underlying divergence in intent. For evaluation purposes, the mission should be stated in behavioural terms, that is, something must happen to the beneficiaries after being exposed to industrial extension. For example, "after two years of extension services, 25 relatively progressive SSIs should have installed appropriate book-keeping systems" or "after 15 meetings with the area's SSI furniture producers association, it will start a joint marketing project".
- c) Which are the extension program's short- and long-term goals? This is an elusive issue. Some say infusing "entrepreneurial spirit" among SSIs through industrial extension is the long-term goal. But under pressure to produce immediate results, many extension managers could not wait for long-term effects to become manifest. To simplify, let the extension officers, who will ultimately live with the evaluation results, do the goals classification.
- d) What are the criteria for success? After goals have been set, yardsticks should be formulated, that is, "what constitutes successful attainment of goal?" Suppose an extension program assisted 160 SSIs within a year, is this a successful record? Without yardsticks, evaluation results are interpreted subjectively. These are exemplified by such statements as "a small change is better than no change" or worse, "no change is better than retrogression".
- e) What are the unintended consequences? In accomplishing the industrial extension mission, some unexpected consequences emerge. Although rare, an industrial extension program may aggravate rather than alleviate the very problems it is addressing. A supervised credit cum industrial extension program, for example, may finance inefficient SSIs which only get them deeper into debts.

4.2. Defining Evaluation Tasks

This handles the administration and management of the evaluation exercise. It defines the activities to be undertaken, who will do them, when will they be done, how will they be done, etc. Moreover, the following issues could meaningfully be clarified:

(a) why the evaluation?, (b) what is to be learned?, (c) who wants to know?, (d) how will the evaluation be conducted (external versus internal evaluation)?, (e) what evaluation methodology will be used?, and (f) when should the evaluation be conducted?. Finally, this step ensures that the evaluation results will be : (a) objective - minimize subjectivity and personal biases, (b) timely - available at the time needed, (c) applicable - contain useful conclusions and recommendations, (d) communicable - "translatable" to the users' language, and (e) valid - adhere to accepted principles and practices ensuring data reliability.

4.3. Gathering Data

Using various research techniques, evaluation data are gathered from various sources. The sources include : interviews, questionnaires, observation, ratings (by peers, staff, experts, among others), psychometric tests (for attitudes, values, personality, preferences norms, beliefs, etc.), institutional records, government statistics, information retention tests, projective tests (like Thematic Apperception Tests in Achievement Motivation Training), situational tests (presenting respondents with simulated life situations), diary records, physical evidence, financial records, testimonials and documents (minutes of meetings, newspaper clippings, etc.).

In evaluating extension programs, it is almost impossible to disregard data gathering tools probing attitudes, values, knowledge and behaviour. An extension program, for example, imparts basic small business management knowledge, skills and entrepreneurial values. To gather data on its impacts, tests, interviews and questionnaires may be used, for example, "self-reports" of affected groups such as assisted clients, extension officers, SSI loan officers, SSI information officers, among others. Behavioural changes may also be observed or felt, such as willingness to initiate changes, openness in problem discussions, etc. To a limited extent, financial records also reflect changed behaviour. Judgement on behavioural changes may likewise be adopted provided outsiders rather than extension officers do the enquiry.

A common evaluation data gathering approach is the survey of assisted and non-assisted industrial extension clients. An example was piloted by the Economic Development Foundation (EDF) in 1981 for the Philippines' Small Business Assistance Centers (SBAC) - an industrial extension program of the government under the Ministry of Trade and Industry. The instruments used in the survey are found in Annexes 1 and 2. The EDF approach focusing on the extension program's impact classified the randomly selected respondents according to setting (rural and urban), size (small or medium), industry (armaments, furniture, metal, etc.). Sample sizes were established on national and regional levels using "purposive sampling methodology".

4.4. Processing Data

Data processing starts with the identification of relevant indicators based on evaluation issues and data gathering instrument. Indicators are factors which induce changes - directly or indirectly - to the variables being examined. Since indicators lend themselves to simple quantification, they measure some extension program characteristics. To measure performance, for example, the simple indicator, "number of extension contacts made", is compared with the "number of contacts made last year". To measure effectiveness, the evaluators compare what actually happened, for example, "sales increased by 10 percent", with what was expected to happen, for example, "sales will increase by 30 percent next year". To measure efficiency, cost per unit of benefit may be quantified and compared with previous records.

Despite their popularity, indicators have advantages and disadvantages. Indicators can : (a) establish the change that has occurred including its character, direction and rate of change, (b) compare the actual change against what was planned, (c) assess the impact of change on higher goals (d) compare the program's performance with other programs', and (e) examine input-output and cost-benefit relationships. Despite these advantages, some apprehensions exist. If wrongly applied, indicators may : (a) force the setting of more precise targets than perhaps necessary, and (b) require quantitative measurements when much of the extension program's concerns are qualitative improvements in target beneficiaries' knowledge, skills, attitudes, etc.

In the EDF example, six (6) macro indicators were examined for assisted clients and three (3) for non-assisted ones. For the assisted clients, the following indicators were analysed : (a) client performance, (b) client employment, (c) client geographic distribution, (d) services rendered, (e) extension services' impact on assisted clients, and (f) other clients' needs. For the non-assisted, EDF considered : (a) potential client profile, (b) performance, and (c) potential clients' awareness of the extension services. The data processing flow-chart appears in Figure 9.1 below.

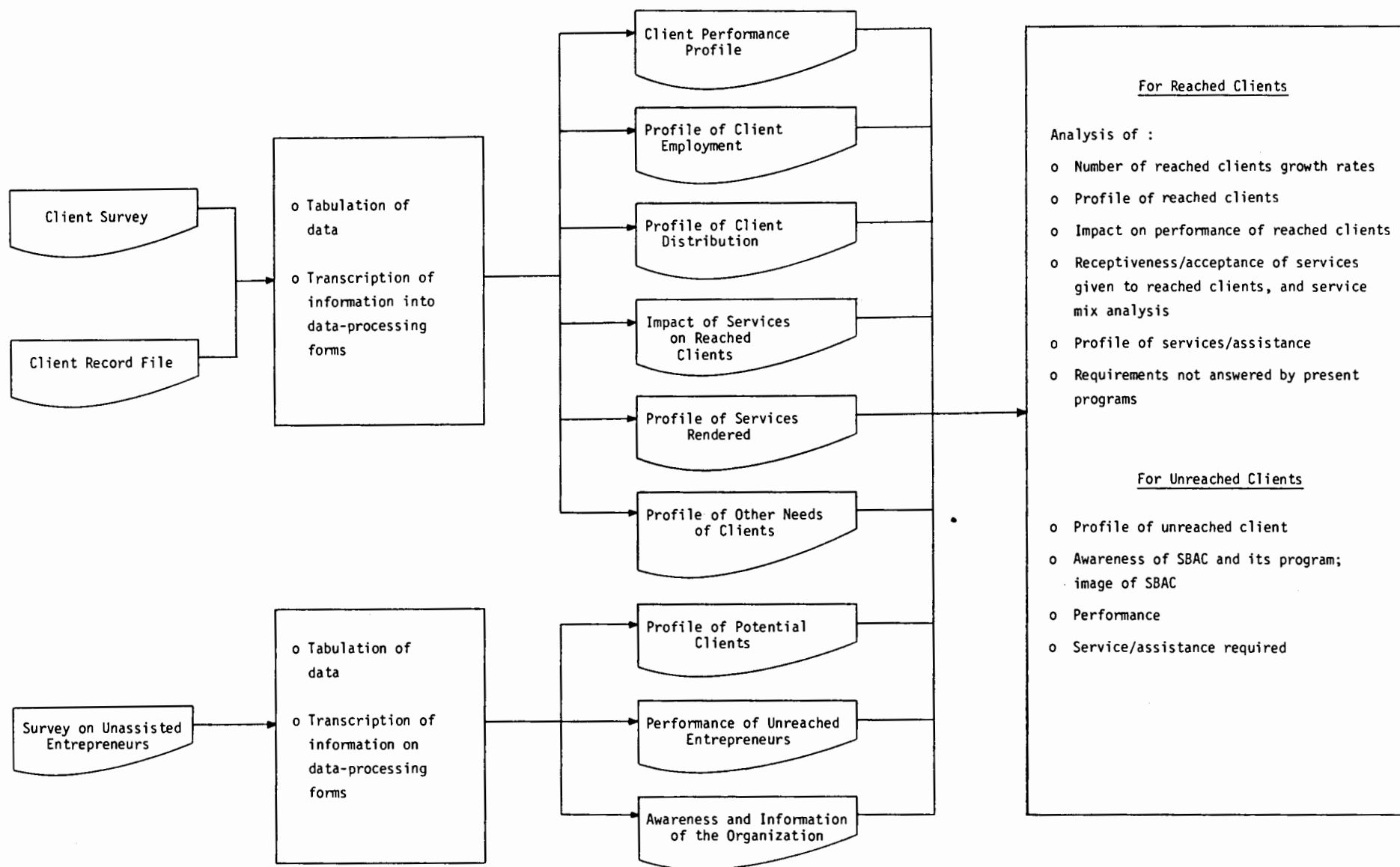


Figure 9.1. EDF Data Processing Flowchart

4.5. Analysing Data

From the evaluation data collected, each indicator should be analysed for : (a) rate of change, (b) direction of change, (c) nature of change, and (d) amount of change, considering the following issues : (a) was the extension mission (or intermediate target) accomplished?, (b) did the extension program make significant impact on broader development goals?, (c) was the extension program worth the cost and effort?, (d) what lessons can be learned?, and (e) what were the critical factors that determine the outcome?

To assess extension program effectiveness, cost and benefit indicators are analysed. Suppose an extension program aimed to train 100 entrepreneurs yearly. After a year, only 70 were trained at a cost (excluding capital outlays) of US\$35 000. For the sake of simplification, program effectiveness is rated at 70 percent and the cost is US\$500 per trainee. Is this cost effective? To conclude, a cost per trainee of comparable course, must be obtained, for example, a business administration course. If the course costs only US\$450 per trainee, then the extension program's training is expensive and not cost effective.

In the EDF example, analysis focused on : (a) extension outreach, (b) extension impact, and (c) non-assisted clients' perception of the extension program.

Extension outreach evaluated the extent by which assisted clients were served by the extension program. It initially looked at their population, growth rates and proportion of small to medium firms. Also, extension outreach charted the extension services' geographical penetration. Finally, it classified the assisted clients according to their business activity and the specific extension services rendered.

Extension impact determined the program effects on the assisted clients. It began by measuring the assisted clients' performance, in terms of total sales, total assets, total profit and total employment. Then, using the scale "low" "moderate" and "high", it asked the clients to assess the extension services' influence on their operations. And it considered the extension effects on client performance indicated by business growth, profitability, improvement of management skills and development of business linkages.

Non-assisted clients' extension program perception measured the awareness and impression of non-assisted clients on the extension service. Moreover, it classified the non-assisted clients into setting and firm size. Finally, it traced the channels through which awareness was made possible.

4.6. Using Evaluation Results

Evaluation results have 4 major uses : (a) management utilization, (b) program/policy modification, (c) option generation and (d) archival.

For management utilization, evaluation results are useful if an extension program wants to continue or discontinue an on-going activity. Evaluation results are specially relevant in areas where program management has direct control and accountability. As such, evaluation results provide "early warning signals" for decisions that may go wrong, decisions that should be made and decisions that will work out better than anticipated.

Using evaluation results for program modification requires redefinition of current activities. Redefinition focuses on how such activities are performed and not necessarily on the objectives that initiated the activities. In policy modification, evaluation results expose the objectives to reinterpretation, that is, they subject program objectives into successive iterations and adjustments. What started out as vague and ambiguous objectives are successively refined into more operational and usable guides.

In new option generation, extension evaluation results seek to develop new objectives and activities. Moreover, evaluation results pave the way for major changes in existing activities.

Archival, the residual use of evaluation results, has two aspects : conformance and modelling. Conformance refers to the evaluation exercise being an obligatory element of the extension program management cycle. In modelling, evaluation results are assumed not to contribute to program decision-making, instead provide a broader understanding of how socio-economic development worked. Hence, evaluation results contribute to academic and theoretical pursuits.

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CLIENT SURVEY FORM
[Assisted Clients]

Name of Company: _____

Address : _____

Setting : Rural (☐) Urban (☐)

Size : Small ⁶ (☐) Medium (☐)

Date : _____

Respondent : _____

Position : _____

Good morning. (good afternoon) I am from the Ministry of Trade and Industry. We are presently conducting a survey so that we can be of better service to you. The survey will be used to update our data on the clients, we have served and to evaluate the effects of our programs on our clients, like you, for example:

I. COMPANY PROFILE

1. Ownership

Single Proprietorship (☐) Partnership (☐) Corporation

2. Proprietors/Stockholders

3. Nature of Business: _____

4. Date of Inception : _____ Manager: _____

5. Principal Products: _____

II. INSTITUTIONAL LINKAGE

The following questions are about your relationship with us as our client and the forms of assistance you have received from us.

1. First of all, how did you come to know about the organization?

- a. Approached by extension officer ()
- b. Through industry association ()
- c. Through the bank ()
- d. Through colleagues or business ()
- e. Others () Specify _____

2. When did you first come to know about the organization's services?

3. Are you a member of any industry association? () Yes () No
If yes, proceed to question 4.

4. Have you received any assistance from the organization through this association? Yes () No ()

If no, proceed to question 5.

If yes, a) what was the nature of the assistance?

(allow for multiple answers)

- Consultancy ()
- Project feasibility study ()
- Training ()
- Information ()
- How did the assistance affect your business?
(explain benefits or disbenefits to the company).

5. What form of direct assistance have you received from us?
(allow for multiple answers)

- Consultancy ()
- Project feasibility study ()
- Training ()
- Information ()

6. When did you start to get these assistance?

7. What specific services did you get Were these implemented and how did they affect your business

<u>Assistance/ Recommendation</u>	<u>Date</u>	<u>Implementation</u>			<u>Brief Description of Effects</u>	<u>Effect on Operation</u>		
		<u>Full</u>	<u>Partial</u>	<u>Not Implemented</u>		<u>Low</u>	<u>Moderate</u>	<u>High</u>
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____

8. In case an assistance or recommendation was not fully implemented, please give reasons.

III. COMPANY PERFORMANCE

Through the following questions, we would like to measure the specific effects of our program on your business operations.

Note for interviewer

The question leads to indicators of performance of the company. It is possible that the respondent may not be able to give absolute values or answers, but the interviewer may obtain indices through probing questions.

Negative performance indicators as well as indirect answers should also be recorded.

Example: The respondent may not have increased his permanent employees, but could have increased his average number of employees by hiring more casuals during peak seasons.

A. Status of Operation

Total Assets (P) _____ Plant Capacity: _____

Number of Employees:

Permanent: _____ Average number of employees
per year (including casuals) _____

Sales in 1980:

P _____

Volume: _____

Net Profit in 1980: _____

B. Performance

1. Growth

Since the start of assistance:

a) How many additional employees have you hired? _____

b) How much additional investment have you put into the
business (equity and loan)? _____

- c) How many product lines if any, have you added to your previous lines? _____
- d) How much space have you added to your operations (percentage to original space occupied)? _____

- e) How much additional investment have you made on equipment (percentage to original)? _____

- f) By how much have you increased your sales (with reference to sales before start of assistance)? _____

2. Profitability

- a) By how much have you improved your profits (with reference to profits before start of assistance)? _____

3. Linkages

- a) Do you think there is an improvement in management and/or labor skills in your company because of the assistance? () Yes () No
- b) How many new systems, if any, have you installed after the assistance (e.g., accounting inventory, purchasing, etc.)? _____

IV. OVERALL PROGRAMS ASSESSMENT

1. Aside from the extension organization, have you sought or availed yourself of assistance from other organizations?

() Yes () No

2. What organizations?

_____	_____
_____	_____
_____	_____
_____	_____

3. What type of assistance have they rendered?

4. What other type of assistance do you want our organization to offer?

5. Have you recommended our organization to any of your friends? () Yes () No

6. In your assessment, how much has the organization's services influenced the present state of your business?

Slightly () Moderately () Much ()

7. How would you rate the services offered by the organization?

Poor () Satisfactory () Excellent ()

CLIENT SURVEY FORM
(Non-Assisted Clients)

ENTREPRENEURS BACKGROUND

Name of Company : _____ Respondent: _____
Address : _____ Position : _____
Setting : Urban () Rural () Date : _____
Size : Small () Medium ()

Good morning/(good afternoon). We are representatives from the industrial extension service office in your region. Our office offers selected services to small and medium entrepreneurs like you, and among these services are management counselling, product and packaging design and marketing assistance.

We are conducting a survey of unreached entrepreneurs to assess the image of our organization and to help us improve our services.

May we interview you? (If yes, proceed with questionnaire)

A. Entrepreneur's Profile

1. Ownership

Single Proprietorship () Partnerships () Corporations ()

2. Manager _____

3. Date of Inception _____

4. Nature of business _____

8. Awareness of the Organization's Services

1. Are you aware of the services offered by the organization?

Yes () No ()

2. If no, proceed to question C.c.

If yes, a) - What to your knowledge are the services offered?

b) How did you come to know of the services?

o Approach by extension officer ()

o Through industry association ()

o Through the bank ()

o Through colleagues or business association ()

o Others () Specify _____

c) Where did you first come to learn of the services offered?

C. Image of the Organization

C.a. Impression of Entrepreneurs

1. Do you think the organization can be of help to you?

Yes () No ()

If no, go to C.b.

If you don't know, go to 2.

2. Why don't you avail yourself of the service? (Determine impediments to positive client-organization relationship, e.g., accessibility, impression of paid services, insufficient information, etc., go to C.c.)

C.b. Factors Leading to
Negative Impression

What makes you think the organization cannot help you?
(Determine entrepreneur's impression on the organization's credibility in meeting his needs, impression created by other parties e.g., friends, association, etc.)

C.c. Receptiveness to Calls by
Extension Officer

Will you entertain officers of the organization who will discuss with you the nature of its services and how they can help in your operations? Yes () No ()

If yes, go to C.d.

If no, go to D.

C.d. Needs of Prospective Clients

In what areas in your operation do you think you need assistance most? (e.g., marketing, finance, etc. site specific cases, if possible.)

D. Client Performance

(Past 5 years; or start of operation which ever is shorter).

1. Growth

% Growth

- a. No. of employees
- b. Space occupied
- c. No. of major equipment
- d. No. of product lines
- e. Sales
- f. Profitability (ROI or Profits)

2. Upgrading of Management

Management systems installed

% increase

3. Linkages

New linkages developed (e.g., banks, marketing outlets, sources of technology, etc.)

Year

Name of Operation

Nature of Linkage

% increase