

Japan International Cooperation Agency

Secretary of Industry, Commerce and Small and Medium  
Enterprise, Ministry of Economy and Production, Argentina

Sub-Secretary of Industry

Sub-Secretary of Small and Medium Enterprise and Regional Development

National Institute of Industrial Technology

# The Study on Revitalization of Small and Medium Enterprises in Argentina

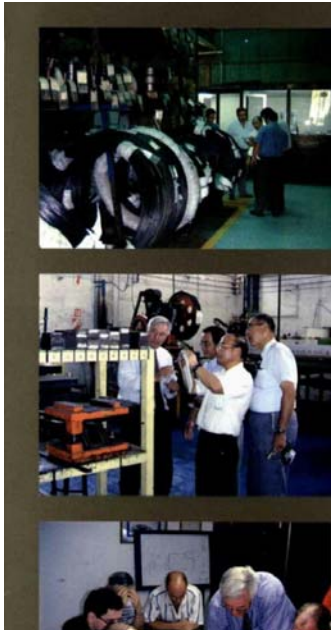
## **Final Report**

### **(Summary)**

MARCH 2006

UNICO INTERNATIONAL CORPORATION

INTI made a brochure of the Study, in which the transfer of soft technology to the local SMEs with the experts of the Study Team is presented.



## Estudio sobre la Promoción de la Pequeña y Mediana Empresa en la República Argentina

Viernes 3 de marzo de 2006 | EL CRONISTA

8

LA SEPYME AUDITA LA VERACIDAD DE LOS DATOS

# Lanzan un nuevo portal para Pymes

DANIELA VILLARO Buenos Aires

La semana próxima estará habilitado al público el nuevo portal Bolsa Pyme de la Subsecretaría de la Pequeña y Mediana Empresa, en el que los empresarios podrán ofrecerse como proveedores al mercado nacional e internacional.

El portal es uno de los emergentes del Estudio sobre la Promoción de la Pyme en la Argentina llevado adelante por la Sepyme, la Agencia de Cooperación Internacional del Japón (Jica) y el Instituto Nacional de Tecnología Industrial (Inti).

Se trata de una bolsa de subcontrataciones dirigida por la Sepyme con el apoyo y financiación de Jica, que permite a las grandes empresas buscar proveedores y subcontratistas. Allí, y en forma gratuita, las Pymes pueden dar a conocer su oferta, detallar los productos que venden, las condiciones tecnológicas, brindar datos de localización y de recursos humanos, en español e inglés.

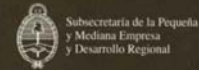
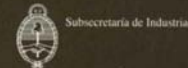
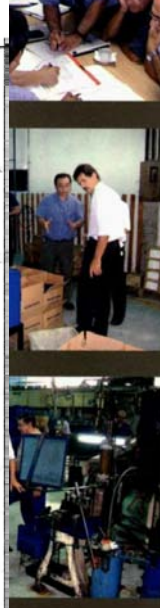
La Sepyme, en tanto, audita la fidelidad de los datos. De esta forma, "la gran empresa que busca proveerse sabe a quién está contratando. Es una herramienta copiada de las mejores prácticas del resto del mundo. En quince países europeos,



Federico Poli

donde este tipo de instrumento tiene un gran potencial, participan del sistema unas 70.000 empresas proveedoras que facturaron más de 60.000 millones de euros", dijo ayer el subsecretario Pyme, Federico Poli, durante el seminario de cierre del Estudio.

Bolsapyme estará abierto al público a partir del 11 de marzo. Permite hacer búsquedas por empresa, producto, nomenclador o región. En esta primera etapa hay 204 empresas -autopartistas, de maquinaria agrícola y alimenticia- en la base de datos y se siguen incorporando sectores. También incluye una bolsa de trabajo.



"Bolsa de PyME" (SME database) developed as a joint work of SSPyMEyDR and the Study Team was launched in the closing seminar of the Study.

Procedure of the closing seminar of the Study  
on March 2, 2006 in Buenos Aires



**Seminario de cierre**  
**Estudio sobre la Promoción de la Pequeña y Mediana Empresa en la República Argentina**

**Instituciones:**

Agencia de Cooperación Internacional del Japón (JICA)  
Secretaría de Industria, Comercio y PyME  
Instituto Nacional de Tecnología Industrial (INTI)

**Fecha:** Jueves 2 de marzo de 2006 – 8:45 a 13:00 hs.

**Lugar:** nH City Hotel - Bolívar 160 - Salón Plaza Mayor - Ciudad Autónoma de Buenos Aires

**Agenda:**

- 8:45 h **Acreditación**
- 9:00 h **Apertura**  
-Miguel Peirano, Secretario de Industria, Comercio y de la Pequeña y Mediana Empresa  
-Ana Caffero, Representante Especial para Asuntos de Cooperación Internacional, Cancillería Argentina  
-Shinya Nagai, Embajador de Japón en Argentina  
-Toshiaki Furuya, Representante Residente de JICA Argentina
- 9:20 h **Resumen del Estudio y sus Proyectos Modelo**  
-Toru Moriguchi, Jefe de la misión japonesa – Unico International Corporation
- 9:45 h **Casos de implementación de mejoras en empresas modelo del Estudio**  
-Reducción de PPM e implementación de 5S, Fundación GATTI (Rosario)  
-Implementación de sistema Kanban, FAESA (Córdoba)
- 10:15 h Coffee break
- 10:45 h **Casos de implementación de mejoras en empresas modelo del Estudio (cont)**  
-Implementación del Programa de 5S, MAI (San Martín)  
-Diseño de layout de planta nueva y Mejoras de setup, Altísimo (San Martín)  
-Reducción de tiempos de setup y programación de la producción, Aniceto Gómez (San Martín)
- 11:30 h **Capitalización del Estudio en el INTI: asistencia en mejoras de productividad en PyMES, tecnología transferida por Proyecto Modelo I.**  
-Enrique Martínez, Presidente del INTI
- 11:45 h **Capitalización del Estudio en la SSEPyMEyDR: Portal "Bolsa PyME", desarrollado en el marco del Proyecto Modelo II.**  
-Federico Poli, Subsecretario de la Pequeña y Mediana Empresa y Desarrollo Regional
- 12:00 h **Conclusiones y Recomendaciones del Estudio**  
-Toru Moriguchi, Jefe de la misión japonesa – Unico International Corporation
- 12:30 h Preguntas y encuestas
- 13 00 h Cierre y lunch ejecutivo

**Informes:** INTI – Subprograma de Vinculaciones Internacionales

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## Abbreviations

ADEFA	Asociación de Fábricas de Automotores
ADERR	Agencia de Desarrollo Región Rosario (Rosario Regional Development Agency)
ADIMRA	Asociación de Industriales Metalúrgicos de la República Argentina
AFAC	Asociación de Fábricas Argentinas de Componentes
AFIP	Administración Federal de Ingresos Públicos
AFYDREM	Asociación Fabricantes y Distribuidores de Repuestos para Automotores de la República Argentina
AGE	Asesores en Gestión de Empresa
AIM	Asociación de Industriales Metalúrgicos de Rosario
BICE	Banco de Inversión y Comercio Exterior, SA
BID	Banco Interamericano de Desarrollo
CAFMA	Cámara Argentina de Fabricantes de Maquinaria Agrícola
CAP	Common Automotive Policy
CDE	Centro de Desarrollo Empresarial
CDTI	Centro para el Desarrollo Tecnológico Industrial
CEINDEPRO	Centro de Investigaciones para el Desarrollo Productivo
CEMROS	Centro Multipropósito Rosario de INTI
CET	Common External Tariffs
CGI	Confederación General de la Industria
CIDETER	Centro de Investigación y Desarrollo Tecnológico Regional
CIF	Cost, Insurance, Freight
CIME	Centro de Investigaciones del Metal Estampado
CIME	Centro de Investigación de Métodos y Técnicas para Pequeñas y Medianas Empresas
CITSAFE	Centro de Investigaciones Tecnológicas de la Provincia de Santa Fe
DAT	Dirección de Asesoramiento Técnico de la Prov. de Sta. Fe
EPSAM	Environment, Physical Sciences and Applied Mathematics
EU	European Union
FA	Flexible Automation
FICO	Feria Internacional de Córdoba
FOGAPyME	Fondo de Garantía para la Micro, Pequeña y Mediana Empresa
FONAPyME	Fondo Nacional de Desarrollo para la Micro, Pequeña y Mediana Empresa
FPM	Food Processing Machinery
GBA	Great Buenos Aires
GDP	Gross Domestic Product
GPS	Global Positioning System
IAS	International Accounting Standard

IBQP	Instituto Brasileiro de Calidad y Productividad
ICT	Information and Communication Technology
IDB	Inter-American Development Bank
IDEB	Instituto de Desarrollo Empresario Bonaerense
IMV	Innovative International Multi-purpose Vehicle
INDEC	Instituto Nacional de Estadística y Censos
INPI	Instituto Nacional de Propiedad Industrial
INTA	Instituto Nacional de Tecnología Agropecuaria
INTEMIN	Instituto Tecnológico Minero
INTI	Instituto Nacional de Tecnología Industrial
ISIC	International Standard Industrial Classification for all economic activities
JICA	Japan International Cooperation Agency
JIT	Just In Time
MERCOSUR	Mercado Común del Sur
MRP	Material Requirement Planning
MTySS	Ministerio de Trabajo y Seguridad Social
OAPLO	Organización Argentina de Producción Logística y Operaciones
OECD	Organization for Economic Cooperation and Development.
OEM	Original Equipment Manufacturing
OJT	on-the-job training
OLAC	Organización Latino-Americana para la Calidad
PATI	Programas de Asistencia Técnica Integral para la Formación de Empresarios de la Pequeña y Mediana Industria
PDE	Proyectos de Desarrollo Empresarial
PDM	Project Design Matrix
PRE	Programa de Apoyo a la Reestructuración Empresarial
REM	Replacement Equipment Manufacturing
S.G.R.	Sociedades de Garantía Recíproca (Society of Mutual Guarantee)
SCM	Supply Chain Management
SEBRAE	Servicio Brasileiro de Asistencia a Empresas (Brazil SME Promotion Organization)
SENAI	Servicio Nacional de Asistencia a la Industria
SIJP	Sistema Integrado de Jubilaciones y Pensiones
SLP	Systematic Layout Planning
SSPyMEyDR	SubSecretaría de la Pequeña y Mediana Empresa y Desarrollo Regional
SWOT	Strength,, Weakness, Opportunity, Threat
TPM	Total Preventive Maintenance
TQC	Total Quality Control
UADE	Universidad Argentina de la Empresa
UBO	Unión Brasileira para la Calidad
UIA	Unión Industrial Argentina

UNIDO	United Nations Industrial Development Organization
USI	Unidad de Sistemas de Información
UVT	Unidad de Vinculación Tecnológica
VA/VE	Value Analysis / Value Engineering



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## Study Outline

# Study Outline

## 1 Trend of Argentine Economy and Background of the Study

Argentina carried out economic reforms rapidly in the 1990s, in particular, vigorously promoting liberalization of foreign trade and investment, privatization, and deregulation. The Conversion Law enacted in 1991, accompanied by contraction of currency issue, caused the rampant hyperinflation to subside rapidly and contributed greatly to stabilization of the national economy. However, the same law, which introduced the fixed exchange rate system, resulted in overvaluation of the peso and deteriorated the current account balance of payments. The high peso increased imports and weakened domestic manufacturing industries that lost government protection as a result of deregulation. The national economy further dilapidated due to external factors such as the devaluation of the Brazilian currency.

Uncertainty about the future of the economy that showed no sign of recovery spurred drains of bank deposits and a rapid decline in foreign currency reserves due to the exchange of the local currency with the U.S. dollar, and the government initiated restrictions on the withdrawal of bank deposits and the outflow of foreign currency. As a result of these drastic measures, the de la Rúa government collapsed. In January 2002, the government discontinued the fixed exchange rate system, which was shifted to the full float system. Then, inflation accelerated and unemployment increased rapidly to bring consumer spending down further and to cause inflow of investment to stop. In 2002, the GDP growth rate fell to minus 10.9%.

In 2003, the Argentine economy showed signs of recovery as led by companies that survived through hard times marked by economic crisis and recession due to the devaluation of the peso. Especially, construction and manufacturing sectors enjoyed growth. Domestic fixed investment in the country soared by 42.7% and private consumption expanded by 10.4%. Now, the Argentine economy is clearly in the process of expansion. It is reflected in tax revenues, as evidenced by appreciable increases in export and income taxes, and government finance starts to show a brighter picture.

The Kirchner administration, which came to power after the economic crises, declares sustainable growth of the economy that accompanies employment growth as the most important policy agenda, and in particular, it considers revitalization of the manufacturing sector to be an important challenge because of a high effect of job creation and realizes that promotion of



SMEs holds the key. And the government intends to promote SMEs by focusing on enterprises in industries with high growth potential and encouraging reinforcement of their competitiveness with a view to energizing export promotion, increase in local content, and development of high value added products and services. In other words, the government is expected to devise and implement policies and programs that support the business environment capable of promoting development of the manufacturing industry and the improvement of its international competitiveness in a steady way.

Against this background, the Argentine government takes notice of Japan's experience in SME fostering and support under concerted efforts the public and private sectors as well as pervasiveness of production management technology in Japan and has requested the Japanese government for technical support relating to revitalization of SMEs in Argentina.

## **2 Objective of the Study**

The principal objective of the Study is to ensure that the Argentine economy recovers fully from the recent crisis and promote the establishment of a stable industrial structure required for continuation of the recovery trend by revitalizing small- and medium-sized manufacturers that play a critical role in the country's industry and by promoting the reinforcement of their competitiveness in the world marketplace.

- Super-goal: To improve competitiveness of small- and medium-sized manufacturers
- Project goal:
- 1) To propose action programs required for improvement of competitiveness of small- and medium-sized manufacturers; and
  - 2) To conduct, jointly with counterpart organizations in Argentina, model projects that introduce specific kaizen activities to SMEs, to verify effectiveness of the proposed action programs, and promote improvements of capacity of SME managers and skills of SME support organizations and their staff.

## **3 Sectors and Technologies Covered by the Study**

Small- and medium-sized manufacturers of machine parts for automobiles, agricultural machinery, and food processing equipment are selected for the basic survey and the model projects, which are key components of the Study.

Among the technologies required by the manufacturing industry, the Study will cover soft

technology, or business and production management techniques.

## **4 Components of the Study**

### **4.1 Basic Survey**

Objective: To identify the current state of SME promotion policies of the Argentine government and promotion programs conducted by the public and private sectors, analyze major issues relating them, and study the current state of small- and medium-sized manufacturers. Based on the results of the analysis and study, draft action programs and model project schemes will be developed and proposed.

### **4.2 Model Projects**

Objective: To verify effectiveness of draft action programs and to promote technology transfer to individual enterprises and the counterpart organization by providing “kaizen” guidance for selected enterprises using soft technology.

### **4.3 Formulation of Action Programs**

Based on the results of the basic survey and the model project, draft action programs are examined and formal action programs are developed and proposed.

## **5 Organization of the Study Team and Study Schedule**

### **5.1 Study Team**

Table 1 summarizes the organization of the study team and responsibilities of study team members.

Table 1 Organization and Responsibilities of the Study Team

Job title	Name	Responsibility
General supervision and SME policies and programs	Toru Moriguchi	General supervision of the study (basic survey, model project, formulation of action programs)
SME diagnosis	Akira Hata	General supervision of simplified corporate diagnosis, and Model Project 1 (San Martín district)
Business strategy and marketing	Yoshinari Yamamoto	Basic survey and management of the model project
Production control I	Teruo Higo	Simplified corporate diagnosis, and Model Project 1 (Rosario – Rafaela district)

Production control II	Rinji Wakamatsu	Simplified corporate diagnosis, and Model Project 1 (Córdoba district)
Production control III	Nobushige Fukase	Simplified corporate diagnosis, and Model Project 1 (Rosario – Rafaela district)
Financial and management accounting	Hikomichi Kato	Simplified corporate diagnosis, and Model Project 1
ICT support	Masashi Nakajima	Simplified corporate diagnosis, and Model Project 2

## 5.2 Study Schedule

The field survey schedule and major activities are summarized as follows.

Table 2 Field Survey Schedule

Field surveys		Major activities by the study team
First field survey	September – October 2004	Basic survey (interview surveys of related organizations, literature research, questionnaire surveys of individual companies)
Second field survey	November – December 2004	Basic survey (continued) and simplified corporate diagnosis
Third field survey	February – March 2005	Formulation of the model projects, Model Project 1 kickoff seminar
Fourth field survey	May – June 2005	Implementation of the model projects, Study PR seminars
Fifth field survey	August – October 2005	Implementation of the model projects, KANBAN seminars
Sixth field survey	November – December 2005	Implementation of the model projects, seminars to present results of Model Project 1
Seventh field survey	February – March 2006	Seminar to present results of Model Project 2, seminar to present action programs

## 6 Seminars

During the study period, the following seminars were held.

Table 3 List of Seminars Held

Title	Date	Place	Eligible participants	Lecturer	Content
Seminar on the method for simplified corporate diagnosis	2004-11-9	INTI head office	INTI counterpart staff	Study team members	Simplified corporate diagnosis techniques
Model project 1 kickoff seminar	2005-3-2	Rosario	Companies participating in Model Project 1	Study team members	Outline of production management technology
Study PR seminar (1)	2005-6-7	Córdoba	Open to public	Study team members	Study outline Japan's SME support policy

Study PR seminar (2)	2005-6-16	Rosario	Open to public	Study team members	Study outline Japan's SME support policy
Study PR seminar(3)	2005-6-23	Buenos Aires	Open to public	Study team /counterpart members	Study and model project outlines Japan's SME support policy
KANBAN seminar (1)	2005-9-6	Rafaela	Companies participating in Model Project 1 INTI counterpart staff	Study team members	Outline of KANBAN system
KANBAN seminar (2)	2005-9-20	Córdoba	Companies participating in Model Project 1 INTI counterpart staff	Study team members	Implementation of KANBAN system
Model Project 1 result presentation seminar (1)	2005-12-5	Rosario	Open to public	Participating companies Study team members	Presentation on results of Model Project 1
Model Project 1 result presentation seminar (2)	2005-12-6	Rafaela	Open to public	Participating companies Study team members	Presentation on results of Model Project 1
Model Project 1 result presentation seminar (3)	2005-12-7	Córdoba	Open to public	Participating companies Study team members	Presentation on results of Model Project 1
Study result presentation seminar	2006-3-2	Buenos Aires	Open to public	Participating companies Study team /counterpart members	Presentation on results of Model Project 1 Presentation of Bolsa de PyME Action programs

## 7 Study Implementation Flow and Organization of the Report

The study implementation flow based on the study components and the organization of this report corresponding to each component are illustrated in Fig.3.

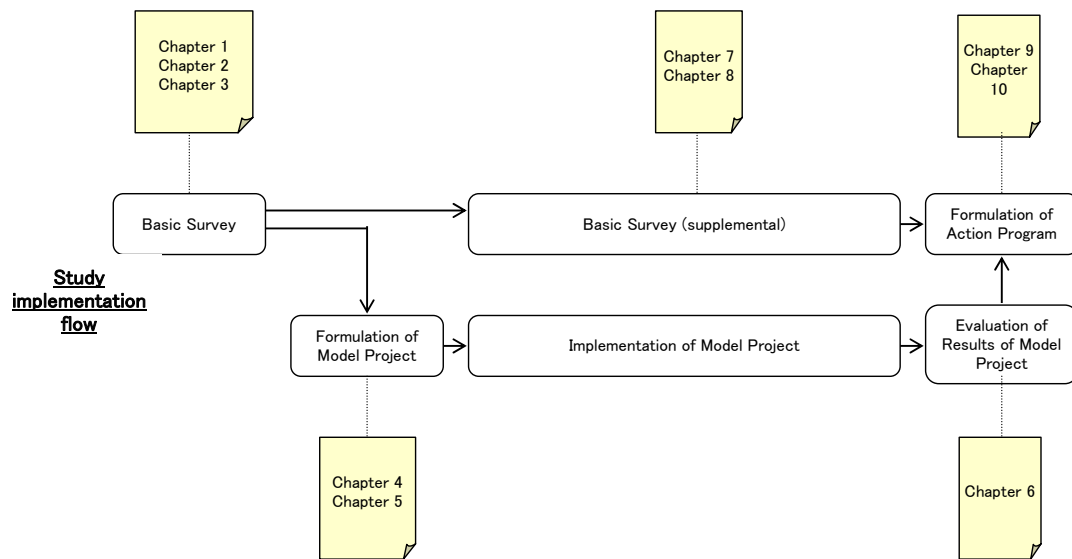


Fig.1 Study Implementation Flow and Organization of the Report

## Chapter 1

# SME Policy in Argentina and Support Programs

## Chapter 1 SME Policy in Argentina and Support Programs

### 1.1 SME Law

In Argentina, there is no law that sets forth the principle, policy and other basic framework of SME support programs, as in the case of the Basic SME Law in Japan. Thus, laws described below provide for systems and institutions for SMEs and are different in nature from the basic law. In particular, Ley 25.300 enacted in 2000 is a major amendment to Ley 24.467 of 1995, and although it amends a number of provisions in the original one, its basic framework does not change significantly.

#### Ley 24.467

Objective: To promote development of SMEs through a new system as well as an integrated existing system.

Enacted in March 1995

#### Ley 25.300

Objective: To improve competitiveness of micro enterprises and SMEs by developing a new system and upgrading the existing system, thereby to develop the country's production activities.

Enacted in September 2000

### 1.2 Definition of Micro Enterprises and SMEs

Table 1.1 Definition of Micro Enterprises and SMEs

Unit: Pesos

	Agriculture & stock farming	Mining & Industry	Commerce	Service
Micro Enterprise	270,000	900,000	1,800,000	450,000
Small Enterprise	1,800,000	5,400,000	10,800,000	3,240,000
Medium Enterprise	10,800,000	43,200,000	86,400,000	2,600,000

Source : SSPyMEyDR

### 1.3 Sub-Secretary of Production

Fig.1.1 shows an organizational chart of the Ministry of Economy and Production.

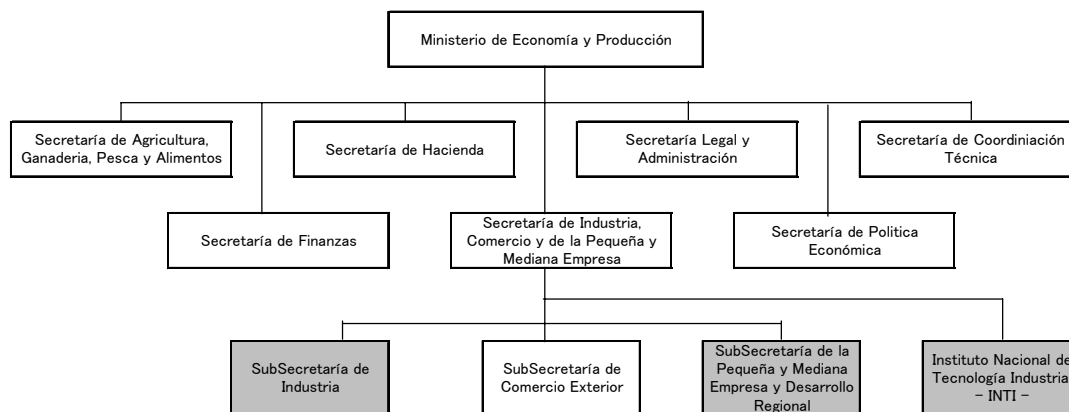


Fig. 1.1 Organization Chart of Ministry of Economy and Production

Sub-Secretary of Production (SSP) is responsible for production of the industrial sector as a whole, including SMEs. Its activities include promotion of Plan Nacional de Diseño, management of Instituto Nacional de Propiedad Industrial (INPI) that is responsible for protection of industrial property rights, and implementation of “Programa de Foros Nacionales de Competitividad de las Cadenas Productivas”.

### 1.4 Sub-Secretary of Small and Medium Enterprises and Regional Development (SSPyMEyDR)

SSPyMEyDR is a government office responsible for formulation of SME policy and an organization responsible for implementation of various support programs.

#### 1.4.1 Major Financial Schemes

##### 1) Bonificación de Tasas de Interés

To provide interest subsidy of 3% - 8% for loans for working capital, capital investment, and R&D.

##### 2) FoMicro

This is the fund created for the purpose of creating production bases and reinforcing micro enterprises through integration or collaboration, thereby to reduce unemployment, revitalize industries, and stimulate the local economic base.



### **3) MyPEs II**

A dollar-based loan program using IDB's funds to provide working capital, fixed asset investment, and exports. The loan period is one year for working capital and seven years at maximum for capital investment (with the grace period of three years).

### **4) FONAPyME**

The loan scheme covers investment projects contributing to promotion of local employment (production capacity expansion, product development, etc.), tourism, agriculture, and R&D, and customers include new startups, existing companies, and associations.

### **5) SGRs**

The number of SGRs has been steadily increasing; 9 in 2002, 11 in 2003, and 17 in 2004. In 2004, approximately 4,500 SMEs benefited from the loan guarantee service, totaling 140 million pesos that were twice that in the previous year.

### **6) FOGAPyME**

This is the fund established pursuant to Ley 25.300 and its purpose is to provide loan guarantee by means of re-guaranteeing of loans covered by SGR's guarantee or by directly guaranteeing ME and SME loans up to 25% of the total loan value. As it has been established only recently, it has still to report notable results.

## **1.4.2 Export Promotion Measures**

Only a small number of SMEs in the country export their products and exports by SMEs are mostly done on a spot basis. Even for SMEs that are capable of making products that can be sold internationally, it is difficult to overcome a number of problems that are different from the local market, such as commercial risks relating to export, minimum lot requirements, and logistics. SSPyMEyDR encourages SMEs to export products by forming a group, instead of a single company, under the assumption that the group approach creates competitive advantage by allowing SMEs to share experience and cost burdens. Export promotion programs that are currently in place are summarized below.

### **1) Grupos Exportadores**

The program was started in September 2000, and today 30 groups are formed by approximately 250 companies in diverse sectors, including food processing, automotive parts, agricultural machinery parts, and metal parts.

### **2) Programa de Apoyo a la Primera Exportación**

This program supports SMEs that want to start exports, including formulation of long-term strategy.

### **3) Articulación Exportadora entre Grandes Empresas y PyMEs**

From the viewpoint that collaboration and complementary relationship with large enterprises contributes to improvement of competitiveness of SMEs, a joint export promotion program between SMEs having export capability and large enterprises is promoted.

### **4) Provision of export information, both local and foreign**

#### **1.4.3 Management Training Program**

This program is designed to improve management capability of owners and managers of MEs and SMEs, to teach market knowledge, and help them to develop the ability to determine what is needed for improvement of productivity and competitiveness. In 2005, training courses to meet local characteristics will be conducted jointly with Agencia, and local organizations are invited to make suggestions for actual training content. The training fee is tax deductible.

#### **1.4.4 Programa de Apoyo a la Reestructuración Empresarial (PRE)**

This program provides subsidy to cover up to 50% of the cost for a variety of projects, including market study, product development, development of production infrastructure, merchandizing, certification of a quality management system, reinforcement of competitiveness, and the building of a production chain involving customers and suppliers. PRE covers both individual companies and trade associations. As part of the program, a directory of consultants that are qualified to participate in PRE (DIRCON) is provided.

#### **1.4.5 Red de Agencias Regionales de Desarrollo Productivo**

It was proposed under Ley 25.300 as a framework for SME support on a regional level, which

was designed on the basis of successful cases in various countries. In line with the decentralization trend, it is intended to deploy support programs of the central government, including SSPyMEyDR, to rural regions, while reinforcing the ability to plan and implement SME support programs on a regional level. Now the program is one of pillars for national SME policy.

SSPyMEyDR, through the network of “agencias”, promotes cooperation with local support organizations, including systematic support, collaboration between the public and private sectors, and joint loan schemes at national, state and municipal levels. As “agencias” can carry out strategically SME support by taking into account local characteristics, while SSPyMEyDR does not have local office, the former serves as an important policy tool for the latter for the purpose of achieving the goal of regional development.

To this date, approximately 50 “agencias” have been established and networked throughout the country. They are essentially non-profit, non-government organizations having a mission to reinforce competitiveness of MEs and SMEs and promote development of local economy by disseminating and promoting various services of public organizations, especially SSPyMEyDR. Under the law, the central or provincial government is authorized to establish the “agencia” jointly with a local government or the private sector.

In 2004, SSPyMEyDR emphasized the establishment of new “agencias” in areas that are not yet served by them, but few efforts were made to strengthen activities of the existing ones. “Agencias” vary greatly in terms of activity and resources (budget and staffing), although they have to meet several criteria to participate in the network. Each “agencia” is an independent organization and its activity is not strictly regulated by SSPyMEyDR. In any case, “agencias” serve as a primary contact for companies that want to use loan schemes offered by SSPyMEyDR, such as FoMicro and MyPEs II and promote and advertise new schemes. SSPyMEyDR appoints local coordinators who communicate with “agencias” by dividing the country into five districts

## **1.5 Instituto Nacional de Tecnología Industrial (INTI)**

Under Secretaría de Industria, Comercio y de la Pequeña y Mediana Empresa, INTI provides a

wide variety of services for industry, including, testing, R&D, quality control, standardization, pollution control. In particular, it offers the services for MEs and SMEs.

INTI's strength lies in the ability to deal with technical problems through its 29 centers, including 5 regional centers that are equipped with functions and resources to meet local needs.

## **1.6 Other SME Support Organizations**

In Argentina, many organizations are involved in SME support activity, including the Bank of Investment and Trade (BICE) in the financial area, the Ministry of Foreign Affairs and Export.Ar Foundation in the area of export promotion, INTA in the area of technology that is a research institute specialized in agriculture (in addition to INTI that is the counterpart of the present study), as well as trade associations on national and local levels. NGOs in Red de Agencias are among many other organizations engaged in SME support.

Local trade associations provide service to meet the needs of member companies. Many of them emphasize seminars and information service relating to technology and management. Some work jointly with SME support organizations to operate various programs. Note that metalworking companies contribute 1% of wages to the national trade association, Asociación de Industriales Metalurgicos de la Republica Argentina (ADIRA), which distributes to local trade associations the funds for workers' training. This system is expected to help invigorate activities of trade associations in the industry, although there are some problems to be solved, such as detailed delineation of service content and treatment of companies that belong to two or more associations. Various donor organizations, including IDB, Germany, and Spain, have been carrying out technology transfer projects in the areas of quality control and production management.

As for problems, service and staff is rather limited due to financial constraint of individual organizations, together with the lack of linkage with other support organizations, companies, and financial institutions, and duplication of service among support organizations and regional inequality in availability of service.

## Chapter 2

### Current Situation and Problems of Three Target Sectors of Model Project

## **Chapter 2 Current Situation and Problems of Three Target Sectors of Model Project**

### **2.1 Automotive Parts Industry**

#### **2.1.1 SWOT Analysis**

The results of the SWOT analysis of the Argentine auto industry are summarized as follows.

##### Strengths

- Productivity is improving due to demand growth in recent years.
- There are assemblers that have large production capacities.
- There is an agglomeration of parts manufacturers as well as engineers and skilled workers.

##### Weaknesses

- Demand in the domestic market and supply by assemblers are not balanced. Imports increase because popular models are not produced locally.
- The industry has not established the flexible production system. In particular, local parts manufacturers have poor production capabilities.
- Local parts manufacturers are dominated by SMEs and are unable to make large investment because of uncertainty in the future. Also, financial institutions are reluctant to lend capital investment funds.

##### Opportunities

- If the industry improves productivity further and develops flexible production capability, it will be able to improve production capability and increase exports.
- At present, local content in the industry seems to be very low. Raising it will boost production of automotive parts.
- Assembly plants that are currently closed down can resume operation.

##### Threats

- If supporting industries (including parts suppliers) are unable to keep up with increased production of assembled cars, the hollowing out of the parts industry will progress further.
- Unless the present bottleneck – the shortage of engineers and skilled workers – is resolved,

the industry's technological base will weaken further.

- Unless the industry gains competitiveness not relying on the present cost advantage, which will disappear in due course, it will not be able to explore export markets and imports will increase to create competitive pressure.

The automobile industry is generally governed by strategies and attitudes of assemblers that are multinationals, while many parts manufacturers that constitute the supplier base have not established international competitiveness and have a long way to improve in the areas of production management, at least as seen by the study team. As parts manufacturers, which function as supporting industries, are not in a position to lead the industry. Instead, they can improve the industry's competitiveness from the bottom up by making continuous improvements in cost, quality and delivery schedule to win confidence of customers (assemblers) and new orders. In other words, they should set a goal to become an integral part of the assembler's global strategy. Needless to say, they also have another strategic option to serve the aftermarket, and they still have to improve competitiveness by developing the ability to meet strict requirements peculiar to the market.

## **2.2 Agricultural Machinery and Parts Industries**

### **2.2.1 SWOT Analysis**

The results of SWOT analysis of farming machinery and parts industries are summarized as follows.

#### Strengths

- As Argentina is one of the leading agricultural countries in the world, it has a sizable market and a technological base in the area of agricultural machinery.
- The industries consist of local manufacturers and parts suppliers, with geographical concentration along National Highway Route 9 between Rosario and Cordoba.
- Local companies maintain a predominant position in the local markets for seed drills and dusters.

#### Weaknesses

- Tractors and cultivators, which constitute relatively large markets, are losing ground to imports.
- Local companies are technologically lagged behind in electronics and other areas.
- Local companies are mainly SMEs with small production capacity and modernization of production systems has not been progressed. With little room for capacity, they have low levels of export capacity.

#### Opportunities

- Agricultural machinery made in the country still maintains price competitiveness and can find export opportunities if quality is improvement and production capacity increases.
- The repair parts and implement markets have further growth potential.
- There is a technological base to develop unique technology such as direct sowing.

#### Threats

- Competition with imports will intensity if the industry cannot keep up with market expansion or trade is fully liberated.
- The agricultural machinery and parts industries cannot escape from market volatility due to business cycles relating to the international agricultural product market and the purchase of agricultural machinery.
- If the industries fail to make adequate technology investment, they will likely be lagged behind.



The agricultural machinery industry produces a wide variety of products and creates niche market opportunities. Also, local companies can have comparative advantage on strength of the varying market needs according to different types of agricultural products, soil property, and local climate, and other factors. In addition, recent demand growth and the increase in the number of companies that change ownership to younger generations are paving the way to introduce new technology and production methods. At the same time, an industrial agglomeration is present but fails to produce its effect. A new source of growth is therefore investment by individual companies while they need to work together effectively to maximize potential power of the industrial concentration.

## **2.3 Food Processing Machinery and Parts Industries**

### **2.3.1 SWOT Analysis**

The results of SWOT analysis of the FPM and parts industries are summarized as follows.

#### Strengths

- Argentina is the world's leading agricultural country, and as a result, the food processing industry is relatively well developed.
- The industry's production capacity is relatively small but it does not present a significant problem for make-to-order production.
- Availability of engineers and skilled workers in the metalworking sector

#### Weaknesses

- Insufficient R&D investment
- Absence of a trade association to represent the interest of the industry through exchange of information or lobbying for governments
- The industry's level of concentration is low.
- Lack of technical support and training service organizations specialized in the area of food processing

#### Opportunities

- The industry has cost advantage to enter the MERCOSUR market.
- There are massive market opportunities in China and India.

#### Threats

- The globalization trend may induce domestic competition from other countries.
- The industry is sensitive to the general business cycle.

Thus, a future prospect for this sector is not very bright, but some companies seem to establish a relatively stable position in the market by grasping the local needs effectively. As the industry inherently serves the local market, it must make efforts to meet the needs of local food processing companies, while upgrading their technology to international levels in order to compete with imports.

## **2.4 Machine Parts Industry**

### **2.4.1 Conditions for Development**

The present level of competitiveness of the machine parts industry (manufacturers) is described as follows.

#### **(1) Human resources**

The literacy rate in Argentina is close to the average rate for OECD countries and exceeds that in most Latin American countries. While it does not rise as rapidly as before in recent years, the government continues to make efforts through policy implementation relating to the improvement of the labor market and public education. The law covering technical schools and higher education was enacted in September 2005, in an attempt to improve human resources both qualitatively and quantitatively for long-term improvement of competitiveness.

#### **(2) Improved conditions for the manufacturing industry**

Capital formation in the manufacturing industry has been recently on the rise due to the increase in investment. At the same time, the percentage share of the manufacturing sector in GDP rose due to the recovery of the national economy, e.g., 21% in 2004. In particular, automobile, metal and machinery industries (including farming machinery and food processing equipment) recorded strong growth, 20% in 2003 and 50% in 2004.

Meanwhile, the volume of agricultural production more than doubled between 1990 and 2004. Major crops were bean, wheat, corn, and sunflower seeds. During the period, the total cultivated land area grew by 40%. Also, mainly due to the eradication of the foot-and-mouth disease, the business environment for the livestock industry improved to create new market opportunities and allow favorable pricing. In addition, expansion of agricultural production created positive impacts on agricultural machinery, food processing equipment, and parts industries.

#### **(3) Cost and input**

In 1991, the Argentine government pegged the peso to the U.S. dollar at a 1:1 exchange rate, which has continued until the end of 2001. Some researches estimate that the pegging has distorted a normal exchange rate by more than 20%. The devaluation of the peso was expected in early 2001 to reflect the actual rate, and the exchange rate fell finally to 3.5 pesos per U.S. dollar. According to a study by the Argentine Business University (UADE), this resulted in a 117% increase in the internal cost compared to the end of 2001 and the country's price

competitiveness increased by around 40% in the export market.

Meanwhile, the increase in industrial production had impacts on domestic production costs. Generally, labor, energy and fuel costs declined significantly on a foreign currency basis at the end of 2002 when the devaluation of the peso occurred. As a result, wage levels in Buenos Aires became cheaper than other countries in relative terms. For instance, the average annual wage in Buenos Aires was \$10,500, lower than \$13,400 in Sao Paulo, Brazil, and \$15,500 in Santiago, Chile. Also, the average wage for general factory workers was \$5,100 in Buenos Aires, favorable compared to \$6,500 in Sao Paulo and \$8,300 in Santiago. These differences narrowed to some degree in 2005, but Argentina still maintains the cost advantage.

The country also has cost advantages in the areas of industrial energy sources including electricity and gas, as summarized below.

Table 2.1 Industrial Inputs

<b>Industrial Inputs</b>	<b>Argentina</b>	<b>Brazil</b>	<b>Mexico</b>	<b>Chile</b>
Electric power for industrial use (US\$/ kwh, taxes included)	0.048	0.054	0.058	0.081
Gas for industrial used (US\$/ kcal, taxes included)	75.3	214.2	191.6	n/d
Steel –laminated steel and others- (US\$/ton)	677	754	n/d	n/d
Qualified industrial workers (annual gross salaries in US dollars)	5,100	6,500	n/d	8,300
Engineers (annual gross salaries in US dollars)	10,500	13,400	n/d	15,500

Source:

Argentina, Advantages of Investing Nowadays (2004), Investment Development Agency (ADI), Secretariat of Industry, Commerce and Small and Medium-sized Companies, Ministry of Economy and Production.

Siderar SAIC, accounting books up to June 30, 2005; [www.siderar.com.ar](http://www.siderar.com.ar)

Arcelor, management report, first six months 2005; [www.arcelor.com](http://www.arcelor.com)

## **2.4.2 Major Issues**

### **(1) Shortage of skilled workers**

In any country, the industry's strength lies in a long-time accumulation of production skills, especially abundance of skilled workers, whose training takes considerable time to make them a formidable advantage. In Argentina, however, the industry has lost the bulk of skilled workers in the 1990s and in early 2000, when many companies went out of business or laid off many workers. As a result, the industry is unable to recruit skilled workers despite strong demand created by the recent strong increase in work orders.

At the same time, it is difficult to train workers immediately, because many technical high schools that previously supplied a large number of apprentices to factories have been closed down, while technical high schools that are still operated do not have sufficient training facilities and equipment due to government budget restraints. Thus, there is no breeding ground for skilled workers who can support production activities in the future.

The Argentine government is now creating retraining opportunities for unemployed persons as part of its efforts reduce the unemployment rate. For instance, Cordova Province has started such retraining program in cooperation of trade associations. This type of program represents an effective effort on the government side to meet the needs of companies by providing necessary retraining, but it is not suitable for training a large number of persons to skilled workers within a relatively short period. Instead, it is important to develop an industrial workforce from long-term perspectives by building a sufficient number of technical high schools and vocational training institutes.

### **(2) Insufficient investment**

As pointed out earlier, a large number of production machinery and equipment in the country are obsolete and require upgrading or replacement for significant modernization in some cases. However, it is difficult for many companies to borrow funds for equipment upgrading from commercial financial institutions. Besides, a number of manufacturers made substantial capital investment in the 1990s and some are still in debt from such projects. Furthermore, even companies with a relatively strong financial base tend to avoid major investment for future growth because the Argentine economy is still far from stable.

Nevertheless, the present recovery of industrial demand spurs an increasing number of manufacturers to invest in capacity expansion. As they are operated near capacity to meet

increasing demand, some cannot fulfill orders and lose sales. In fact, while assembly manufacturers and international-class parts suppliers have sufficient production capacities, local suppliers serving them become a bottleneck due to an insufficient number of establishments or low production capacity. Thus, capital investment is expected to grow significantly once manufacturers are unfettered from financial constraint and the financial industry redirects lending policy.

### **(3) Small domestic market**

For parts manufacturers, the largest problem is a small and unstable domestic market. They should therefore follow suit of assembly manufacturers and need to be export oriented. Traditionally, local industries have not made much effort to sell their products to the Brazilian market. They need to explore new markets outside the country, not only Brazil, but other Latin American countries and elsewhere such as Europe. To do so, they have to build a flexible production system capable of meeting small lot orders. Government's trade policy also influences export efforts of individual companies, especially promotion of bilateral and multilateral free trade agreements, including MERCOSUR. Also, for the automobile industry, the shift to the flexible production system allows smaller lot production of parts in response to the increase in the number of models.

### **(4) Shortage of raw materials**

The major problem relating to the industrial production chain in the country is unstable supply of raw materials for metal parts, i.e., it is difficult for parts manufacturers to obtain a required quantity of raw materials within a required period. It is often the case that it takes as much as three months to obtain a material, not to mention a delay in delivery. In particular, automotive parts often require special metals which suppliers are limited, even a single company in some markets. Partly due to the lack of competition between materials suppliers and partly due to a small amount of such material consumed by individual small- or medium-sized parts manufacturers, they are generally put in a unfavorable position. Imports from countries outside the MERCOSUR region cost a lot because of high tariff and transportation cost (due to a small quantity). In fact, there are a large number of materials suppliers in Brazil and imports from them entail zero or very low tariff rate, but many Brazilian suppliers do not receive orders from SMEs in Argentina. Recently, an increasing number of SMEs can purchase steel materials from Brazilian suppliers.

Recently, the iron and steel industry increases capital investment for capacity expansion and supply shortages are expected to ameliorate. To change the relationship between suppliers and

local parts manufacturers, the competitive environment must be created. This means, market conditions need to be improved to facilitate imports from Brazil and elsewhere. It is important to realize that the development of the metal parts industry is limited even if demand increases, unless the issue of materials supply is solved.

#### **(5) Low level of cluster concentration**

In the machine parts industry that achieves a certain level concentration, scales of economy are seldom felt by individual companies. Major reasons include a weak vertical relationship between SMEs and customers as well as suppliers and the lack of a horizontal network of parts manufacturers. As a result, there is the lack of communication between them to disseminate necessary information, and there is little initiative by the parts industry to address common problems, which are largely left to trade associations or governments.

#### **(6) Technological innovation and productivity improvement**

Generally, industrial R&D investment in the country remains at fairly low levels. One reason is the lack of domestic competition that seems to discourage the desire to promote technological innovation.

Suppliers serving as subcontractors for assembly manufacturers do not have much opportunity to learn new technology, and their innovative efforts are limited to meet the ad-hoc needs, such as responding to customer complaints or complying with specifications or quality standards of assemblers. They try to copy products on the basis of information obtained from trade shows in various places or receive short-term training from equipment manufacturers at the time of new purchase, but such activities do not lead to continuous innovations. In particular, few efforts have been made for productivity improvement, i.e., improvement of competitiveness. In contrast, Brazil's rapid industrial development, including the automotive parts industry, can be explained by massive direct investment by foreign manufacturers, which has brought not only technology but competition as well.

Meanwhile, companies that manufacture repair parts seem to make R&D efforts by copying original products. Although some of them are not content with mere copying and develop new products in the form of modification, such efforts are not sufficient to improve or maintain competitiveness.

Among the model enterprises to which the study team has been providing guidance, many fail to utilize production equipment to their maximum capability. In fact, there is a significant

room for improvement in terms of equipment use, time management, raw materials, and human resources. At the same time, many companies are in the process of transferring management and ownership to younger generations, and new owners are willing to accept a new system, technology and training to support future growth.

In the wave of globalization, SMEs in the country cannot avoid competition with local and foreign companies, including those in neighboring countries and world-class companies. Needless to say, it is difficult for SMEs to have leading-edge equipment or hire experienced researchers or engineers. However, they can make efforts to improve productivity by understanding its importance, which would then improve the possibility of survival. More precisely, effective use of production management technology increases productivity (final profit versus input, rather than simple production volume or work hours), which in turn improves a financial position and facilitates equipment upgrading, thereby to raise motivation of the company and its employees for future improvement and growth. Once machine parts manufacturers enter this broad-sensed technological advancement spiral, they are expected to catch up with competitors as the industry is endowed with matured technology. What SMEs and their managers should realize is the need for efforts to achieve a long-term goal and the possibility of achieving it through continuous efforts.



## Chapter 3

### Basic Survey for Formulation of Model Project

## **Chapter 3 Basic Survey for Formulation of Model Project**

### **3.1 Comparative Study of Five Selected Cities**

The following five cities were selected as candidate areas for implementation of model projects by the counterpart.

Province of Buenos Aires	San Martín, Lanús
Province of Santa Fe	Rosario, Rafaela
Province of Córdoba	Córdoba

#### **3.1.1 Brief Review of Industry Profiles**

##### **(1) San Martín**

The General San Martín County is situated in the metropolitan area of the City of Buenos Aires. Historically known as the "The City of Industry" because of the high economic development brought in by the growth of the Textile Industry and industrial production. San Martín County contributes more than 10% of the Province of Buenos Aires GPI, and even today, it is a very important industrial center.

Approximately 85% of the total companies in San Martín are SMEs. Also, the three most important industries are the Metallurgy Industry (it represents a 23% of the total industrial activity), the Textile Industry (13%) and the Plastic Industry (10%).

##### **(2) Lanús**

Lanús County is located in the Province of Buenos Aires in the area known as Riachuelo Basin in the southern part of the Ciudad Autónoma de Buenos Aires (Capital Federal). This industrial zone holds 3.18% of the Province of Buenos Aires total GPI.

At present, this industrial zone concentrates more than 3,500 SMEs distributed among nine industrial sectors. The three most important industrial sectors are, in the first place, leather, shoes and leather goods, followed by the Metal-mechanic Industry and, in third place, the Food Industry. Lanús has become the most important production zone of leather, shoes and leather goods in the country.

##### **(3) Rosario**

Rosario is situated in the Province of Santa Fe and is a city of business and historical importance. Rosario holds 45% of the Province of Santa Fe GDP and 5% of the national GDP. The City of

Rosario has a diversified economy, and its main industries are the Food Industry (21% of the economic activity), the Metal-mechanic Industry (18%), and the Equipment and Machine Industry (10%).

In relation to the Food Industry, Rosario also has the biggest cooking oil industrial park in Argentina. Other important industries in the City of Rosario are the Meat Processing and the Dairy Industries. In reference to the Metal-mechanic Industry, it is necessary to mention the importance of agro parts production. This sector gathers more than 10% of the total companies of the city, 63% of which are SMEs.

#### **(4) Rafaela**

The City of Rafaela is the administrative center of Castellanos County in the Province of Santa Fe, and is located at 90 kilometers to the south of the City of Santa Fe, the capital of this Province.

The City of Rafaela has a diversified industrial economy. According to information provided for the year 2000, the main industrial activities of Rafaela are the Food and Beverage Industry (27% of the industrial activity), metal products except equipment (16%), auto parts and non-metallic mineral products (10% and 9%).

Historically, the City of Rafaela has been an important center associated with the Dairy Farm Industry, with the production of a great variety of milk and dairy products. For this reason, the Food and Beverage Industry is the sector with higher production levels in the area and is also the reason for the manufacturing of food processing equipment in Rafaela. Among the Chambers and Associations of this area, there are a higher percentage of companies related to the production of milk and dairy processing equipment.

Data taken from the year 2000 "Censo Industrial Local" indicates that more than 85% of the total companies settled in Rafaela are SMEs.

#### **(5) Córdoba**

Córdoba is the capital of the Province of Córdoba and the second largest urban center in Argentina after the City of Buenos Aires.

In the City of Córdoba, the Auto parts Industry is very important, and there are four assembly companies (IVECO, Renault, FIAT and Marco Polo). At the same time, it is important to

mention that there are also other important sectors such as the Industrial Equipment, Agro Equipment and Clothes Industries. More than 85% of the companies of these sectors are SMEs.

Finally, it is worth mentioning that Córdoba used to have a Military Airplane Factory. This factory gave rise to several engineers and specialists in matters of aviation. At present, the firm Lockheed Martin does maintenance work for the planes of the Argentinean Air Force.

### **3.1.2 Statistical Comparison**

The results of the statistical comparison of number of operating corporations and employees of the three sectors in the five cities are as follows. The statistical comparison was done using data from INDEC, database of Secretary of Industry, Commerce and Small and Medium Enterprise, Ministry of Economy and Production, and Association Directories of national and regional levels in the three sectors.

#### **(1) San Martín City**

The city has many automotive parts manufacturers because there was previously an assembly plant. It is confirmed by data collected for the study. Similarly, presence of many food processing machinery manufacturers suggests the city's proximity to the largest consumer market, Buenos Aires, and the resultant presence of food manufacturers. On the other hand, not many manufacturers of agricultural equipment parts are located in San Martín despite of the fact that Province of Buenos Aires is a major agricultural area, probably because the city is principally an industrial area. Another trend relating to the city is the relocation of an increasingly number of manufacturers to suburbs due to deterioration of public safety in the city as well as difficulty in land acquisition. In addition, many companies have gone out of business since the 1990s.

#### **(2) Lanús City**

The city is characterized by an agglomeration of SMEs, which mainly belong to the leather and shoes industry, and there is no significant concentration of the metalworking industry due to the lack of presence of major machinery manufacturers. The city accounts for little over 3% of GDP of the Province of Buenos Aires, which is therefore much smaller than San Martín that represents 10% of the provincial GDP.

### **(3) Rosario**

Data analysis indicates that the city serves a major industrial area in all the three sectors. In particular, there is an agglomeration of agricultural machinery manufacturers along Highway No.9 between Rosario and Córdoba, and many of them are located within the Province of Santa Fe. Also, an engine plant of John Deere, which is a world-class tractor manufacturer, is operated in the city of Rosario. The food processing machinery industry seems to have developed to take advantage of presence of loading facilities for various agricultural products in the city area, such as flour and cooking oil. As for automotive parts, the city does not have as heavy concentration of suppliers as Córdoba and San Martín, but future growth can be expected in consideration of presence of various automakers, namely a GM plant in the city, and Toyota (Zarate), Ford, and Volkswagen (Pacheco) along Highway No.9 between Rosario and Buenos Aires.

### **(4) Rafaela City**

The city lags behind other cities in terms of a surrounding market size and the level of SME concentration. However, data analysis indicates that its level of industrial concentration in agricultural machinery and food processing machinery ranks next to Rosario, suggesting that these industries occupy an important position in the city area, in comparison to its small population size. In particular, manufacturers of food processing machinery for dairy products have established their position in the area to reflect highly developed dairy farming in the city and its vicinities. Successful industrial growth also owes to the municipality's enthusiasm about industrial development and seems to be driven by vigorous activities of local trade associations and the chamber of commerce and industry.

### **(5) Córdoba City**

The city has a concentration of automotive parts suppliers because it was the birthplace of the country's automobile industry and various automakers have been operating here since early times. In particular, there are a large number of established tier-one suppliers with long history. However, the city has largely lost its legacy status as the country's auto city; assembly plants operated in the city are engaged only in assembly of engines or produce a relatively small number of assembled cars. On the other hand, production of agricultural machinery and its parts seems to be maintained at a higher level than that shown in available data, because some automotive parts suppliers also make agricultural machinery parts. Finally, the food processing machinery industry is not highly developed despite of presence of an international confectionary company that operates a factory in a nearby area.

## **3.2 Questionnaire Survey**

### **3.2.1 Outline**

#### **(1) Objective**

1. To understand the current state of external support for machine parts manufacturers in Argentine and major issues facing them.
2. To understand types of external support needed by machine parts manufacturers.

#### **(2) Subject of survey: Machine parts manufacturers in the study area**

##### 1) Types of manufacturers

- Automotive parts manufacturers
- Agricultural equipment parts manufacturers
- Food machinery parts manufacturers

##### 2) Number of companies that responded the survey: 240

#### **(3) Survey period**

The questionnaire was distributed in early October 2004 and it took around one month to complete collection.

#### **(4) Survey area**

Province of Buenos Aires

- Lanús City
- San Martín City

Province of Santa Fe

- Rosario City
- Rafaela City

Province of Córdoba

- Córdoba City

#### **(5) Survey items**

- Company size and business profiles
- Markets for products (parts and services)
- Supplier's position
- Need for external support, desirable field, experience, and evaluation

- Knowledge on fundamentals of business/production management, and implementation status
- Interest in simplified corporate diagnosis and workshop

### 3.2.2 Analysis of Survey Results

#### (1) General profiles of responding companies

##### 1) Number of respondents

Classification of respondents by province and city is summarized as follows.

Table 3.1 Classification of Respondents by Province and City

Province	City	Number of Companies	%
Buenos Aires		36	15%
	Lanús	14	6%
	San Martín	22	9%
Córdoba		90	38%
	Córdoba	90	38%
Santa Fe		114	48%
	Rafaela	58	24%
	Rosario	56	23%
Total		240	100%

Source : JICA Study Team

##### 2) Number of Respondents by Sector

Table 3.2 Classification of Respondents by Sector

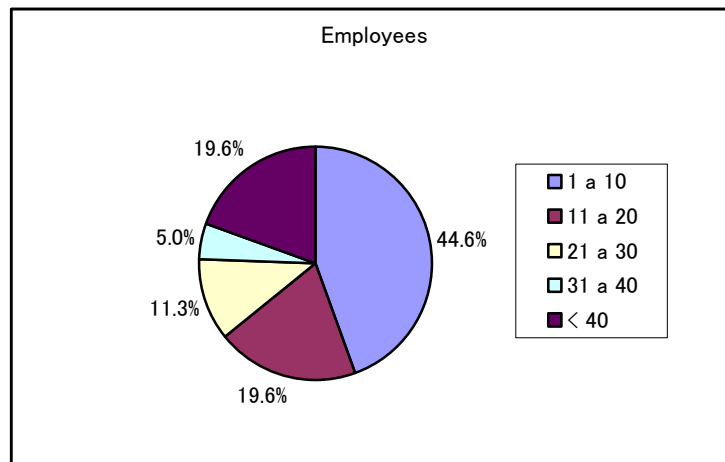
Province	City	Automotive Parts	Agricultural machinery parts	Food processing equipment parts	Electronic parts	Others	Unknown
Buenos Aires		25	1	5	6	25	0
	Lanús	9	0	2	3	6	0
	San Martín	16	1	3	3	19	0
Córdoba		70	36	20	17	30	0
	Córdoba	70	36	20	17	30	0
Santa Fe		50	26	39	7	59	3
	Rafaela	13	7	30	6	41	2
	Rosario	37	19	9	1	18	1
Grand total		145	63	64	30	114	3

Source : JICA Study Team

The total of the number of responses in Table 3.2 is larger than the total in Table 3.1, as some companies are suppliers of two or three industrial sectors.

##### 3) Number of employees

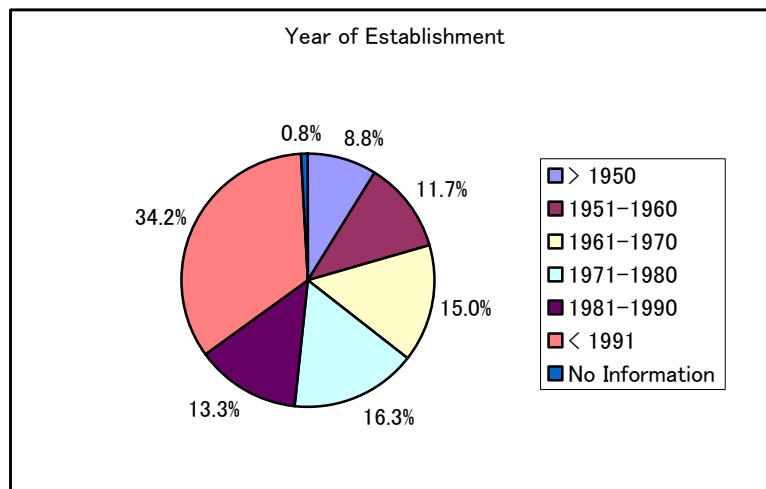
The average number of employees of responding companies was 27. Micro enterprises with 10 or less employees accounted for 45% of total.



Source : JICA study team

Fig. 3.1 Number of Employees

4) Year of establishment

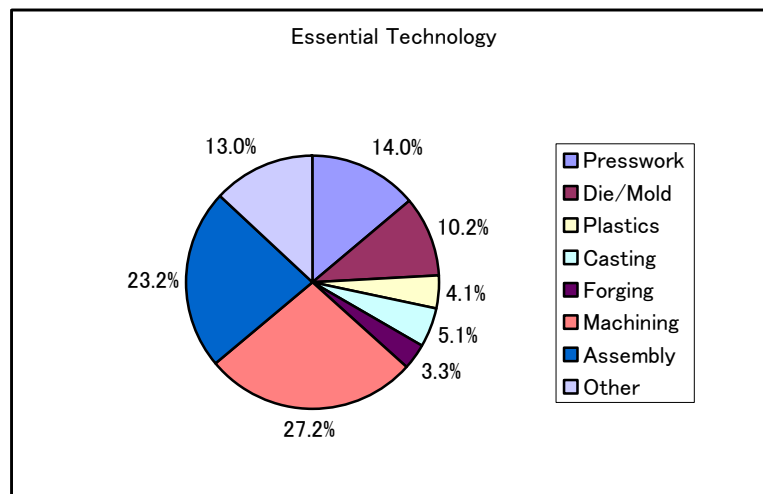


Source : JICA study team

Fig 3.2 Year of Establishment



5) Classification by essential technology

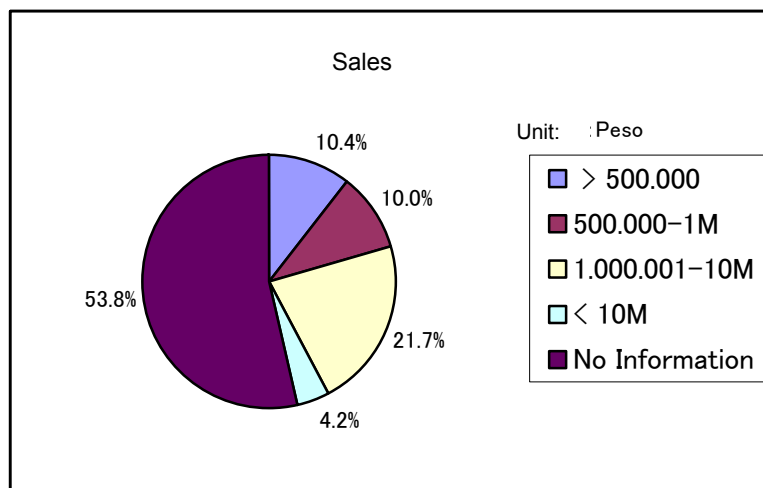


Source: JICA study team

Fig. 3.3 Essential Technology

6) Sales

Unfortunately, the majority of respondents did not report annual sales. The average sales of companies that reported them are approximately 1.8 million pesos and the majority of them ranged between 1 million and 10 million pesos. 10% or more of the total reported 500,000 pesos or less. The average sales per employee are approximately 20,000 pesos.



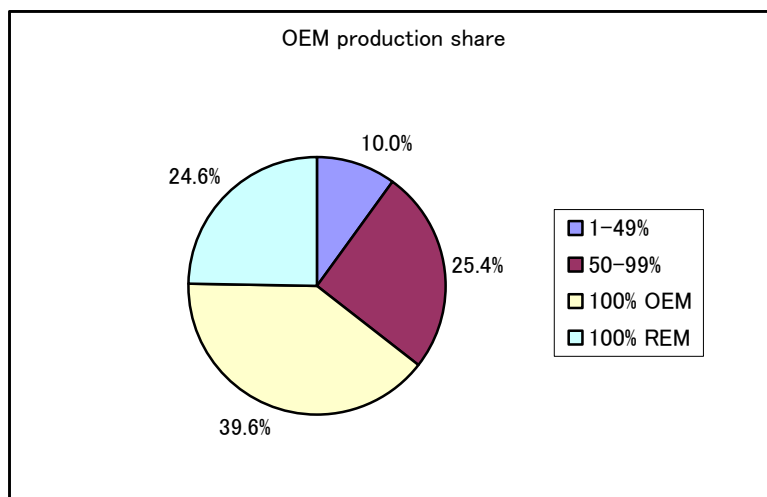
Source : JICA study team

Fig. 3.4 Sales

7) Major markets

Three out of four companies make and sell OEM products. 95 companies (40% of total) supply OEM products only and 59 (25%) are specialized in aftermarkets. The results reflect

that the questionnaire survey focused on manufacturers of OEM products. Note that the percentage shares of OEM manufacturers in agricultural machinery and food processing equipment parts sectors are higher than that of automotive parts manufacturers serving the OEM market.



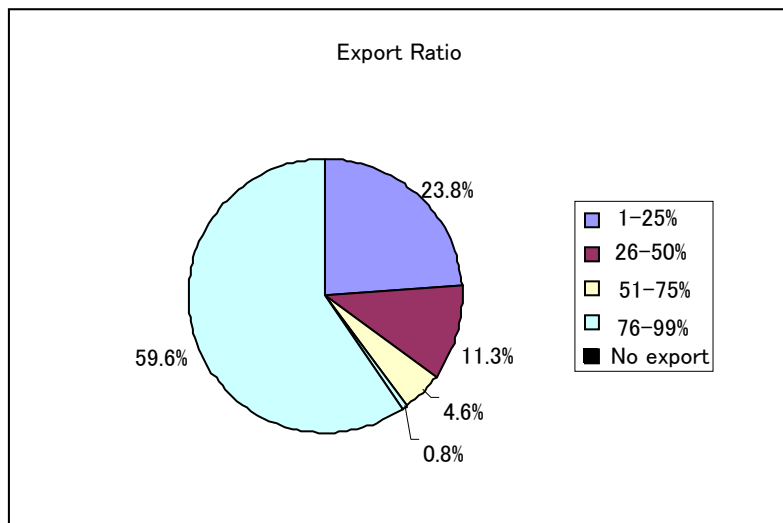
Source : JICA study team

Fig. 3.5 OEM production share

#### 8) Export

Around 60% of the responding companies supply their products to the domestic market only. The remaining 40% make exports in various forms, but exports represent a relatively low percentage of total sales. Sector-wise, higher percentages of agricultural machinery and food processing equipment parts manufacturers target the domestic market only than automotive parts manufacturers. Note, however, that the bulk of parts supplied to the OEM market seem to be exported by assembly manufacturers as part of finished products. If such indirect exports are included, the ratio of exports by machine parts manufacturers would increase further.

Thirteen companies earn 50% of annual sales from exports, and nine companies are specialized in OEM production. Several companies appear to supply products to assembly manufacturers in Brazil, serving as a primary example that parts manufacturers are incorporated into part of assemblers' strategy taking advantage of MERCOSUR.



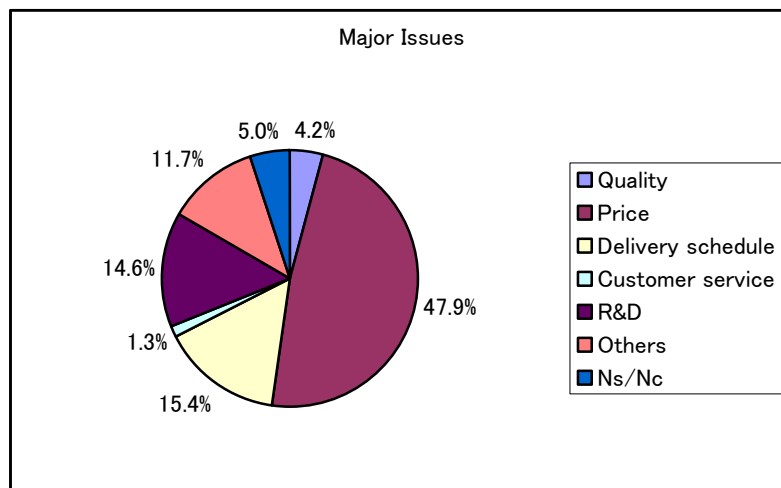
Source : JICA study team

Fig. 3.6 Export Ratio

## (2) Competitiveness

### 1) Major issues relating to competitiveness

The majority of companies quoted price as the major issue, followed by delivery schedule and R&D (15% each). Only two companies considered customer service as the major issue, and ten companies cited quality. The answer was concentrated on price as the question asked respondents to select the most important issue.



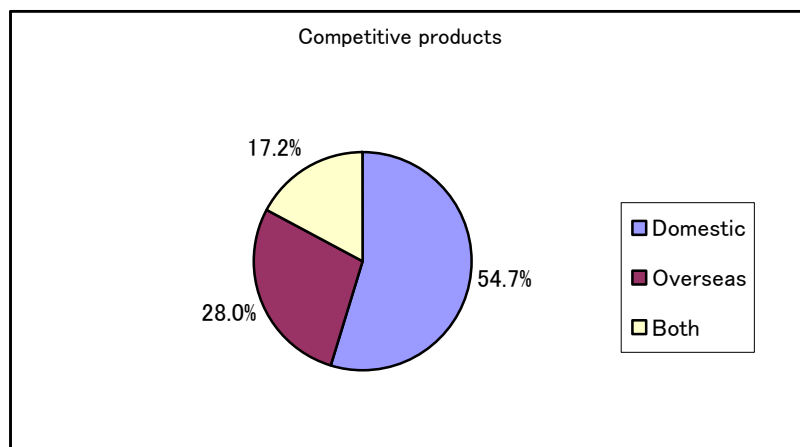
Source : JICA study team

Fig. 3.7 Major Issues

### 2) Competitive products

As major markets for the responding companies are domestic, 70% of respondents cited competition with local companies, slightly over 40% foreign companies, and less than 20%

both. Sector-wise, a higher percentage of automotive parts manufacturers than other sectors reported competition from foreign countries, while food processing equipment parts manufacturers showed a higher percentage for competition with local companies and agricultural machinery parts manufacturers more or less the same as the average.



Source : JICA study team

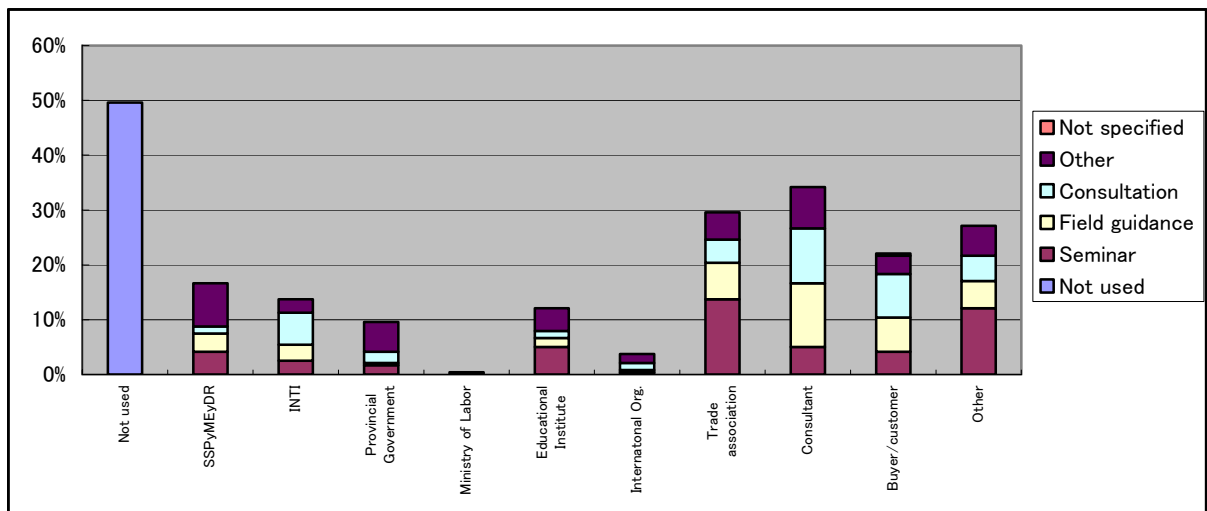
Fig. 3.8 Competitive Products

### (3) External support

#### 1) External support received

Approximately one half of the responding companies have not received external support. The largest source of external support was professional consultants (82), followed by trade associations (71) and buyers (customers) (53). Among companies that received external support, many received from two or more sources; 121 companies received 406 cases of support (3.4 cases on average).

Many respondents considered external support as “very useful” or “useful.” Of 352 cases of support in total, 64% were rated as useful. 6% were considered as “not very useful” or “waste of time.” Thus, external support was generally considered to be useful. In particular, professional consultants and trade associations were highly valued probably because they provided service that met the needs.



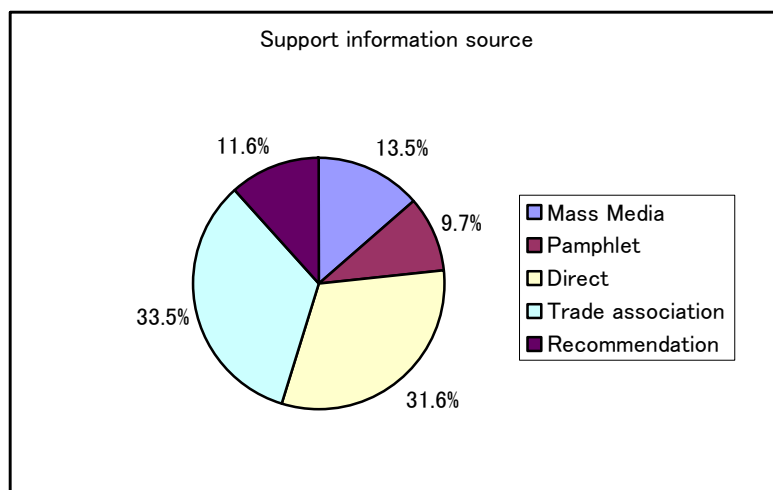
Source : JICA study team

Fig. 3.9 External Support by Source and Type

Note: The total number of companies that gave response – 240; each subtotal of the above percentage shares exceeds 100% because many companies received external support from more than two sources.

Geographically, a higher percentage of companies in Rafaela used external support more often than other cities, i.e., 3.3 times per company vs. 2.2 times on the overall average, suggesting active support in cooperation of various organizations, including municipality, trade association, INTI, and CED.

## 2) Support information source

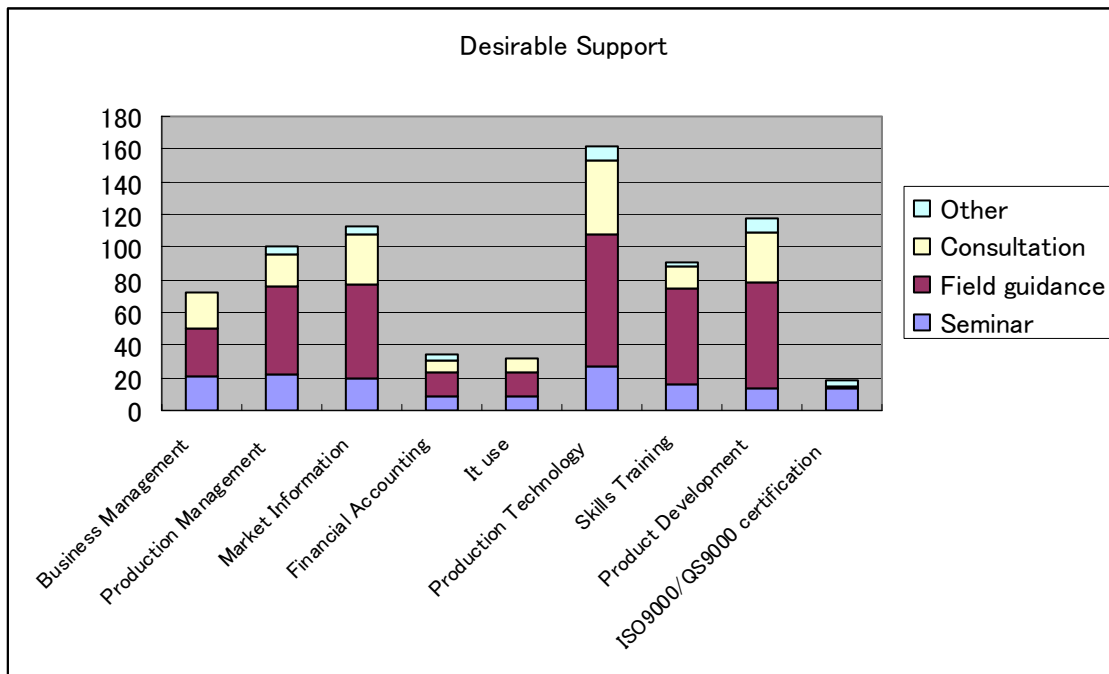


Source : JICA study team

Fig. 3.10 Information Source

**(4) Future intent to use external support organizations and consultants**

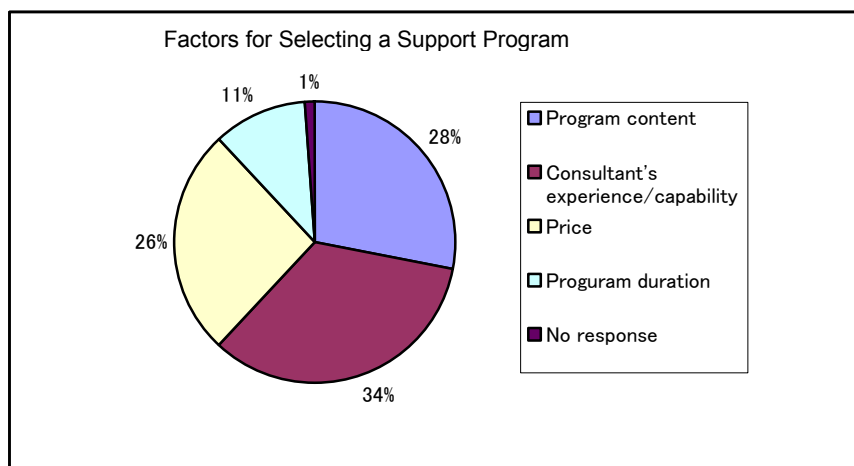
92% of respondents answered “will use” or “will use under certain conditions.” On the other hand, reasons cited for not using external support in the future were “can be dealt with internally (11),” “little effect (4),” “disturbance with daily operation (4)” and “high cost (3).”



Source : JICA study team

Fig. 3.11 Desirable Support

In selecting a support program, most respondents answered “consultant’s experience/capability” as most important factor, followed by “program content” and “price”.

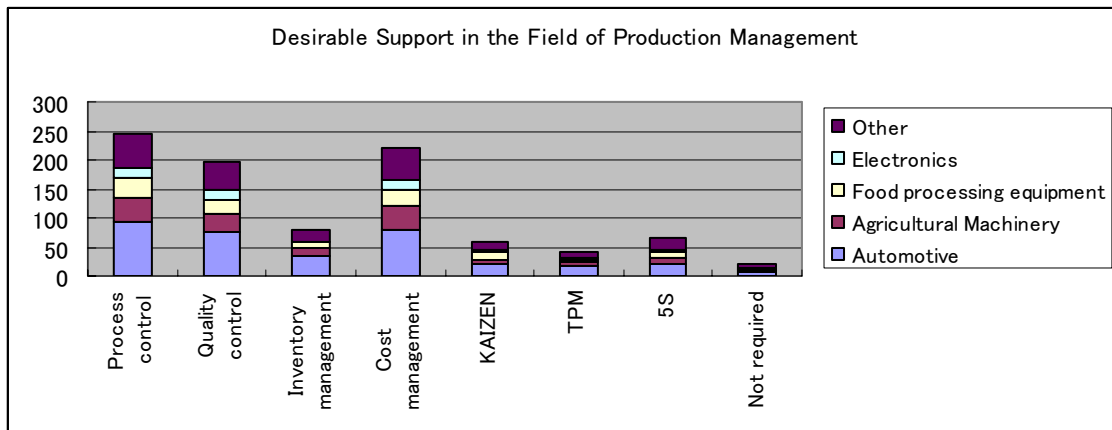


Source : JICA study team

Fig. 3.12 Factors for Selecting a Support Program

**(5) Support in the field of production management**

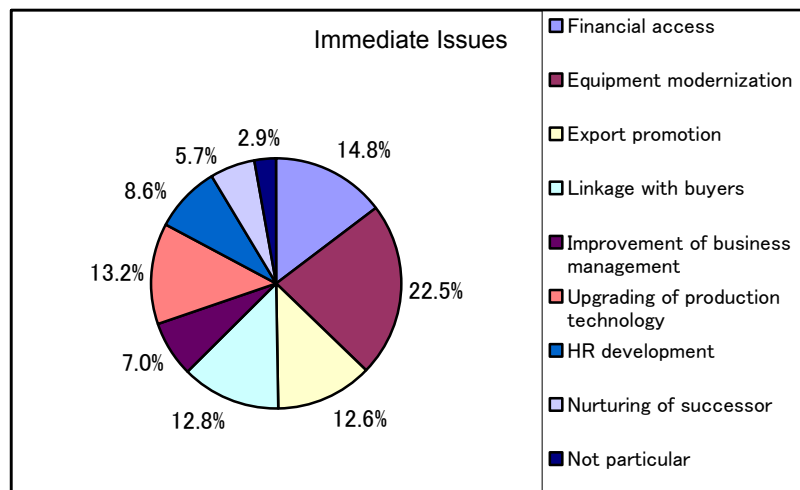
As for production management-related support, many respondents expressed interest in “process control,” “cost management” and “quality control,” which were more frequently cited than other areas. In contrast, there were much few requests for Japanese production management methods, such as 5S, Kaizen, and TPM. A major reason for the poor interest is the lack of knowledge and understanding of their existence and effect. The most requested support method was field guidance at factory, followed by seminar and dissemination of information.



Source : JICA study team

Fig. 3.13 Desirable Support in the Field of Production Management

**(6) Immediate issues**



Source : JICA study team

Fig. 3.14 Immediate Issues

### 3.2.3 Conclusion

Major characteristics of the responding companies are summarized as follows.

- Micro enterprises represent large portions and many companies report relatively small sales, especially the food processing equipment industry.
- Many companies were established after 1990.
- Essential technologies are mainly machining and assembly.
- The average annual sales are around 1.8 million pesos.
- Three out of four companies are engaged in OEM production.
- Most companies serve the domestic market, with a generally low export ratio.
- Many companies believe that a major source of competitiveness is price, delivery schedule or R&D, while a small number of companies cite quality.
- Nearly one half of respondents have not received external support.
- The major source of external support is professional consultants, followed by trade associations and buyers (customers). Generally, companies that have received external support consider it to be useful.
- Most companies desire to use external support, while a small percentage of them do not intend to use it, largely because they believe they can take care of themselves.
- Production management fields for which support is expected strongly are “process control,” “cost management” and “quality control.”
- Immediate issues that are frequently cited are equipment modernization, financial access, improvement of production technology, export promotion, and linkage with buyers.
- 99 out of 240 companies comply with internationally accepted accounting standards.
- 201 companies want to participate in the model project.
- The major request for government is concerned with tax.

The questionnaire survey revealed that many companies expected to receive future support while many did not receive such support, and reasons can be explained as follows.

- Lack of efforts to communicate support information
- Lack of timeliness of support that was not available when wanted
- Poor market conditions that prevented companies from seeking support
- High service prices that were not affordable for most companies

At present, the market is recovering and many manufacturers appear to boost production, partly explaining the reason why many respondents cited equipment modernization as the most important issue in the questionnaire survey, and suggesting the rise in the need for improvement



of productivity and production management. Meeting these diverse needs, therefore, would promote use of support and increase its contribution to industry and its growth.

### 3.3 Simplified Corporate Diagnosis for SMEs

Simplified corporate diagnosis for SMEs, which primary purpose was to select areas and companies for the model project – the major component of the present study, was carried out as part of the preliminary survey between November and December 2004.

The simplified corporate diagnosis for SMEs was conducted for the following three objectives.

- To understand the current state of SMEs and use it for formulation of the model project, while selecting candidate companies for the project.
- To carry out technology transfer to INTI staff as the counterpart.
- To provide the simplified guidance and advice by the study team members for companies that receive the simplified diagnosis.



### 3.3.1 Outline of the Simplified Corporate Diagnosis and Methodology

#### (1) Candidate project areas and final selection

As candidate areas for the model project, five cities in three provinces (Buenos Aires, Santa Fe, and Córdoba) were selected by the counterpart, namely San Martín, Lanús, Rosario, Rafaela, and Córdoba. Then, the preliminary survey was conducted for the five cities and the study team visited, together with the counterpart staff, public and private SME support organizations in the cities. Lanús was dropped from the final list as there was no organization responsible for implementation of the model project and the municipal government did not show interest in project participation.

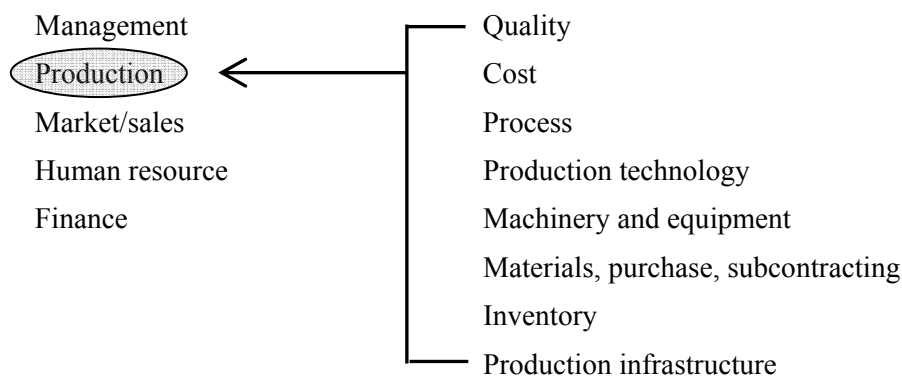
As a result, simplified corporate diagnosis was conducted for SMEs in four cities, San Martín (Buenos Aires), Rosario (Santa Fe), Rafaela (Santa Fe), and Córdoba (Córdoba).

#### (2) Presenting meeting on the corporate evaluation method

Prior to the start of the simplified diagnosis, a seminar on the corporate evaluation method was conducted for the counterpart staff, upon the request of INTI.

#### (3) Corporate evaluation method

Diagnostic items were designed to cover five areas relating to general business management, namely “management,” “production,” “market and sales,” “human resources” and “finance.” In particular, “production” that was the major subject of the present study was composed of the following eight sub-items. The average score for the eight sub-items in the production category is presented as evaluation on the company’s production capability, and the average score for the five areas including production is the overall evaluation score.



The five-grade scale evaluation criteria was based on the average level of parts manufacturers serving the global OEM markets, which was set at 5, while the cottage level industry using

obsolete equipment and technology at 1.

Evaluation results were compiled into a corporate diagnosis chart using a uniform format. The corporate diagnosis chart contained two radar charts that showed the overall evaluation on each company including “production” and a specific evaluation on the eight sub-items in the production category. Furthermore, it included comments by the evaluation team, including kaizen proposals, overall evaluation, a guidance record summarizing guidance and advice provided for the company in the course of the diagnosis program, and the intent of the company to participate in the model project.

**(4) Selection of companies**

Companies that would receive the simplified corporate diagnosis were selected from small- and medium-sized parts manufacturers for automobiles, agricultural machinery and/or food processing equipment. The number of companies that received the simplified diagnosis in each city is shown below.

San Martín (Buenos Aires)	16 companies
Rosario (Santa Fe)	9
Rafaela (Santa Fe)	5
Córdoba (Córdoba)	11
Total	41

**(5) General profiles of companies that received the simplified diagnosis**

a. Sector

Table 3.3 Classification by Sector

Sector	No. of companies
Automotive parts	30
Agriculture machinery parts	13
Food-processing equipment parts	2
Other	3
Total	48

Note: Of total, seven companies supply both automotive and agricultural machinery parts.

Source : JICA Study Team

b. No. of Employees

Table 3.4 Classification by No. of Employees

Number of employees	No. of companies
less than 10	2
10 - 99	31
100 or over	7
Total	40

Note: Employment data are not available from one company  
Source : JICA Study Team

### (6) Actual visit

The study team members formed two or three groups and visited one company per day. Prior to each visit, the evaluation team sent to the company a simple questionnaire asking its general profiles.

Corporate diagnosis was conducted as follows.

- a. Interview with management (confirmation on the company's profiles and hearing of problems recognized by the company)
- b. Factory tour under the guide of the owner and/or the factory manager
- c. Interview with management (detailed interview by the evaluator, questions and answers, and consultation)

### 3.3.2 Results of Corporate Diagnosis

The corporate diagnosis charts covering 41 companies for which the simplified corporate diagnosis was performed were compiled by the study team and were then submitted to INTI.

**Table 3.5 summarizes evaluation results of all the 41 companies. The average for their overall evaluation scores is 3.2 on a five-grade scale.**

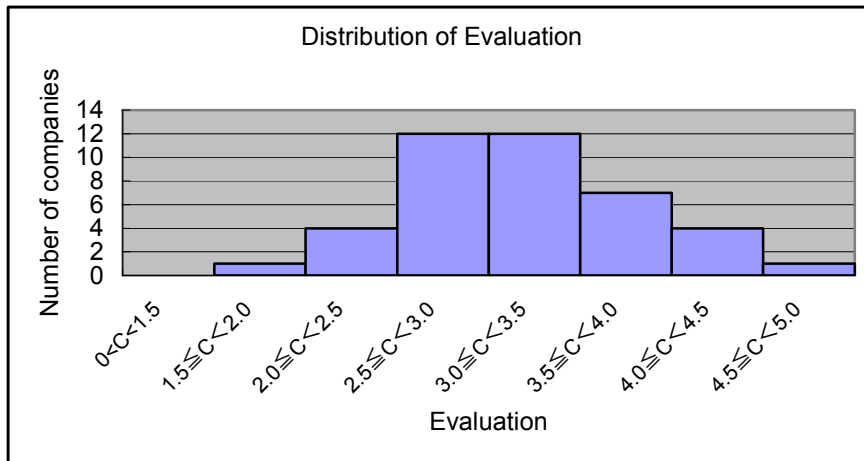
The study team had conducted the corporate diagnosis using the same five-grade scale method in Mexico and Thailand. The evaluation score of 3.2 of Argentina is almost the same as that of Mexico but a little bit lower than Thailand.

Table 3.5 Result of Corporate Diagnosis for 41 Companies

Code No.	Overall	Evaluation of 5 levels												
		Overall					Production							
		Management	Production	Marketing and Sales	Human Resource Management	Finance	Quality	cost	Process	Production Technology	Machinery & Equipment	Materials control/ procurement/ outsourcing	Inventory	Production Infrastructure
SM-1	2.5	3.0	2.3	2.0	2.0	3.0	2.0	3.0	3.0	2.0	2.0	2.0	2.0	2.0
SM-2	2.8	4.0	3.1	3.0	2.0	2.0	4.0	2.0	4.0	3.0	3.0	3.0	3.0	3.0
SM-3	2.5	2.0	2.6	3.0	2.0	3.0	3.0	2.0	3.0	2.0	3.0	4.0	2.0	2.0
SM-4	3.5	4.0	3.5	4.0	3.0	3.0	4.0	4.0	3.0	3.0	3.0	4.0	4.0	3.0
SM-5	1.5	2.0	1.5	2.0	1.0	1.0	2.0	1.0	2.0	2.0	1.0	1.0	2.0	1.0
SM-6	2.6	2.0	3.1	3.0	2.0	3.0	2.0	2.0	3.0	3.0	4.0	4.0	4.0	3.0
SM-7	4.0	4.0	3.8	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0	3.0	4.0
SM-8	3.1	4.0	3.3	3.0	3.0	2.0	3.0	3.0	4.0	3.0	4.0	3.0	3.0	3.0
SM-9	2.9	4.0	2.4	3.0	3.0	2.0	3.0	2.0	2.0	3.0	3.0	3.0	1.0	2.0
SM-10	2.9	3.0	2.5	3.0	3.0	3.0	3.0	2.0	3.0	2.0	2.0	3.0	2.0	3.0
SM-11	3.2	3.0	3.1	3.0	4.0	3.0	3.0	3.0	3.0	2.0	3.0	4.0	4.0	3.0
SM-12	2.8	3.0	3.1	3.0	3.0	2.0	3.0	3.0	3.0	3.0	4.0	3.0	3.0	3.0
SM-13	3.1	4.0	3.4	3.0	3.0	2.0	4.0	3.0	3.0	3.0	3.0	3.0	4.0	4.0
SM-14	4.2	5.0	4.0	4.0	5.0	3.0	4.0	4.0	4.0	4.0	5.0	4.0	3.0	4.0
SM-15	3.5	3.0	3.4	5.0	3.0	3.0	3.0	3.0	4.0	4.0	4.0	3.0	2.0	4.0
SM-16	2.9	3.0	3.5	3.0	3.0	2.0	4.0	3.0	3.0	4.0	3.0	3.0	4.0	4.0
Ro-1	3.5	4.0	2.5	4.0	4.0	3.0	3.0	2.0	3.0	3.0	2.0	3.0	2.0	2.0
Ro-2	3.5	4.0	3.3	4.0	3.0	3.0	3.0	3.0	4.0	3.0	3.0	4.0	3.0	3.0
Ro-3	3.0	3.0	2.9	4.0	2.0	3.0	4.0	3.0	3.0	2.0	3.0	3.0	3.0	2.0
Ro-4	2.9	3.0	2.6	4.0	2.0	3.0	2.0	3.0	2.0	3.0	3.0	2.0	4.0	2.0
Ro-5	2.8	3.0	2.8	3.0	2.0	3.0	4.0	2.0	2.0	3.0	4.0	2.0	2.0	3.0
Ro-6	4.5	5.0	4.5	4.0	5.0	4.0	5.0	5.0	4.0	4.0	5.0	5.0	3.0	5.0
Ro-7	2.2	2.0	2.1	3.0	2.0	2.0	2.0	2.0	1.0	2.0	2.0	3.0	2.0	3.0
Ro-8	4.2	4.0	4.0	4.0	4.0	5.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Ro-9	3.3	3.0	3.4	4.0	3.0	3.0	4.0	3.0	3.0	3.0	4.0	3.0	4.0	3.0
Rf-1	3.6	4.0	3.8	3.0	4.0	3.0	4.0	4.0	3.0	4.0	3.0	4.0	4.0	4.0
Rf-2	3.3	3.0	3.3	3.0	4.0	3.0	3.0	3.0	4.0	3.0	3.0	3.0	4.0	3.0
Rf-3	2.7	3.0	2.6	4.0	2.0	2.0	3.0	2.0	3.0	3.0	2.0	3.0	2.0	3.0
Rf-4	3.6	4.0	4.0	4.0	4.0	2.0	4.0	4.0	4.0	4.0	3.0	4.0	4.0	5.0
Rf-5	3.2	3.0	3.1	4.0	3.0	3.0	3.0	2.0	3.0	3.0	4.0	3.0	3.0	4.0
Co-1	4.3	5.0	4.3	4.0	4.0	4.0	4.0	5.0	4.0	5.0	4.0	4.0	4.0	4.0
Co-2	3.3	3.0	3.3	4.0	3.0	3.0	3.0	3.0	3.0	4.0	3.0	3.0	4.0	3.0
Co-3	3.5	3.0	3.3	4.0	4.0	3.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0	4.0
Co-4	3.4	4.0	3.1	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0	2.0	2.0	3.0
Co-5	3.4	3.0	4.0	4.0	3.0	3.0	4.0	3.0	4.0	4.0	5.0	4.0	4.0	4.0
Co-6	2.5	3.0	2.3	3.0	2.0	2.0	3.0	3.0	2.0	2.0	2.0	2.0	2.0	2.0
Co-7	2.5	2.0	2.3	3.0	2.0	3.0	3.0	3.0	1.0	2.0	2.0	3.0	2.0	2.0
Co-8	4.1	4.0	4.0	4.5	4.0	4.0	4.5	4.0	4.0	4.0	4.0	4.0	3.0	4.5
Co-9	3.5	4.0	3.6	4.0	3.0	3.0	4.0	3.0	3.0	4.0	4.0	4.0	3.0	4.0
Co-10	3.0	3.0	2.9	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.0	3.0
Co-11	3.7	4.0	3.3	3.0	4.0	4.0	4.0	4.0	2.0	2.0	3.0	3.0	4.0	4.0
Average	3.2	3.4	3.2	3.5	3.1	2.9	3.4	3.0	3.1	3.1	3.2	3.2	3.0	3.2

Source : JICA Study Team

Fig. 3.15 plots the number of companies for each 0.5 point of the overall evaluation score. As shown here, 24 companies (approx. 60% of the total) are rated in the range between 2.5 – 3.5 points, which is equivalent to the middle-point range of the five-grade scale, from cottage industry level companies to OEM parts manufacturers serving the global market. Thus, the average technology levels of small- and medium-sized manufacturers in Argentina seem to be found in this range.



Source: JICA Study Team

Fig. 3.15 Distribution of Evaluation

Looking at the evaluation results in relation to the five areas, evaluation on “market and sales” is relatively high, while that on “finance” is low. As for the eight sub-items in the production category, “cost” and “inventory” received low scores.

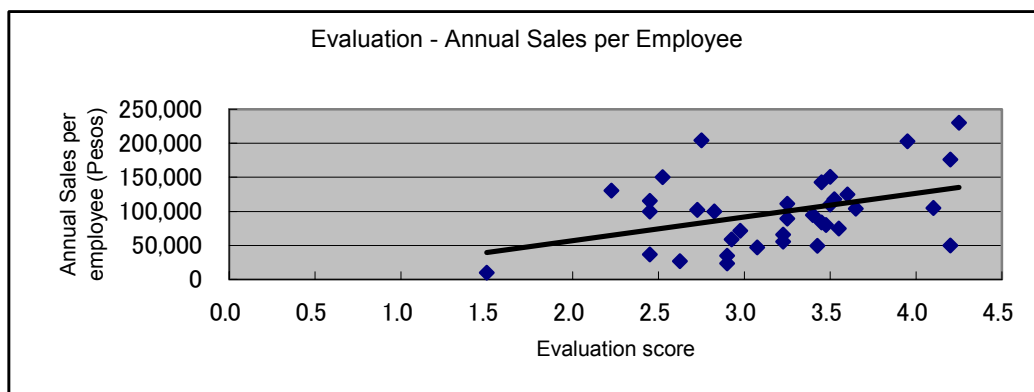
Only a handful of companies serve exclusively to the OEM market, and many strive to expand sales and production by relying much on active repair parts markets (REMs), both domestic and export. This seems to be reflected in the relatively evaluation on “market and sales.”

“Finance” and “cost” are interrelated. While “finance” covers the internal accounting system, budget and fund management, and investment planning, “cost” that belongs to the domain of production deals with cost management, variance analysis between standard and actual costs, and break-even point analysis. The fact that many companies were rated low in the two categories reflects the current state of Argentine SMEs that they outsource even “tax accounting” to outside accounts and do not understand the basic concept of “management accounting.”

Inventory reduction is one of major issues relating to production management, but many of

SMEs in Argentina, which have gone through the series of drastic changes in the business environment, opt to hold excessive inventories in preparation for the future crisis. As a result, they do not understand the need for inventory control by directly linking production and demand, and the study team had to give a low grade in the area of “inventory.”

Fig. 3.16 plots sales per employee and the overall average score for 35 companies (not including SM-9) for which sales per employee has been calculated, indicating some degree of correlation between two indicators (correlation coefficient = 0.4), suggesting that, the higher the evaluation score of the company, the higher its sales per employee gets. On the other hand, there is no correlation between the OEM sales ratio in the automobile sector and the evaluation score, nor between the OEM sales ratio and sales per employee.



Source: JICA Study Team

Fig. 3.16 Correlation between Evaluation Score and Sales per Employee

### 3.3.3 Findings by Experts

Major findings on Argentine small- and medium-sized manufacturers by the study team’s experts who have performed the simplified corporate analysis are summarized as follows.

- a. A large number of SMEs went bankrupt during the economic crisis in 2001, and most companies that survived through it seem to be family operated, using their own funds. In fact, with exception of a few companies, most companies that participated in the corporate diagnosis project do not borrow money from external sources.
- b. Many companies made it clear that they were reluctant to make medium- or long-term plans as an aftermath of major changes they underwent after 1990, including the enactment of the Conversion Act, its repeal, and the ensuing economic crisis.
- c. Many automotive parts manufacturers supply products to both OEM and REM markets, including those that were specialized in OEM products and switched to REM after the economic crisis. This is because many foreign-affiliated assembly manufacturers reacted



to the economic crisis by reducing production in Argentina or relocating their factories to other countries, creating a painful experience for local suppliers. Now they still feel uneasiness about relying on the OEM market.

- d. At present, the REM market is booming, thanks to the recovery of the national economy. Some companies take a challenge in resuming the OEM business as they view strict quality and delivery requirements in the OEM market provide a good opportunity for improvement of their technology levels. Yet, many companies try to expand sales in the domestic and export markets by making capital investment and boosting production capacity under the assumption that they continue to serve the brisk REM market.
- e. As for engine parts for agricultural machinery, there are OEM and REM markets as in the case of automotive parts. On the other hand, there is no clear difference between the two markets for food processing equipment parts and implements of agricultural machinery.
- f. Aside from financial problems, problems commonly facing SMEs are: 1) the shortage of skilled workers; and 2) the need for upgrading business and production management techniques for productivity improvement. Especially, self-evaluation of SMEs and the view of the study team agreed on 2).
- g. As for the shortage of skilled workers, the study team heard from many companies that there is a nationwide shortage of workers who can adapt themselves to new technology and machinery because skills education and training as national undertaking was neglected as a result of a clear decline of the local manufacturing sector in the 1990s.
- h. To learn business and production management techniques, many companies hire consultants or participate in training programs provided by public and private organizations. However, many of training programs do not deal with problems on the shop floor and instead are designed to assist ISO certification.
- i. Many programs provided by public SME promotion organizations take up market development or ISO and other certifications as major subject. For most SMEs, opportunity to learn new business and production management techniques is fairly limited.
- j. Quality control information is generally known and many companies have ISO and other certifications. However, efforts are limited to data collection, which is not linked to corrective measures or kaizen activities on the shop floor. Some companies try to introduce small group activities but they have still to take root. Many companies want to learn about small groups activities in Japan, including the kaizen suggestion system.
- k. It appears that many companies should promptly start with introduction of 5S or 3S activity as the first step of full-scale kaizen efforts or the means to raise employees' morale.
- l. Many companies want to reduce setup change time but do not know an effective way to achieve it and fail to take any action.
- m. Many companies have problems relating to the work flow at factory, probably because they

have been making piecemeal expansion. To improvement productivity, fundamental layout modification is required.

- n. Many machines are obsolete and are idling.
- o. The study team found that many factories had excess inventories of materials and/or products. In response, companies explained local conditions peculiar to Argentina, which were different from those in Japan and other industrialized countries. Thus, they need guidance that takes into account such conditions, rather than applying the Japanese system as it is.
- p. There is the lack of effort or activity relating to the improvement of labor safety and health, such as lighting inside the factory, control of dust or noise, and an appropriate method to stack up materials and products. This comes from the lack of awareness both on the management and worker sides.
- q. A large number of SMEs are family operated and want support to sustain the same form of management by transferring the ownership to the next generation smoothly. Yet, if new business and production management techniques are to be successfully implemented, companywide efforts for productivity improvement as driven by highly motivated employees are essential. How far family-operated companies can motivate employees is questionable.
- r. Current state of financial management and accounting control
  - While the corporate diagnosis was conducted from the viewpoint of compliance with internationally accepted accounting standards, most companies seem to be in the state before introduction of the IAS (International Accounting Standard) or at the level similar to Japanese SMEs in around 1960, except for subsidiaries of U.S. companies.
  - Generally, internal accounts issue vouchers and manage revenue and expenditure, and compilation of financial statements and tax accounting are left to an outside account who come to the company once or twice per week.
  - As for cost accounting for products, the cost estimated at the time of product development is used and is revised only when materials, electricity, labor or other cost increases or decreases substantially. Thus, implementation of “management accounting” using standard and actual costs can only be considered in the future.
- s. In Argentina, Internet connectivity and low-cost, high-speed communication infrastructure are well developed, but they have yet to be widely used by companies. This is partly because SMEs are family operated and do not feel the need for a sophisticated information system for information sharing and planned management as they believe that they keep close communication without any problem. Clearly, if they are to improve productivity, they need to use ICT for companywide information sharing and the streamlining of commercial transaction. To promote wide adoption of ICT, efforts should be made, among

other things, to enhance availability of software technology, assure security relating to on-line trade, standardize product specifications, and reinforce the legal system governing patent and copyright protection.

## Chapter 4

### Rationale for Formulation of Model Project

## **Chapter 4 Rationale for Formulation of Model Project**

The model project, which constitute a core element of the Study as described in the following chapter, will be carried out to examine feasibility of the action programs. The results of the model project and their evaluation will be reflected in final action programs.

For this reason, this chapter presents basic concept that is incorporated into essential features of the action programs and constitutes the basis of formulating the model project, before the details of the implementation plan for the model project are described in the subsequent chapter.

### **4.1 Industrial Policy and SME Promotion Policy**

Today, there are intensive discussions on government role in the national industrialization process and industrial policy, and an increasingly number of people argue that government intervention in the marketplace leads to deterioration of economic efficiency. However, this argument does not stand for generalization because some countries have achieved economic development under government intervention, especially Japan, South Korea and other countries in East Asia. At the same time, these cases of successful industrialization under government's vigorous industrial policy are clearly conditioned on government's ability to formulate and implement fair and effective policy and consensus in the country to support such policy. In fact, there are a large number of cases that failed to produce expected results under government's intervention that was carried out while failing to meet such condition.

Industrial policies focusing on promotion of industrialization can be generally divided into the following two categories.

#### **a) Selective policy**

The selective policy generally refers to, among other things, protection and nurturing of infancy industries and government subsidy to research and development in specific fields of technology. However, it is often difficult to determine potential competitiveness of specific companies and industries in the international market, thus creating a risk of introducing and maintaining industrial policy that unduly protects companies and/or industries that are incapable of attaining international competitiveness in the first place.

#### **b) Interindustrial (neutral) policy**

This type of policy usually has generic names, such as SME promotion policy, export promotion policy, science and technology promotion policy, and human resource development policy. Compared to the selective policy, the interindustrial policy has a wider target range and experiences failure less frequently. Its primary purpose is to establish preconditions for domestic industries to enter the international market and gain competitiveness.

It should be noted that, given a large number of cases of failure under government intervention in the market, and given the progress of market opening and globalization that need to be taken into account as the given conditions, many countries are reluctant to choose the selective policy and instead focus on the interindustrial (neutral) policy.

Government's intervention in promotion of SMEs as part of interindustrial (neutral) policy is generally justified as "a means to provide a level playing field for SMEs that usually face various unfavorable conditions against large enterprises by implementing a program that helps correct such conditions that are difficult to be overcome through the working of an ordinary market mechanism."

SME promotion policy generally covers the following functional areas, in which government can still play a significant role.

- 1) Improvement of society's ability to introduce and absorb technology
- 2) Reduction of service link costs
- 3) Development of an environment to promote the building of diverse relationships between individual enterprises
- 4) Formation of industrial concentration
- 5) promotion of transaction between enterprises in the same region

#### **4.2 Improvement of Society's Ability to Adopt Technology and Technology Transfer**

The machine parts sector, for which the model project will be carried out, can be roughly divided into two sectors: the one producing automotive parts and agricultural machinery parts, with multinational assembly manufacturers operating on the top of a pyramid structure, and another sector supplying parts for general agricultural machinery, food processing machinery, and consumer equipment, which is less structured than the former.

Compared to the period when multinational assemblers were actively engaged in improvement of technical capability of local suppliers under the host country's protectionism policy, such as import substitution and local content requirements, they are now operating according to their

own long-term strategy and their linkage to local communities and suppliers is very weak. This is evidenced by the reaction of automakers to the 2001 economic crisis in 2001.

Under the increasingly globalized and volatile business environment, it is very difficult, if not impossible, to link technology transfer made by assemblers and other customers to local SMEs - in the course of supply contract - to the long-term formation of the country's technology base and then to self-propelled economic development. In this case, government is expected to take measures to promote the improvement of basic technology levels to facilitate technology transfer, or the improvement of "society's ability to adopt technology."

On the other hand, the sector supplying general machine parts is also expected to establish and maintain competitiveness of its products, which should be backed up by production technology that can meet demand for higher performance and diverse products and can compete with imported products. For any manufacturing industries including the sector supplying consumer products, technology forms their foundation. In particular, the average technology level in the country, the degree of technology pervasiveness, and the ability to adopt technology are indicative of the following abilities that are essential for development of local Small- and medium-sized manufacturers : 1) ability to absorb and develop technology transferred from outside sources; and 2) ability to develop new technology.

#### **4.3 Positioning of Business Management/Production Management Technology in the Manufacturing Industry**

Technology required by the manufacturing industry consists of "production technology" "production skills," and "business management/production management technology," which is also called soft technology.

Our preliminary survey of local SMEs indicates that most SMEs manufacturing machine parts strive to improve productivity by using field-proven technology and limited resources, including equipment and workers. Few companies are engaged in development of proprietary technologies or new products.

This situation facing small- and medium-sized manufacturers is not unique to Argentina. Yet, it is possible for them to create their own competitive advantage by effectively combining various management resources, each of which cannot constitute a key element of competitiveness. In the machine parts sector, suppliers are increasingly expected to establish and maintain a production management system capable of manufacturing small lot products in

large varieties in order to satisfy demand from their customers who are engaged in product development to meet the market needs by incorporating diverse types of parts into machinery. Under these circumstances, for small- and medium-sized manufacturers that need to improve productivity and competitiveness by optimally combining limited resources, business and production management technology is an essential element in addition to essential technology and production skills.

In Argentina, various organizations provide support in the field of production technology, led by INTI. However, there is no official support system, whether public or private, for soft technology (business and production management technology) despite its importance in revitalization of small- and medium-sized manufacturers, equaling that of production technology. As a result, dissemination of soft technology is currently spearheaded by consultants whose quality varies greatly among individuals.

The establishment of a formal system to promote dissemination of soft technology to local SMEs, including education and training on basic knowledge and skills, is one of the important roles that should be played by government. In fact, it is as important as school education and should form an integral part of national industrial policy. Its importance remains unchanged under the globalizing environment. For this reason, the establishment of a system to disseminate soft technology is proposed as a key element of the action program.

Note that this proposal is presented as “improvement of society’s ability to absorb technology,” one of SME promotion programs.

#### **4.4 Promotion of an Integrated SME Support Mechanism**

For effective implementation other SME promotion programs, such as “development of an environment to build diverse relationships between companies,” “formulation of industrial concentration” and “promotion of trade between companies within the region,” collaboration of the public and private sectors and initiative taken by local government hold the key. Most of SMEs are closely linked to local areas where they operate and need customized support, in a sharp contrast to large enterprises, and an integrated support mechanism using local public and private organizations, including educational institutions, can realize such support.

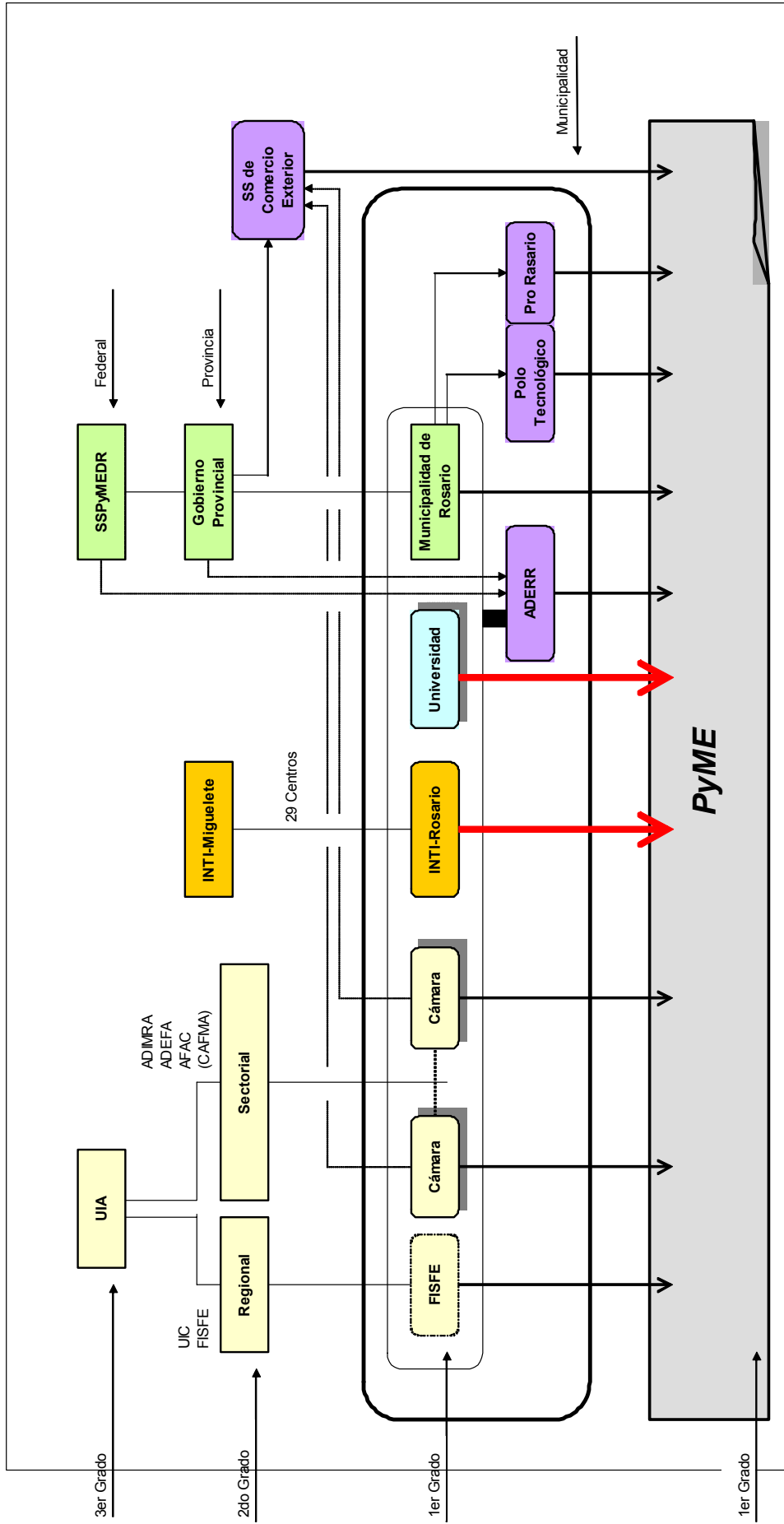
In Argentina, Red de Agencias Regionales de Desarrollo Productivo, as discussed in 1.4 of this report, is proposed as a regional-level, integrated SME support mechanism, and approximately 50 “Agencias” have been established and are networked. They are established jointly by the



central or state government and municipalities or the private sector in order to promote linkage between local support organizations, both public and private, thereby to realize support that takes into account local characteristics.

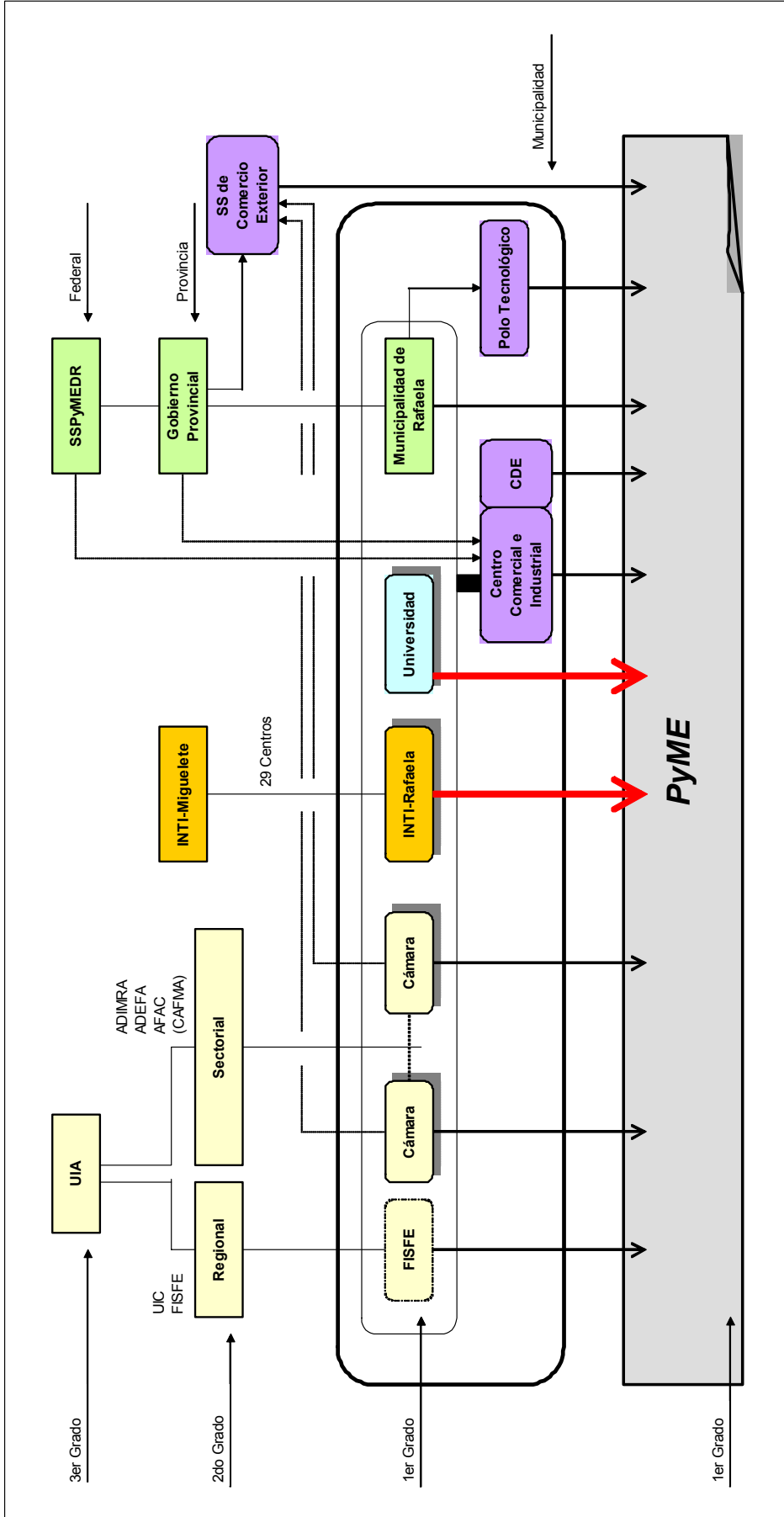
The operating status of 50 “Agencias” varies greatly and some are reportedly inactive. As their intent and objective appears to serve the needs of the times, however, their activities should be enhanced. For this reason, the reinforcement of “Agencias” is proposed as a key element of the action program.

Figures 4.1, 4.2 and 4.3 present SME support organizations in Rosario, Rafaela, and Córdoba, and “agencia” is shown as the integrated support organization in each area.



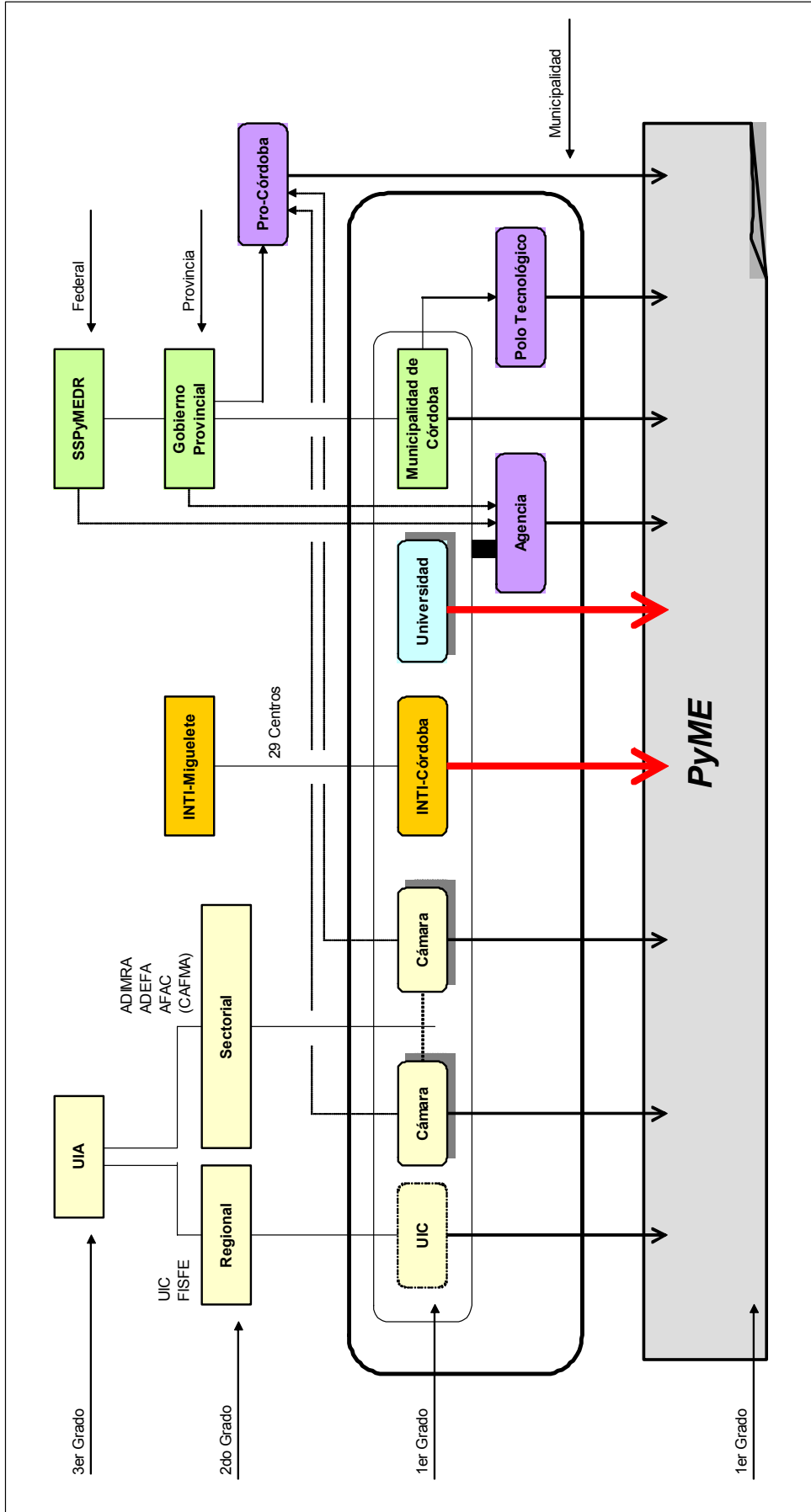
Source: JICA Study Team

Fig. 4.1 SME Support Scheme Ciudad de Rosario



Source: JICA Study Team

Fig 4.2 SME Support Scheme Ciudad de Rafaela



Source: JICA Study Team

Fig. 4.3 SME Support Scheme Ciudad de Córdoba

## Chapter 5

### Implementation Plans for Model Projects

## **Chapter 5 Implementation Plans for Model Projects**

To verify effectiveness of action programs discussed in Chapter 4, the following two model projects will be conducted.

Model Project 1: Strengthening of INTI's soft technology-related SME support capability

Model Project 2: Configuration of the SME database

### **5.1 Model Project 1: Strengthening of INTI's Soft Technology-related SME Support Capability**

#### **5.1.1 Reason for Selection and Project Description**

##### **(1) Reason for selection**

For small- and medium-sized manufacturers to improve productivity and competitiveness by using an optimum combination of management resources, business and production management techniques (soft technology) are essential, as much as production technology and skills. In Argentina, however, companies have a very limited opportunity to learn soft technology, and a technical support system using soft technology has not been established, neither by the public nor private sector.

The study team has selected INTI as the core element of the soft technology support system in the country and as the counterpart organization of the model project. INTI has been engaged in research and industry support activities under the Ministry of Economy and Production, covering broad fields including industrial testing, research and development, quality control, standardization, and pollution control. INTI, through long-time dealing with small- and medium-sized manufacturers, recognizes that soft technology, together with production technology and skills, is essential in improving competitiveness. It is planning to improve support capability and expand activities.

##### **(2) Project description**

The model project is designed to strengthen INTI's soft technology support capability for small- and medium-sized manufacturers through the following activities, thereby to ensure its self-support activity after the end of the study: 1) joint field guidance with experts of the study team; and 2) direct technology transfer by experts of the study team.

#### **5.1.2 Benefits Expected**

Benefits expected from implementation of the model project are summarized as follows.

INTI staff will gain skills and experience in soft technology support.

INTI will develop manuals relating to soft technology support service for small- and medium-sized manufacturers.

INTI will be recognized by the public sector as a soft technology support organization as the model project results in improvement of productivity and performance of beneficiary companies.

INTI will establish soft technology support as one of its major services, next to production technology, and will be able to build a system to strengthen the service including budget allocation.

Improvement of productivity and performance of beneficiary companies under the model project will be made known to the public, and public recognition on importance and effectiveness of soft technology – which is current absent in the private sector – will be improved to stimulate demand for soft technology support.

### **5.1.3 Project Area and Reason for Selection**

As candidate model project areas, the following four areas were selected as the model project implementation area.

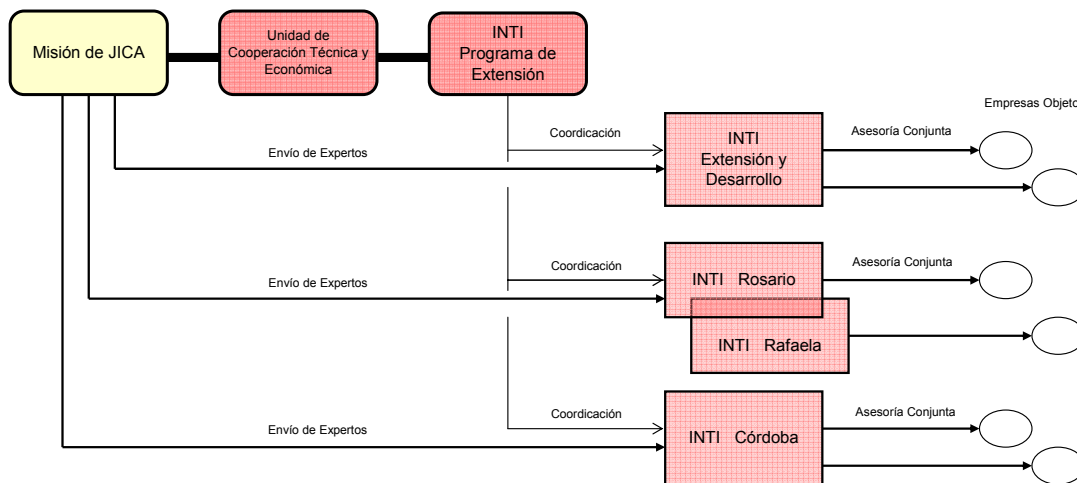
Model Project 1 implementation area

- San Martín, Province of Buenos Aires
- Rosario and Rafaela, Province of Santa Fe
- Córdoba, Province of Córdoba

In the four cities an agglomeration of one or more sectors was observed in Argentina. The four cities have also INTI's regional centers that will assure smooth implementation of the model project.

### **5.1.4 Project Implementation Organization and Schedule**

Fig. 5.1 shows the proposed implementation organization for Model Project 1 and Fig. 5.2 the implementation schedule. Note that the shaded period in Fig. 5.2 denotes the period during which the study team will conduct field survey.



Source: JICA Study Team

Fig. 5.1 Implementation Organization for Model Project 1

	2005											
	2	3	4	5	6	7	8	9	10	11	12	
Establecer Régimen de Ejecución de Proyecto Modelo	█											
Selección de Empresas Objeto	█											
Definición de Puntos a Mejorar y Objetivos a Alcanzar	█											
Formación de Grupos de Asesoramientos para la Mejora	█											
Definir la Planificación de Proyecto Modelo	█											
Organizar el Equipo para la Mejora dentro de la Empresa	█											
Inicio de Asesoramiento para la Mejora	█											
Establecer Tareas de Mejoras por parte de Empresas	█											
Seguimiento por Personal de INTI			█	█	█	█	█	█	█	█	█	█
Capacitación Interna por INTI para Nuevos Integrantes			█									
Ciclo Continuo de "Asesoramiento Periódico" - "Ejecución por parte de Empresa" - "Evaluación"					█	█	█	█	█	█	█	█
Transferencia de Tecnología hacia el Personal de INTI					█	█	█	█	█	█	█	█
Seminario Abierto									█			
Evaluación de Mejoras											█	█
Elaboración del Informe de Proyecto Modelo												█

Source: JICA Study Team

Fig. 5.2 Implementation Schedule for Model Project 1

During the project implementation period, the study team's experts in soft technology will stay at INTI centers in the project implementation areas and will work with INTI staff to provide field guidance for companies participating in the project. At the same time, they will carry out technology transfer to INTI staff in the form of lecture or seminar.

### 5.1.5 Participating Companies and Their Selection Process

Companies participating in the model project were selected by the study team and INTI from companies for which the simplified corporate diagnosis was conducted. Based on diagnostic charts prepared for companies, the study team prepared a list of candidate companies and examined it with INTI. Each candidate company was revisited to confirm the intent to participate and preparedness to extend companywide cooperation before the final selection was



made.

#### **5.1.6 Implement Plans for Participating Companies**

Details of the project were discussed with companies which have been confirmed to have the intent of participation during the visit, including the kaizen theme, target, necessary input, and an implementation schedule for each theme. Then, the kaizen sheet (Hoja de KAIZEN) prepared by the study team was revised to reflect the discussion and agreement and signed by the company, the study team expert, and INTI staff.

## 5.1.7 Project Design Matrix (PDM)

### Project Design Matrix : Model Project - 1 Improvement of INTI Soft Technology Capability to Assist SMEs

Study Period : 2004.9-2006.3

Model Project Period : 2005.2-2005.12

Target Sector : Mechanical Components and Parts Industry

Target Area : San Martín, Rosario, Rafaela and Córdoba and their outskirts

Narrative Summary of Project	Indicator	Methods of Verification	Outer Factors
<p><b>Upper Goal</b></p> <p>Productivity of target sector SMEs is improved.</p>	<p>Production per employee</p>	<p>Questionnaire Interview</p>	<p>No serious economic turmoil Industry continues to grow. No. of companies does not decrease.</p>
<p><b>Project objective</b></p> <p>INTI capability of assisting SMEs with soft technology (ST) is improved.</p>	<p>Number of companies assisted by INTI in ST</p>	<p>INTI record of services</p>	<p>No drastic recession in the target sector</p>
<p><b>Results</b></p> <ol style="list-style-type: none"> <li>1. Capabilities of INTI experts are improved.</li> <li>2. Manual for soft technology consulting services is completed.</li> <li>3. Methodology and ST promotional organization are established.</li> <li>4. SMEs recognize necessity and effectiveness</li> </ol>	<p>Number of experts (defined by criteria) Manual for ST consulting services Organization chart of INTI Budget approval Number of participants in seminars and Eagerness to introduce ST of SMEs Satisfaction of target companies</p>	<p>INTI document INTI document INTI document Records of seminar and workshops Interviews with companies and associations</p>	<p>No. of ST experts is not decreased. INTI continues to give ST services to SMEs. INTI and other organization continue to promote ST.</p>
<p><b>Activities</b></p> <ol style="list-style-type: none"> <li>1-1 To set up criteria and the goal for ST experts</li> <li>1-2 To foster ST experts in INTI through model company consulting services</li> <li>1-3 To evaluate candidates of ST expert and make the future foster plan</li> <li>2-1 To help INTI to assemble guide of ST consulting services</li> <li>3-1 To help all concerned to understand the effectiveness of ST</li> <li>3-2 To design the institutional set-up for promotion of ST</li> <li>3-3 To facilitate contents of ST promotion activities</li> <li>4-1 To give ST consulting services to selected target companies</li> <li>4-2 To evaluate the effectiveness of ST and select good practices</li> <li>4-3 To present the activities and good practices of target companies</li> </ol>	<p><b>Input</b></p> <p>(JICA Team)</p> <ol style="list-style-type: none"> <li>1) 8 Japanese experts</li> <li>2) CP training</li> <li>3) Joint Consulting Services for SMEs</li> <li>4) Seminars and workshops</li> </ol>	<p>(Argentine side)</p> <ol style="list-style-type: none"> <li>1) C/P</li> <li>a. INTI, b. SSEI, c. SSEPyMEyDR</li> <li>b. industrial organizations</li> <li>2) regional governments</li> <li>3) target companies</li> </ol>	<p>1. Security condition in the target areas is not aggravated. 2. Business condition of target sector is not changed dramatically.</p> <p><b>Pre condition</b> All concerned organizations and target companies accept the project.</p>

Source: JICA Study Team

## **5.2 Model Project 2: Configuration of the SME Database**

### **5.2.1 Reason for Selection and Project Description**

#### **(1) Reason for selection**

SSPyMEyDR positions Red de Agencias Regionales as an important policy tool to achieve the key policy objectives of SME promotion and regional development and has been setting agencia's activity goals and implementing its reinforcement programs every year. "Agencias" are an independent non-profit organization that is jointly established by local government and the private sector. Their budget, staffing and activities vary greatly. As SSPyMEyDR does not provide financial assistance, the strengthening of "agencias" is made in the form of staff training and the development and provision of support tools, as seen in previously implemented programs.

SSPyMEyDR sets forth information service and promotion of inter-company linkages and grouping as its non-financial activity. One of key support tools for such activity is a company database storing information on local companies. In Argentina, there are directories of member companies held by trade associations and local databases prepared by provincial governments that have a limited coverage at a specific time. However, there is no SME database that can be accessed to meet business needs and that is regularly maintained to keep its reliability. Thus, "agencias" do not have a basic support tool.

SSPyMEyDR plans to build a SME database covering both the manufacturing and non-manufacturing sectors and to use it as a SME support tool through "agencias" activities. However, the plan has not been materialized for various reasons and the model project is expected to pave the way for its implementation.

#### **(2) Project description**

The model project consists of: 1) development of a database system that can accommodate SSPyMEyDR's future plans and is adaptable to the Internet environment; 2) collection of sample data and construction of the SME database; and 3) promotion of the database use by SMEs.

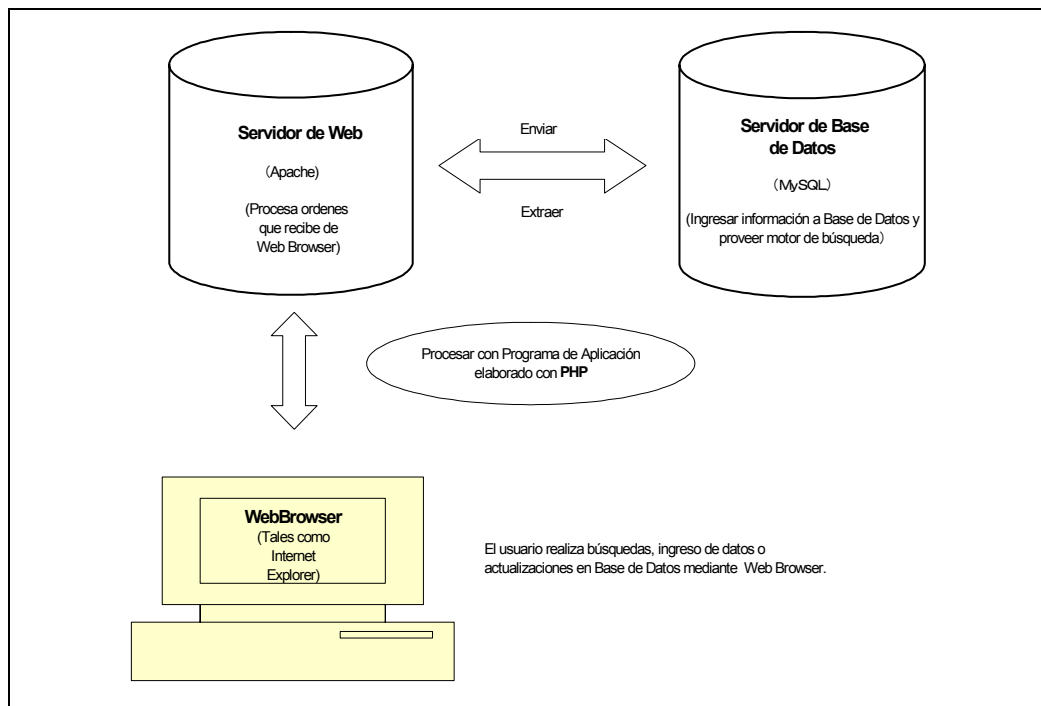
### **5.2.2 General Outline of the SME Database**

The primary objective of the database on small- and medium-sized manufacturers to be developed under the model project is described below. In addition to basic company

information, the database will include data and information that address major issues facing SMEs, such as the shortage of skilled workers and the need for consulting service.

The SME database is designed to provide companies that look for parts suppliers and job shops that do contract manufacturing or machining with basic information required to decide on direct negotiation with a potential supplier, such as the company size, process, and production/processing capacity.

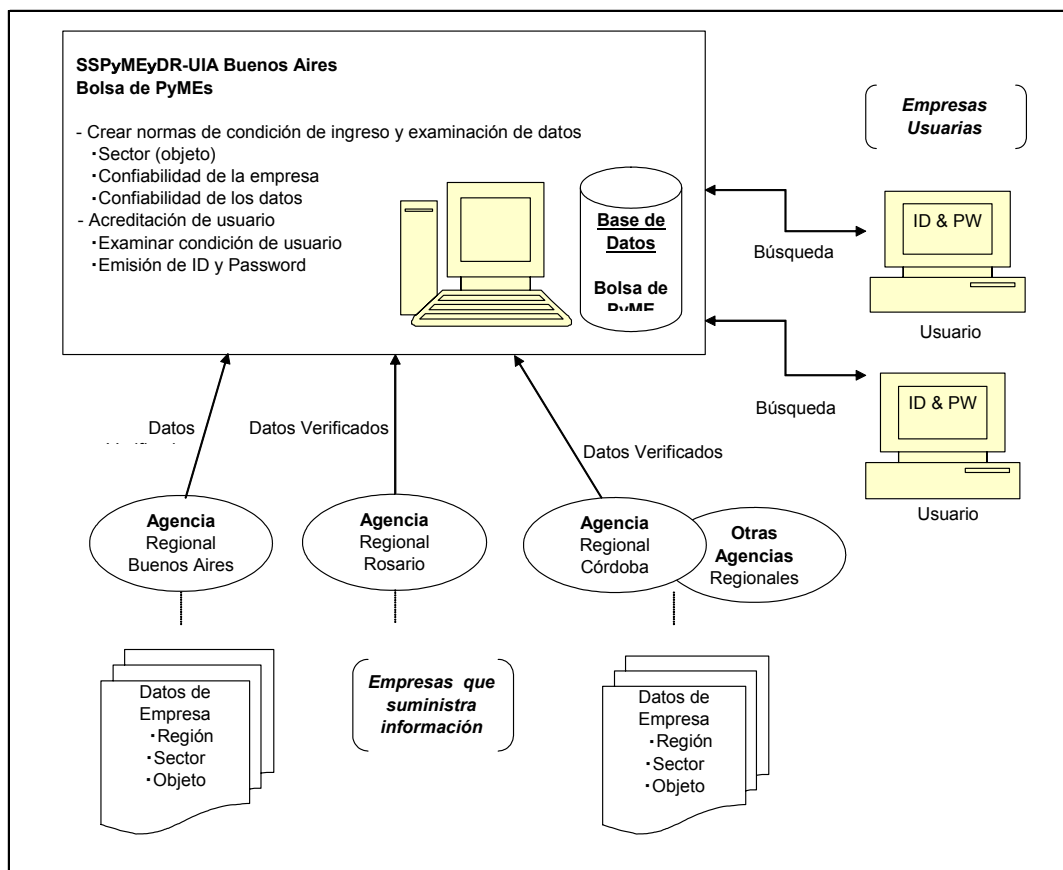
Figures 5.3 and 5.4 shows system design and operation concepts of the proposed database.



- Característica-1 Tiene buena compatibilidad con los Web Browsers convencionales y su uso es posible mediante Internet.
- Característica-2 El uso es libre y gratuito mediante Open Source Software.
- Característica-3 El desarrollo cuesta tiempo y mes-hombre reducidos. Por consiguiente su costo es bajo
- Característica-4 Permite la ampliación de Base de Datos.
- Característica-5 Es lo último en tecnología para el desarrollo de aplicaciones sobre la Base Web.

Source: JICA Study Team

Fig.5.3 System Design Concept of the Database



Source: JICA Study Team

Fig.5.4 Operation Concept of the Database

### 5.2.3 Benefits Expected

- Construction of the SME database system that is adaptable to the Internet environment
- Establishment of the maintenance and operation system for the future database
- Availability of the SME database to local SMEs
- Use of the SME database as a support tool by “agencies”
- The building of the foundation to expand the coverage of the database by area and sector

### 5.2.4 Implementation Organization and Schedule

#### (1) Implementation organization

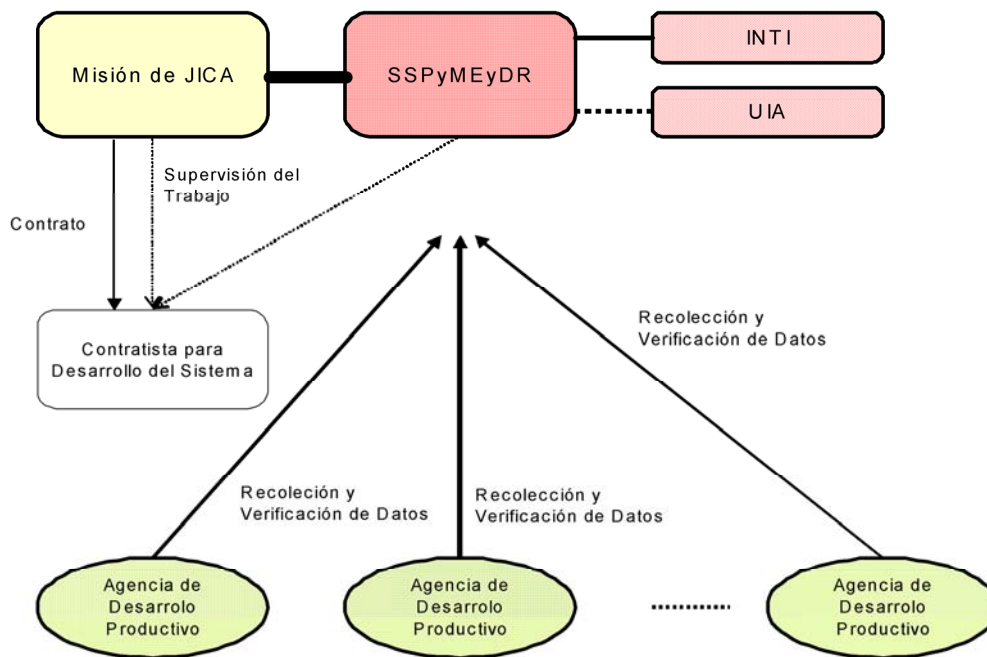
The model project will be carried out by SSPyMEyDR under the assistance of the study team. Table 5.1 summarizes development tasks and division of responsibilities, namely development of database specifications, system development and preparation of user manuals, collection of sample data, PR and promotion, preparation of maintenance manuals.

Table 5.1 Model Project 2 Responsibilities of the Tasks

	Study Team	SSPyMEyDR	“Agencias”	Contractor
Development of database specifications	○	○	○	
System development and preparation of user manuals				○
Collection of sample data		○	○	(○)
PR and promotion	○	○	○	
Preparation of maintenance manuals	○	○	○	○
(DB system maintenance and operation)		○	○	

Source : JICA Study Team

Fig.5.5 shows the implementation organization for the model project.

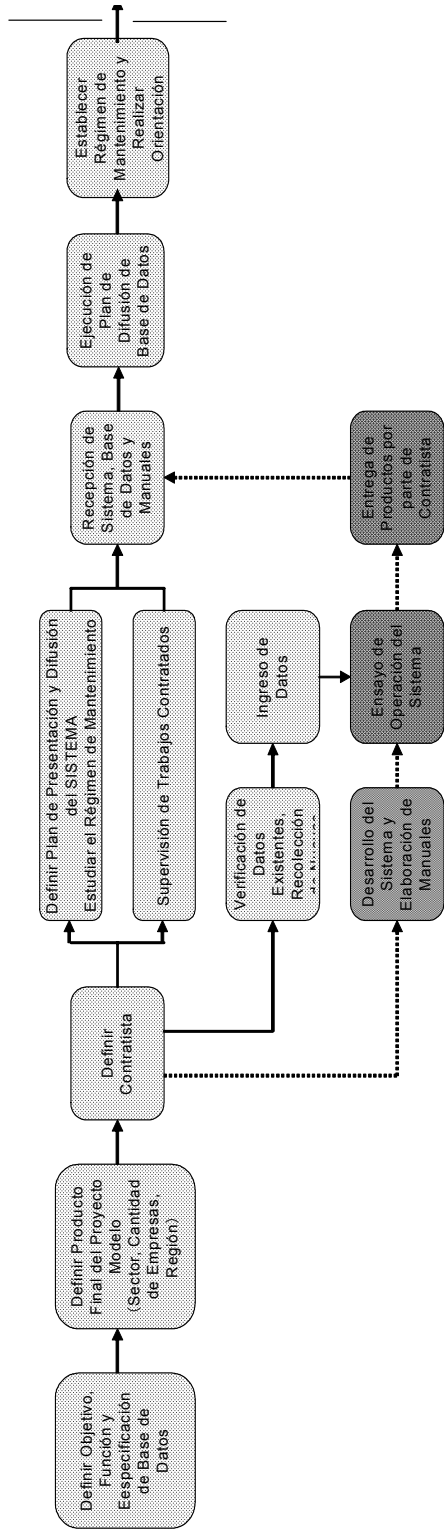


Source: JICA Study Team

Fig.5.5 Implementation Organization for Model Project 2

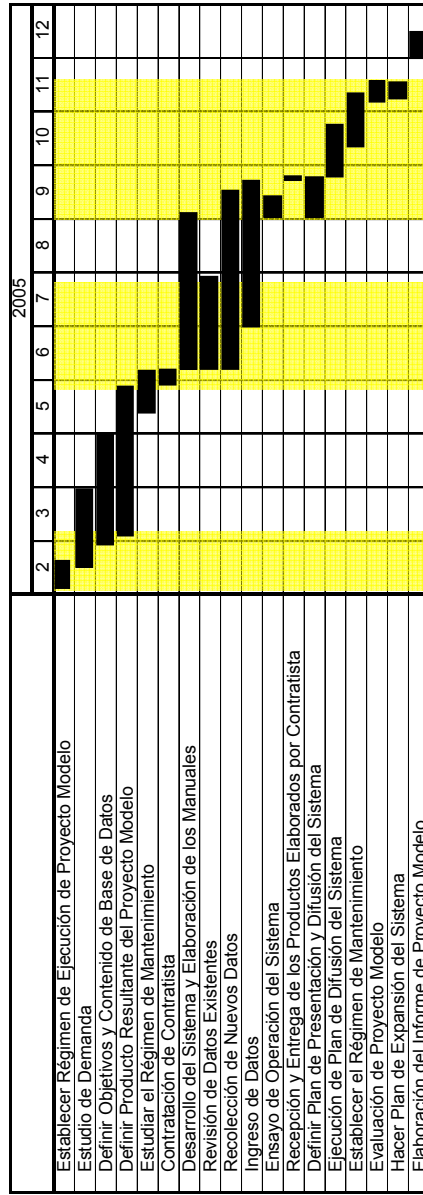
**(2) Implementation schedule**

Fig.5.6 shows a general work flow for the model project, based on which an implementation schedule has been developed as shown in Fig.5.7. Note that the shaded period in Fig. 5.7 denotes the period during which the study team will conduct field survey.



Source: JICA Study Team

Fig. 5.6 General Work Flow of Model Project 2



Source: JICA Study Team

Fig. 5.7 Implementation Schedule for Model Project 2

## 5.2.5 Project Design Matrix (PDM)

### Project Design Matrix : Model Project - 2 Building SMEs Database

Study Period : 2004.9-2006.3		Target Sector : Mechanical Components and Parts Industry	
Model Project Period : 2005.2-2005.12		Target Area : San Marfin, Rosario, Rafaela and Córdoba and their outskirts	
<b>Narrative Summary of Project</b>	<b>Indicator</b>	<b>Methods of Verification</b>	<b>Outer Factors</b>
<p><b>Upper Goal</b> SMEs database system is extended to all regions and sectors of SMEs in Argentine</p>	Regions and sectors covered by the database.	Database directory	No serious economic turmoil
<p><b>Project objective</b> SMEs database is used by the relevant agencies of SSEPyMEyDR as a supporting tool for SMEs.</p>	Track record of utilizing the database Track record of added functions of the relevant agencies	Interview Brochures	Network of development agencies continues. Development agencies continue their activities.
<p><b>Results</b> 1. Model database system is built. 2. Database management system and maintenance organization are established. 3. Database is used by stakeholders.</p>	Source program and system documents Budget Organization chart SSEPyMEyDR website Access count on the internet	Software developer Interview SSEPyMEyDR documents Internet Access counter	Development agencies accept the database system. Government allocates enough budget to manage and maintain the database system. Government does not change the decision on the database.
<p><b>Activities</b> 1-1 To make the research on the needs of the database content 1-2 To consign the database system development and monitor the progress 1-3 To test the database system for evaluation 1-4 To collect sample data of SMEs 2-1 To make the plan for management and maintenance of the database system 2-2 To submit the plan to upper authority for approval 2-3 To train staff for maintenance of the database 3-1 To make ads and brochures for promoting the database usage 3-2 To have seminar and workshops for promotion</p>	<p><b>Input</b> (JICA Team) 1) Japanese experts 2) Software development (consignment)</p>	<p>(Argentine side) 1) C/P a. INTI, b. SSEI, c. SSEPyMEyDR b. UIA</p>	<p>1. Security condition in the target areas is not aggravated. 2. Business condition of target sector is not changed dramatically.</p>
			<p><b>Pre condition</b> Core organizations accept the idea of database.</p>

Source: JICA Study Team



## Chapter 6

### Results of Implementation of Model Projects

## **Chapter 6 Results of Implementation of Model Projects**

### **6.1 Model Project 1**

#### **6.1.1 Guidance Record**

##### **(1) Guidance record and result sheet**

The following documents were prepared as activity record for the model project: 1) KAIZEN sheets agreed with companies selected for the model project (see Chapter 5); and 2) guidance record and result sheets for all the participating companies, describing details of field guidance provided by the study team during the fourth, fifth and sixth field surveys and implementation results, and evaluation on results of guidance based on the KAIZEN sheets. One example of the guidance record and result sheet is shown below.

Note that the model project was started for 24 companies under main kaizen themes of production management and management accounting (an accumulated total of 27 companies for two themes), but 4 companies dropped out due to internal troubles, a customer-related problem, or a time overlap with preparatory activity for ISO certification.

Table 6.1 Participating Company 3 of Model Project 1 Guidance Record and Result

1	Company visited	FUNDICION GATTI S.R.L.		Code No: Ro-9
2	Total number of visits	9		
3	Study team member who made visit	Nobushige Fukase	INTI Personnel	Ing. Raúl Castaño
4	Personnel representing the visited company	Norberto L. B. Gatti C.P.M. Antonela Gatti C.P.M. Marcos I. Meneghetti	Director General Staff de Gerencia Staff de Gerencia	
5	KAIZEN theme-1	(Theme title) Situation prior to use of guidance	Reduction of rejection rate The company is specialized in foundry to manufacture various types of gray iron and nodular graphite cast iron products used by the agricultural machinery and automobile industries, using a high pressure casting line. Partly due to the aging of the casting sand control equipment, the company's total rejection rate reached 3%, consisting of the internal rejection rate of 2% and the return rate from customers of 1%.  Daily production data, such as casting data and the number of defects, were stored in the computer, but data were not effectively utilized, such as data analysis and the planning of the subsequent action. Thus, the kaizen project was planned to start with the basics of quality control with an ultimate goal to reduce the rejection rate to two thirds or less the present level.	
		Guidance record	1. Although daily production records including casting and defect were maintained, no action, such as data compilation by month and year, macro-analysis, and formulation of corrective measures, was taken. It was then advised to analyze melting, casting, production and defect records as well as causes for defects relating to the entire factory in FY2004, plot the results on tables and graphs. In particular, it was instructed to perform data sorting, compilation and analysis by using quality control techniques such as Pareto chart.  2. To organize a small group for each shop or division of the factory and to conduct 5S and the defect reduction activity. An emphasis was made to teach the objective of small group activity – to raise interest of employees in quality – and to train group leaders.  3. The method to promote defect control measures by the small group was taught. It was proposed to hold meetings according to the following schedule and objective and make the minutes of meeting. 1) Beginning of each month: To analyze defect data in the previous month and devise corrective measures.	

		<p>2) Mid-month: To check the status of progress.</p> <p>3) When a sudden quality problem occurs: To convene related personnel for devising and initiating emergency measures.</p> <p>4. As for the QC7 Tool, its use was taught in the form of OJT as required, instead of lecture.</p> <p>* Graphs showing causes for defects in 2004 were presented, and it was advised to prepare Pareto charts. Various QC techniques such as stratified analysis and correlation diagrams were taught.</p> <p>5. To sum up the kaizen theme, responsible managers and kaizen team members attended at the workshop that was held in December 9, 2005, for managers and kaizen team members of model enterprises in Rafaela, using textbooks "Promotion of Quality Control at Foundries" and "Method for Experimental Planning" (Spanish version).</p> <p>In February, the kaizen group was organized and the defect reduction activity was officially launched. Average achievements between January and October are summarized below.</p> <table border="1" data-bbox="644 450 820 1249"> <thead> <tr> <th></th> <th>Mortality due to casting defect</th> <th>Reduction rate of mortality</th> </tr> </thead> <tbody> <tr> <td>Average for 2004</td> <td>5.41 %</td> <td></td> </tr> <tr> <td>Average for January – October 2005</td> <td>4.03 %</td> <td>25.5 %</td> </tr> </tbody> </table> <p>As a result of the defect reduction activity targeting products for John Deere, the rejection rate was down 25.5%, close to the target level (two thirds).</p>		Mortality due to casting defect	Reduction rate of mortality	Average for 2004	5.41 %		Average for January – October 2005	4.03 %	25.5 %
	Mortality due to casting defect	Reduction rate of mortality									
Average for 2004	5.41 %										
Average for January – October 2005	4.03 %	25.5 %									
6	<p>KAIZEN theme-2.3</p> <p>(Theme title)</p> <p>Situation prior to use of guidance</p> <p>Guidance record</p> <p>Results and evaluation</p>	<p>Facilitation of startup of new green sand mixing equipment and early establishment of work standards (documentation)</p> <p>The casting sand processing equipment was aged and sand was frequently spilled in the shop, resulting in the poor working environment. The company realized the situation and ordered new equipment to a Brazilian manufacturer, which was scheduled to be installed in around June.</p> <p>1) To prepare work standards according to the startup of equipment.</p> <p>2) To prepare control charts on sand's CB value and resistant pressure when the casting sand mixing equipment starts, and to control the sand mixing process.</p> <p>Installation of the casting sand mixing equipment was delayed and the startup was postponed until October. The equipment had automatic control functions to replace manual work based on skilled workers' experience and intuition. Personnel of the Brazilian manufacturer taught the operation method as supervisor and work standards were established. It was advised to manage the equipment operation using the control chart presented in the December 9 lecture on "Promotion of Quality Control at Foundries."</p>									

7	KAIZEN theme-4	<p>(Theme title)</p> <p>Situation prior to use of guidance</p> <p>Guidance record</p>	<p>Organization of shop-based small groups to promote 5S activity</p> <p>Patterns used in the foundry were maintained very well by using large stacks at the entrance to the foundry. Orderly arrangement and storage can be a model for other companies. However, dirt on the floor due to sand and disorderly arrangement of articles were visible in the interior, suggesting the need for 5S activity that is the basic of factory management.</p> <p>As INTI Rosario had abundant experience in field guidance for 5S activity, INTI staff took a lead in teaching 5S.</p> <p>1) Eight kaizen groups were organized and each group held weekly meetings on 5S.</p> <p>2) Questionnaire survey (using a two-page form) was conducted for each group to check awareness of and knowledge on 5S. It was advised to conduct the same survey after the end of the project and check the difference from responses in the previous survey.</p> <p>3) "Operation Akafuda" was conducted and disused/unwanted articles were discarded.</p> <p>4) The kaizen activity was started with proper disposal of garbage by installing garbage boxes in each block.</p> <p>5) It was advised to photograph field conditions before and after 5S and to estimate the value of benefits where possible.</p> <p>6) It was advised to raise companywide awareness of employees by installing 5S bulletin boards and posting a layout map showing territories of small groups as well as photos of areas where 5S activity has produced measurable results.</p> <p>7) Field inspection revealed that sand stuck to forklifts' tires because of puddles on the service path outside the building and contaminated the foundry floor, and it was advised to the president to clean puddles immediately. It was emphasized that the situation could adversely affect workers' motivation to promote 5S further, which was still in the nascent stage. Also, important roles of management, engineers and supervisors were explained, i.e., to create and maintain the work environment that facilitates everyday work (management); to design and make dies, patterns and jigs that are easy to use (engineers); and to provide proper and continuous training for workers (field supervisors).</p>
		<p>Results and evaluation</p>	<p>1. Puddles outside the foundry were cleaned up promptly and forklifts' tires were clear of sand. Management's positive attitude seemed to affect employees and 5S took effect. The housekeeping in the foundry was improved every visit.</p> <p>2. The company also disposed unused articles and equipment kept outside the foundry, and an open space of 720m2 was created and 141 tons of scrap metals were sold to earn 34,000 pesos, as of the end of November.</p> <p>Examples of 5S activity results are shown in Appendix 1.</p>
8	KAIZEN theme -4	<p>(Theme title)</p> <p>Situation prior to use of guidance</p>	<p>Reduction of customer (John Deere) complaint (PPM)</p> <p>Since September 2004, the company has been receiving from John Deere – customer of casting parts for agricultural machinery - a monthly equality and delivery evaluation report (PPM). However, the company kept the PPM report for recent</p>

		<p>four months, and early reports were discarded after review. For this kaizen theme, it was decided to focus on reduction of the rejection rate of products delivered to John Deere as a model case for defect control measures.</p> <p>Guidance record</p> <ol style="list-style-type: none"> <li>1) To keep John Deere's PPM reports and show them to the field guidance team on its visit.</li> <li>2) To analyze products returned from John Deere, identify causes, and prepare an analysis report and a Pareto chart, different from those covering internal rejection.</li> <li>3) To conduct the PPM reduction activity in the same manner as advised for defect reduction activity under Kaizen Them 1 – Reduction of the rejection rate. It was thus advised to compile monthly results in 2005 and hold discussion on each month's results to devise corrective measures, in particular:             <ol style="list-style-type: none"> <li>1) To perform comparative analysis with results in 2004 and the previous month to find trends (effect of corrective measures); and</li> <li>2) To investigate causes for returned products and plot them on a Pareto chart.</li> </ol> </li> </ol> <p>Results and evaluation</p> <p>In February, the kaizen group was organized and the defect reduction activity was officially launched. Average achievements between January and October are summarized below.</p> <table border="1" data-bbox="778 448 957 1249"> <thead> <tr> <th></th> <th>Return rate due to casting defect</th> <th>Reduction rate of return</th> </tr> </thead> <tbody> <tr> <td>Average for 2004</td> <td>4.74%</td> <td></td> </tr> <tr> <td>Average for January – October</td> <td>3.29%</td> <td>30.6%</td> </tr> </tbody> </table> <p>As a result of the defect reduction activity, the return rate dropped 30.6%, almost reaching the target level (two thirds). Appendix 2 shows changes in the return rate.</p>		Return rate due to casting defect	Reduction rate of return	Average for 2004	4.74%		Average for January – October	3.29%	30.6%
	Return rate due to casting defect	Reduction rate of return									
Average for 2004	4.74%										
Average for January – October	3.29%	30.6%									
<p>9. Follow-up activity by INTI staff</p> <p>10 Documents submitted</p>	<p>Although the company was located in a remote area near Rafaela, approximately 200km from Rosario, INTI staff visited it frequently and sent useful information to Japan by e-mail. It was a great job. Guidance and advice on 5S was led by INTI staff.</p> <ol style="list-style-type: none"> <li>1) Casting record and defect cause analysis tables</li> <li>2) Sample of QC flowchart and QC flow sheet for foundry</li> <li>3) Promotion of quality control within the company (Spanish version, for seminar)</li> <li>4) Kaizen suggestion system (Spanish version)</li> <li>5) Promotion of quality control within the company (part 2) (Spanish version, for workshop)</li> <li>6) Documents on QC 7 Tools in Spanish (one copy from INTI)</li> <li>7) Summary of the fourth field survey results (Spanish version)</li> <li>8) PC document on small group activities and revitalization of companies (Spanish version)</li> <li>9) Promotion of quality control at foundry (Spanish version)</li> </ol>										

		<p>10) Experimental planning method (Spanish version)</p>
11	Documents received	<p>1) Organization to promote the INTI-JICA Kaizen project and scope of work  2) Sample of "akafuda" used for "Operation Akafuda"  3) Melting, casting, production and defect records, defect cause analysis tables and graphs for the entire factory in FY2004  4) Casting, shipment and return records on John Deere-destined products, defect cause analysis tables and graphs in FY2004  5) Copies of quality evaluation (PPM) reports from John Deere  6) Monthly melting, casting, production and defect records for the entire factory in FY2004  7) Monthly melting, casting, production and defect records on John Deere-destined products in FY2004  8) Sample report on measures to prevent recurrence of quality defects  9) PowerPoint document on current status reports on progress of kaizen themes  10) Documents presented at the December 5 seminar and CD storing them</p>
12	Guidance activities other than the kaizen theme	<p>The company is also actively engaged in equipment improvement, such as introduction of casting sand processing equipment and a non-frame molding line, and information relating to casting equipment and its operation, as learned by the study team expert, has been provided for reference.</p>
13	Comment by the study team member	<p><b>Future issues and goals for the company</b></p> <ul style="list-style-type: none"> <li>- The quality control technique and concept that the company has learned through the activity to reduce the return rate of John Deere-destined products should be deployed to products from the entire foundry.</li> <li>- It is hoped that the company will carry out proper quality control by using new green sand processing equipment and control charts.</li> </ul> <p><b>Items to be taken over by INTI staff</b></p> <ul style="list-style-type: none"> <li>- INTI is expected to follow up the project to ensure that the quality control system and technique that the company has learned through the project will become established in the country.</li> <li>- As the company is expected to develop further if its management technology is upgraded, it is desirable that INTI will provide support in the area of management technology, in addition to quality control.</li> </ul>

## Appendix 1 Results of 5S Activity

Left: Before start of 5S activity

*Antes...*




Right: During implementation of 5S activity:

*Ahora...*



Below: Results of 5S activity outside the foundry

### *Cuantificación de lo Recuperado:*

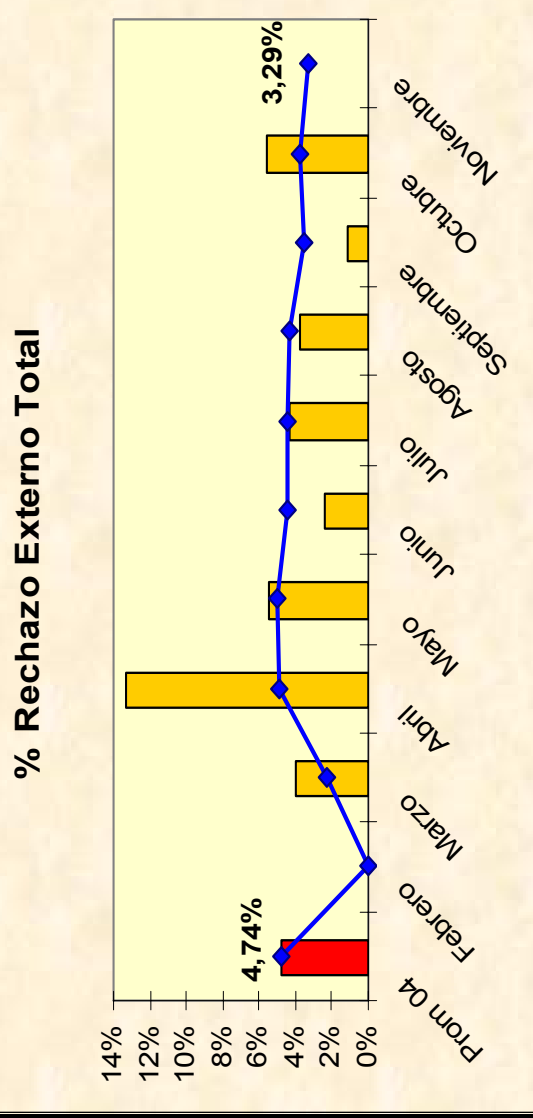
- Metros cuadrados recuperados: 720 m<sup>2</sup>.
- Recupero de Materiales:  
141.180 Kilos de chatarra equivalentes a \$ 34.002 (US\$ 11.334) 





Appendix 2 Changes in the Rate of Return from the Major Customer, John Deere,

## Porcentaje de Rechazo Externo



- Mejora lograda: Reducción de Defectos: 31%

## **(2) Radar charts**

In the simplified corporate diagnosis, diagnostic items were designed to cover five areas relating to general business management, namely “management,” “production,” “market and sales,” “human resources” and “finance.” Furthermore, “production” that was the major subject of the present study was divided into eight sub-items, “quality,” “cost,” “process,” “production technology,” “machinery and equipment,” “materials, purchase and subcontracting,” “inventory” and “production infrastructure.” Then each item was evaluated on a five-grade scale. In corporate diagnosis charts the results of evaluation was presented in two radar charts, one for five principal areas and the other for “production”.

As discussed in Chapter 5, this model project sets the improvement of productivity and competitiveness by using soft technology as the main kaizen theme. Fig.6.1 presents five-grade scale evaluation results (in the form of the radar chart) – before and after the field guidance - on the eight sub-items of the “production” category for two companies.

Note that the average score on the production category for all the companies was 3.2 at the time of the corporate diagnosis and 4.0 after completion of guidance.

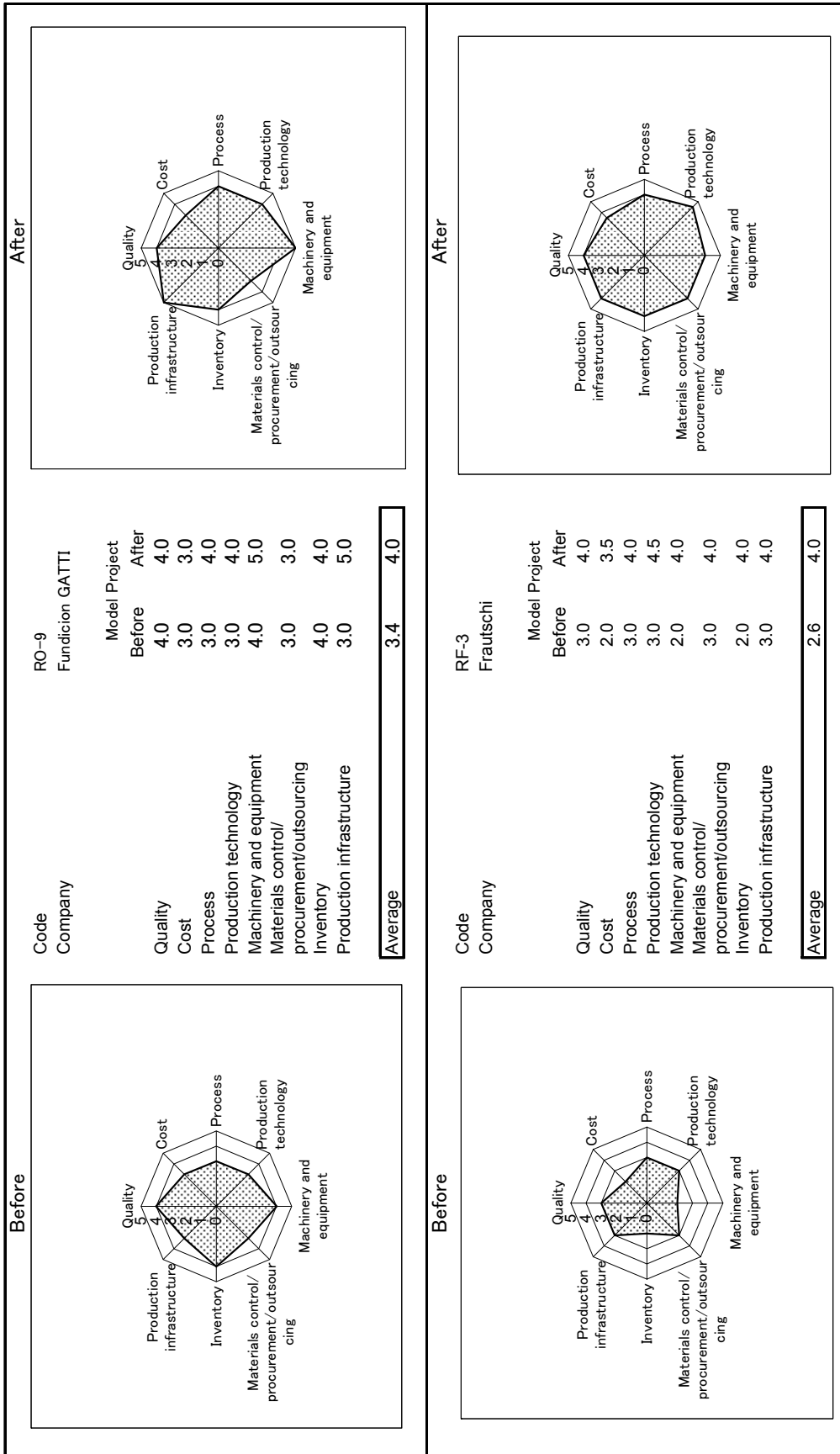


Fig. 6.1 Evaluation before and after Guidance

### **6.1.2 Technology Transfer to INTI's Counterpart Staff**

The model project had two purposes: 1) to raise interest in and demand for soft technology by demonstrating effectiveness of corporate guidance using soft technology; and 2) to assist INTI in establishing a formal system to provide field guidance service using soft technology. The study team's experts effectuated technology transfer to the counterpart staff throughout the model project period by performing joint field guidance service for individual companies, while conducting lectures and question and answer sessions as required.

Table 6.2 represents a part of a record on technology transfer to INTI staff at four INTI regional centers, as conducted by four experts in the field of production management.

Table 6.2 Summary of Technology Transfer to INTI Staff during the Fifth and Sixth Field Surveys (Rosario)

1	Period implemented	During the fifth field survey During the sixth field survey	August – October, 2005 November – December, 2005
2	Study team member in charge	Nobushige Fukase	
3	General Content	<p>INTI staff always participated in field guidance activities in order give an opportunity to learn SME guidance techniques on an OJT basis. This method is believed to help SME staff to develop expertise and experience in consultation service for SMEs.</p> <p>During the sixth field survey, an emphasis was made to teach the methods for preparing presentation materials used at the seminar where model companies report their kaizen activities and results, and the presentation method, with view to transferring the same to INTI staff. In addition to the practical training in the form of OJT, the following workshops were held for INTI staff.</p> <p>1. First technology transfer workshop for INTI Rosario staff (with Mr. Higo)</p> <p>Date: September 7 (Wed.) Place: JICA expert's office at INTI Rosario (INTI's meeting room) Participants: Raul Castano, Manuel Torne, Gabriela Rafelli</p> <p>General content</p> <p>(1) Desirable role of INTI as coordinator for the meeting of model companies (Fukase) Exchange of opinions on Metaltecnica 's VAVE held on August 25</p> <p>(2) Revitalization of companies by small group activities (Fukae) Lecture was given on the basis of the document entitled "Revitalization of companies by small group activities" (in Spanish and written by Mr. Fukase).</p> <p>(3) Six Sigma (opportunity for a new management technique) (Higo)</p> <p>2. Second technology transfer workshop for INTI Rosario staff</p> <p>Date: September 12 (Mon.) Place: JICA expert's office at INTI Rosario Participants: INTI Rosario, Luis Ayaiza</p> <p>General content : Guidance using video brought by JICA expert</p> <p>1) Small group activities 2) 5S's for small and medium enterprises</p> <p>3. Third technology transfer workshop for INTI Rosario staff</p> <p>Date: September 12 (Mon.) Place: JICA expert's office at INTI Rosario</p>	

<p>Participants: Raul Castano, Gabriel Gorostazu, Manuel Torne, Gabriela Rafelli</p> <p>General content: The following lecture was made using the manual prepared by the JICA study team members (in Spanish).</p> <p>(1) Promotion of quality control at foundry  (The title includes the word "at foundry" because data obtained from foundries were extensively used for ease of understanding, but the basic concept and technique for quality control as discussed here is applicable to all industries.)</p> <p>(2) Experimental design method (Taguchi method)</p> <p>4. Meeting between SME suppliers and large assembly manufacturers as customers</p> <p>Date: September 12 (Mon.)</p> <p>Place : A meeting room at John Deere</p> <p>Purpose: To exchange opinions with the purchase division of John Deere, to which Metaltecnica and GATTI supply parts, for the purpose of information exchange and mutual understanding.</p> <p>Participants: INTI Rosario: Raul Castano and Manuel Torne  Metaltecnica: Carlos A. Boadella (Aseguramiento de CALIDAD), Ing. Migel Ronco(Ventas)  GATTI : C.P.M. Antonela Gatti (Staff de Gerencia)  John Deere: Eng. Carlos M. Casanova (Purchasing &amp; Exports Manager)  Ing. Alexis M. Manavella (Purchasing &amp; Exports Department)  Ing. Federico Catenaccio (Purchasing &amp; Exports Department)</p> <p>General content: OJT-based guidance for the coordinating role of the consultant at the meeting between SME suppliers that are represented by model companies and large assembly manufacturers that are customers</p> <p>5. Meeting with six model companies in Rosario</p> <p>Date: September 28 (Wed.)</p> <p>Place: JICA expert's office at INTI Rosario (INTI's meeting room)</p> <p>Participants:</p> <p>INTI Rosario: Raul Castano, Gabriel Gorostazu, Manuel Torne, Gabriela Rafelli  Customer: Metaltecnica: Juan Alvarez(Gerente), Carlos A. Boadella(CALIDAD), Laura Zabalza (5S y Grupos de Calidad)  GATTI: C.P.M.Marcos I. Meneghetti (Staff de Gerencia)  FONDORIA: Ing. Ricardo Gerosa(PRESIDENTE )  ETMA: One  DBH: One  KRETZ: One</p>	
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		<p>Major subjects of discussion: Meeting with six model companies in Rosario to exchange opinions</p> <ol style="list-style-type: none"> <li>(1) Presentation on progress of kaizen themes by six model companies</li> <li>(2) comments by JICA experts and Mr. Castaño of INTI</li> <li>(3) Report by Mr. Gabriel Gorostazu of INTI on his training experience in Japan (field tour; 5S)</li> </ol>
4	Comment by the study team member	<ol style="list-style-type: none"> <li>1. "Revitalization of companies by small group activities" at the first technology transfer workshop for INTI Rosario staff on September 2 INTI participants commented that the presentation was based on actual experience and very useful. It was recommended that the document be used as the basis of developing a useful guidance for small group activities that is suitable for conditions in Argentina.</li> <li>2. Guidance for the coordinating role of the consultant at the September 12 meeting between SME suppliers that are represented by model companies and large assembly manufacturers (customers) seems to have been useful for INTI personnel. In the future, INTI is expected to coordinate the place for exchange between SME suppliers and large assembly manufacturers.</li> <li>3. The September 28 meeting with six model companies in Rosario <ol style="list-style-type: none"> <li>1) As Mr. Castaño proposed, at the beginning of the meeting, to exchange opinions on results of small group activities, major issues, and future plans of the six companies, presentation and discussion was centered on small group activities including 5S. However, cost reduction by VA/VE, layout improvement, and PPM reduction activities should have been explained in more detail.</li> <li>2) The participating companies commented that the teamwork approach to problem solving and quantitative management based on indices (plotting them on graphs and tables) was very useful.</li> <li>3) Mr. Gabriel Gorostazu's report on training in Japan was very good as it presented 5S and other conditions at Japanese companies visually by using pictures taken during the field tour.</li> </ol> </li> <li>4. The document entitled "Promotion of quality control at foundry" that was distributed at the third technology transfer workshop on December 12 incorporates a large amount of data collected at factories and is expected to be readily and widely useful on the shop floor. While the title includes the word "at foundry" because data obtained from foundries were extensively used, but the basic concept and technique for quality control as discussed here is applicable to all industries and is encouraged for extensive use. Also the experimental design method (Taguchi method) is a very useful technique for the planning of the test to solve technical issues facing factories and analysis of results, and it is desirable to study it further and use it in the production environment.</li> </ol>

### **6.1.3 Evaluation of the Model Project and its Results**

This evaluation was conducted upon completion of the model project for the purpose of performing overall verification on whether the project has achieved its objective, on the basis of PDM described in Chapter 5. After the analysis of the current state and actual results, the project was evaluated in terms of adequacy, efficiency, and effectiveness, and lessons learned from implementation were documented.

#### **(1) Analysis and verification of implementation results**

Input planned for the project was made mostly according to the plan. It consisted of the following: 1) Japanese experts of the study team, with field activities in Argentina of approximately 18 men-month mostly devoted to field guidance for individual companies and technology transfer to INTI staff (field guidance service was conducted at a rate of once per week on average); 2) 8 – 10 staff members of INTI's four regional centers as the counterpart organization; 3) implementation of field guidance using soft technology, jointly by the study team and INTI, for 24 companies; 4) presentation seminars on project results at four locations, theme-specific workshops (Kanban, VE/VA, Six Sigma, etc.), joint study groups by participating companies, and field tours by participating companies on Japanese-affiliated companies that use advanced soft technology; and 5) a counterpart training program in Japan, participated by five INTI staff members.

Specific results achieved from the model project are described as follows.

##### **1) Improvement of INTI staff's capability**

As a result of the model project, INTI staff's capability relating to production management technology has improved, with some variation among individuals. This is confirmed by comments from the study team members, e.g., INTI staff started to give explanation to beneficiary companies and prepared documents by themselves in the second half of the model project. (See the Technology Transfer Record and Model Project Report for details.) In responses of beneficiary companies to the questionnaire survey, INTI's coordination, project implementation, and support is highly valued. Thus, it appears that INTI has improved its capability in the area of soft technology to the level where companies gain confidence in its service. In particular, the study team members pointed out that INTI staff who had received training in Japan took initiative in their work after return from the training.



## 2) Development of manuals for soft technology-related consulting service

Under the leadership of the study team experts, manuals for the ten themes were completed. Most themes are designed to meet the actual needs of companies for field guidance service. The manuals include case studies in an attempt to provide practical knowledge. As a result, they were used during the model project period for technical guidance and training purposes. Note that INTI staff has not been involved much in development of the manuals, other than collection of information, and they need to revise and upgrade them in the future according to actual changes in field guidance.

## 3) Establishment of methodology and organization for dissemination of soft technology

During the study period, INTI did not create a new organization or department responsible for dissemination of soft technology. As this study report proposes the establishment of a new organization and its methodology, it will be up to INTI that implements the proposal.

## 4) Increased recognition by SMEs of the need for and effectiveness of soft technology

According to the questionnaire survey of the client enterprises that was conducted at the end of the model project, all of them valued technical guidance service by the study team and INTI highly and most of them expected to receive INTI's service on a continuous basis. While an actual effect in terms of level of accomplishment for technology transfer varies between companies, their recognition is based on effectiveness that has been clearly felt and proven from the model project.

INTI is already receiving requests for soft technology support from companies other than the clients under the model project. In December 2005, it received inquiry from 20 companies, including a large enterprise that requested training for its employees throughout the country. In addition, INTI receives many inquiries and proposals for joint programs from not only organizations relating to machine parts, but other local industries, trade associations, local governments, and universities as well.

## **(2) Verification of the implementation process**

### 1) Technology transfer to INTI

In the model project, scheduled activities were mostly carried out according to the plan. Technology transfer was conducted mainly in the form of OJT. Details of technical

guidance for the beneficiary companies were determined according to the needs of each company, not INTI staff's needs or skill levels. As a result, the OJT might not be adequate for INTI staff's skills. Also, a large difference in skill and experience of INTI staff may have made it difficult to establish a unified goal or an achievable technology level. To make up for content not covered by OJT, workshops were held for INTI staff, together with manuals and reference documents.

While OJT-based technology transfer is difficult to achieve uniform results of HR development, as compared to a lecture-style one, successful results of field guidance by Japanese experts have helped to raise recognition of INTI staff on soft technology as well as motivation to disseminate it.

## 2) Project management system

As the model project was relatively short, emphasis was placed on communication with INTI staff and beneficiary companies. Assigning one interpreter to each Japanese expert worked well to maximize effectiveness of field guidance and improve communication with the counterpart staff.

## 3) Counterpart and participating companies

Recognition of the model project by INTI head office and staff appear to have risen steadily during the project period, as evidenced by various examples: a center director participated in the project by joining an evaluation team that visited a beneficiary company; the project was introduced in INTI's newsletter; and a section to introduce the project was provided within INTI's Web site.

However, there were several problems about the counterpart staff's locational assignment. Some centers had only one staff and had to spend considerable time for coordination with beneficiary companies. Newly recruited staff without field experience was appointed as the counterpart for technology transfer and was naturally inappropriate for the role.

The model project progressed smoothly in terms of participation of beneficiary companies, except for termination of service for four companies, which did not present a problem as the number of companies was set to allow for dropout of some companies. As the questionnaire survey conducted at the end of the project shows a high evaluation from participating enterprises, it is reasonable to conclude that they feel the value of participation and recognize

importance of soft technology very well.

#### 4) Other

Originally, participation by local trade associations, chambers of commerce and industry, and the central and local governments was expected, but there was no active participation partly due to a relatively low level of recognition on the project of this type and partly due to the shortage of human resource relating to the subject. While local trade associations extended cooperation by providing meeting facilities, the project never turned into an activity involving many organizations. In any case, the model project helped to increase recognition on soft technology among many organizations, as confirmed by the fact that INTI received a number of inquiries and questions on soft technology at the end of the project.

### **(3) Adequacy**

#### 1) Necessity

At present, Argentina is in the process of economic recovery and economic activities in various sectors are becoming brisk. However, SMEs that manufacture automotive, agricultural machinery and food processing equipment parts – target sectors of the study – strive to meet increasing demand. They cannot fulfill all orders as they have decreased production capacity and reduced the workforce due to the persistent recession. They do not have internal funds to boost production capacity and cannot expect loans from financial institutions that are not active in SME loans after the economic crisis. Under these circumstances, there is strong demand for Japanese style production management that can improve productivity and quality without making major capital investment.

#### 2) Priority

Argentina's economic policy generally directs toward revitalization of the manufacturing sector and the securing of employment through promotion of SMEs, and in this sense, supporting the machine parts industry accords with national policy.

#### 3) Adequacy as policy implementation tool

As discussed in "Necessity," selection of the target sectors was appropriate as a strategy to maximize effectiveness of the model project. The automobile and agricultural machinery

industries are symbolic sectors in the Argentine manufacturing sector in terms of their ability to create value added and represent national pride. In contrast, the food processing equipment industry has not established its presence in the national economy (there is no trade association representing the industry) and was not readily selected as the target sector.

Superiority of production management techniques in Japan is globally recognized and many Argentine companies realize the fact. However, most companies know it as written or otherwise published information and do not practice any of such techniques. Furthermore, they believed that production management techniques used in Japan were only applicable to Japanese companies or too sophisticated for SMEs to adopt. However, the results of technical guidance given to the beneficiary companies under the model project have proven otherwise, i.e., Japanese production management techniques are fully applicable to SMEs in Argentina.

#### **(4) Effectiveness**

The project goal was sufficiently accomplished. This more than compensated for the inability to establish a budget and organization for INTI's formal program within the model project period, due to various reasons including INTI's status as government organization.

An impeding factor for accomplishing the project goal is, as analyzed in the implementation, the imbalanced arrangement of counterpart staff, which was partly caused by the difficulty in making a major change in personnel assignment within the same fiscal year. A major contributing factor was that the project was carried out during the recovery phase of the Argentine economy and when companies reached a stage when they began to need soft technology.

As for productivity improvement of the participating companies through technical guidance, it did not constitute a major accomplishment for the model project but it definitely promoted dissemination of production management techniques and motivated counterpart staff by showing successful examples. In fact, the study team focused on a result-oriented strategy because, unless the participating companies produced measurable results, the model project would lose confidence. As a result, successful implementation of production management techniques by the participating countries has contributed greatly to the accomplishment of the project goal.

## **(5) Efficiency**

As discussed in verification of actual results, the model project has successfully effectuated technology transfer to INTI's counterpart staff, although some variation occurred between individuals. Also, manuals were developed and demand was created. In the future, it is expected that INTI's internal organization is established to continue HR development efforts according to actual demand.

Various activities were conducted within a relatively short period. While the questionnaire survey did not show that the project period presented no problem for participants, it is desirable to conduct follow-up activities on a periodical basis after the end of the model project, say six months or one year later, from the viewpoint of effective propagation of soft technology to the beneficiary companies. In fact, many companies expressed such desire <sup>1</sup>.

In terms of cost and benefit, the number of beneficiary companies was sufficient but an insufficient number of INTI staff who learned technology had negative impacts on project efficiency. In particular, OJT should have been carried out by assigning at least three counterpart members to each Japanese expert. Also, counterpart staff should have field experience for at least three years.

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<sup>1</sup> This project focuses on "continuous improvement" and the ability to continue it is a key factor. Furthermore the results of field guidance for participating companies will likely be manifested after the lapse of a certain period

## **6.2 Model Project 2**

Prior to the start of the model project, the study team agreed with SSPyMEyDR on the objectives of the proposed database on small- and medium-sized manufacturers (Bolsa de PyME) as follows: 1) promotion of subcontracting; and 2) publication of recruit information.

Bolsa de PyME will register SMEs that want to supply parts in the form of contract manufacturing and will publish their production capabilities over the Internet. Potential customers will access to Bolsa de PyME and find a supplier that meets their requirements for inquiry. Many companies in the manufacturing sector, which is in the recovery phase after the long recession, are troubled by the shortage of skilled workers, engineers and factory operation staff. To help them with recruitment, Bolsa de PyME will contain recruit information by category.

The existing company databases managed by trade associations or local governments usually face the difficulty in date update, and many of them become obsolete and incorrect over time. Functional characteristics of Bolsa de PyME, which is proposed for development, are found in its data registration and updating methods, i.e., it allows companies registered with Bolsa de PyME to register and update their data via the Internet.

### **6.2.1 System development contract**

The system development contract concerning Bolsa de PyME was concluded on June 15, with the development period of three months. Relevant portions of system specifications contained in the contract are presented below. The system, upon completion, will be operated by SSPyMEyDR, and data will be published on its Web site. System security will be designed according to internal regulations of SSPyMEyDR.

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#### 1. Basic Functions to be developed

- 1) Programming of Input Screen, Update/Delete of the SME data
- 2) Programming of Data Storing into the database and security for protection
- 3) Programming of Screen for searching SME data by key words and/or pre-defined list boxes
- 4) Interface to the Web following all the regulations required by MECON and USI of SSPyMEyDR
- 5) Management of membership registration/rejection by User-ID and Password

- 6) Integrate the Database System into the SSPyMEyDR PORTAL site
- 7) Link to the other authorized Web-sites if required

### 1.1 Special Requirement

In order to accommodate the future enhancement or enlargement of the System, Database should make independent from the logic of the applications.

### 1.2 System Structure

This system must be composed of an “ABM Structure”, capable of generating a tool for Upload (Alta), Delete (Baja) and Modify (Modificación) processes.

In case new different processes should be added, the system can allow the addition of input fields by creating a necessary number of “ABMs”, in order to adapt it for additional industrial sectors.

## 2. Hardware and Software environment for Program Development

In accordance with current system environment of SSPyMEyDR, following characteristics are required for developing any application programs.

### 2.1 Hardware

PC for the client and PC for servers should use the standard platform indicated by SSPyMEyDR.

### 2.2 Software

Following open source software should be used for the program development.

- 1) Operating System: Applications must be executed on platform Linux 2.6.4 (newest version).
- 2) Web Server: Applications must be executed in Apache Web Server 1.3.31 (newest version).
- 3) Database: Applications should work with Open Source My SQL 4.0.17 engines (newest version).
- 4) Programming language: Applications have to be developed in PHP 4.3.4 (newest version).

## 3. Specification of Data to be stored in the Database

Location, Sector Category, Type of Process shall be designed using List Box Control function.

4. Languages to be used for Screen Format

Screen Menu of Registration of ID and Password, Input/Delete/Update and Retrieval shall be expressed both in the Spanish and English languages.

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System development work was jointly supervised by the study team and the System Division of SSPyMEyDR. Upon the completion of an acceptance inspection on September 27, the system and documentation was delivered to the study team. The System Division of SSPyMEyDR will be responsible for technical maintenance of the database system after its completion.

The company data form is presented in the following page.



**DATOS DE LA EMPRESA**[Paso 2!](#)[Paso 3](#)[Imprimir Datos](#)[Nuevo](#)[Grabar y Salir](#)

Razón Social	<input type="text"/>	Tipo de Soc	<input type="text"/>
CUIT	<input type="text"/>		
Propietario/s	<input type="text"/>		
Email	<input type="text"/>	Web	<input type="text"/>

Se encuentra registrada como empresa en algún programa de la SSPyMEyDR?

**DATOS DE LA EMPRESA - Domicilio Real**

Calle	<input type="text"/>	Nro	<input type="text"/>
Piso	<input type="text"/>	Departamento/Oficina	<input type="text"/>
Localidad	<input type="text"/>	Partido	<input type="text"/>
		C.P.	<input type="text"/>
Provincia	<input type="text"/>	País	<input type="text"/>
DDI	<input type="text"/>	DDN	<input type="text"/>
		Teléfono	<input type="text"/>
DDI	<input type="text"/>	DDN	<input type="text"/>
		FAX	<input type="text"/>

**DATOS DE LA EMPRESA - Información Comercial***Identificación CLANAE*

Categoría	<input type="text"/>
División	<input type="text"/>
Grupo	<input type="text"/>
Clase	<input type="text"/>
Subclase	<input type="text"/>

Código Actividad: 

Descripción de Actividad

**CERTIFICACIONES**

Certificación

NUMERO DE EMPLEADOS

Tipo Empleado	Experiencia		Subtotal
	menor a 10 años	mayor a 10 años	
<input type="text"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>

Superficie Total  m2

Superficie de Planta Cubierta  m2

Facturación Anual (en \$)

CLIENTES PRINCIPALES

<input type="text"/>
----------------------

DATOS DE LA EMPRESA - Procesos y Productos

Paso 3

Grabar y Cerrar

Razón Social  Tipo de Sociedad   
Sector

ID.Item	Descripción del Proceso	Productos
<input type="text"/>	<input type="text"/>	<input type="text"/>

Listado de Máquinas

Nombre	Manufactura	Macra	Cantidad	Capacidad
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>

**DATOS DE LA EMPRESA – Datos del Contacto Principal**[Grabar y Cerrar](#)

Nombre  Apellido   
Calle  Nro:   
Piso:  Departamento   
Localidad  Partido  C.P.   
Provincia  País   
DDI  DDN  Teléfono   
Email

**DATOS DE LA EMPRESA – Información General**

Mensaje Promocional

**DATOS DE LA EMPRESA – Ofertas de Trabajo**

Puesto	Referencia	Contacto
<input type="text"/>	<input type="text"/>	<input type="text"/>

### **6.2.2 Sample Company Data Collection Contract**

To ensure that benefits of the new service – Bolsa de PyME – are recognized in Argentine and its existence is widely accepted, only feasible method is to publish the database on SSPyMEyDR’s Web site and invite companies to register their data by conducting continuous promotional activities, thereby to wait for growth of data and access.

Following the system development contract, a commission contract for collection of sample company data required for publication of Bolsa de PyME was concluded on June 22. The scope of service covered by the contract is: 1) collection of company data in a form under development; and 2) input of collected data to the system. The contract period is five months and the target number of companies is 300.

The subject of data collection is SMEs in the target sectors under the model project, namely automotive, agricultural machinery, and food processing equipment parts. The study area covers three provinces of Buenos Aires, Santa Fe, and Cordoba, where machine parts manufacturers are clustered and Model Project 1 has been implemented.

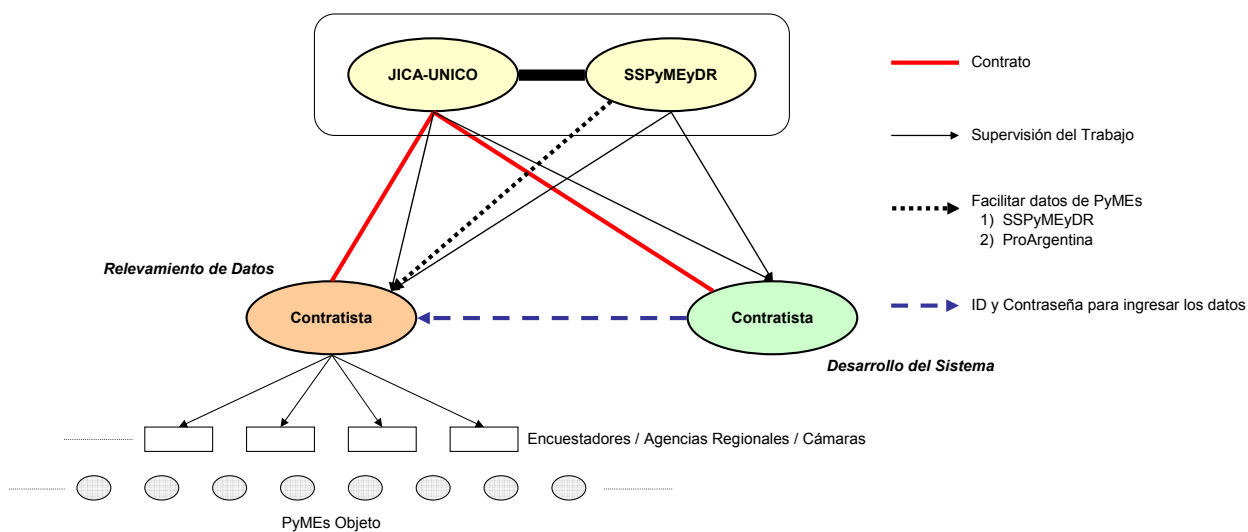
The following data were furnished to the contractor: 1) the list of companies extracted from the existing databases of SSPyMEyDR and ProArgentina and sorted by sector and area; and 2) relevant databases of trade associations and local governments, which were obtained by the study team during the basic survey.

As described in Chapter 4, the intent of the model project is as follows: SSPyMEyDR will develop Bolsa de PyME for the purpose of promoting subcontracts and publishing recruit information; Agencias Regionales de Desarrollo Productivo will use Bolsa de PyME as a SME support tool in each region; and each “agencia” will cooperate in promotional activities relating to the system as well as system maintenance.

Data collection will be carried out by the contractor’s staff, who will visit each company, and it is recommended in the data collection contract to ask for cooperation of “Agencias” in the respective regions.

As in the case of system development, the data collection work will be jointly conducted by the study team and SSPyMEyDR.

Fig.6.2 presents an organization for implementation of Model Project 2 on the basis of two contracts



Source: JICA Study Team

Fig. 6.2 Implementation Organization for Configuration of Bolsa de PyME

### 6.2.3 Amendment of the Sample Company Data Collection Contract

The contractor started activities pursuant to the data collection contract. Note that the contractor assigned the data collection work in Rosario to ADERR by concluding an assignment contract, while the contractor’s staff collected data from other areas.

After the lapse of four months, however, the data collection rate fell way below the target level and it became apparent that it was not possible to collect the rest of data within the contract period. It was mainly caused by the inability of the contractor’s enumerators and “agencia’s” staff to perform their work properly and efficiently, while it was difficult to promote an understanding of companies on an active database over the Internet – largely different from the existing databases – prior to the publication of the system.

The contract was extended for three months under the condition that enumerators would be increased and the staff training system would be modified. At the same time, it was decided to expand the scope of data collection to small- and medium-sized manufacturers in sectors other than the original three (automotive, agricultural machinery, and food processing equipment parts), also without geographical limitation.

Meanwhile, the study team conducted its own data collection activities as follows.

- 1) Data collection from beneficiary companies of Model Project 1 and those that received simplified corporate diagnosis, in cooperation of INTI that is the counterpart of the model project
- 2) The hiring of enumerators for corporate visit, data collection and input
- 3) Promotion of Bolsa de PyME at the presentation seminar on the results of Model Project 1, and invitation of companies that attended at the seminar to register with the database
- 4) Request for cooperation to the following trade associations by visiting them directly; as a result, they recognized the role of Bolsa de PyME and agreed to request member companies to provide data.

Asociación de Fábricas Argentinas de Componentes - AFAC

Asociación de Industriales Metalúrgicos de la República Argentina - ADIMRA

Asociación de Industriales Metalúrgicos de Rosario – AIM

Cámara de Industriales Metalúrgicos y de Componentes de Córdoba

#### **6.2.4 Public Seminar on Bolsa de PyME**

As a result of data collection conducted in method described in 6.2.3, data on 263 companies were collected and registered on the system, although the original target was not met. SSPyMEyDR formally inaugurated and launched the system on March 2, 2006 in the closing seminar of the Study in Buenos Aires. A link will be established to allow users to access to Bolsa de PyME from SSPyMEyDR's Web site shortly.

The model project plan described in Chapter 5 envisaged that, after publication of the system over the Internet, the study team and SSPyMEyDR would jointly conduct promotional activities on Bolsa de PyME as part of the model project. Also, it was assumed that data on access to the system after promotion was included in evaluation of the model project. However, as collection of sample company data took longer than expected, the model project had to end when Bolsa de PyME was formally inaugurated and launched .

Promotional activity for wider use of Bolsa de PyME as well as system maintenance are proposed as action programs in Chapter 10.

## Chapter 7

# Benchmarking of Non-financial SME Support Schemes



## **Chapter 7 Benchmarking of Non-financial SME Support Schemes**

SME support generally consists of two elements: 1) financial support covering the funding of equipment purchase; and 2) non-financial support relating to technology and market information. The Study primarily deals with the latter.

Needless to say, each country has its unique industrial structure as well as economic structure. Each country sets its own industrial policy according to its history and other characteristics, together with local conditions and limitations. Yet, the manufacturing industry, which is the subject of the Study, is facing the global issue of establishing international competitiveness in the waves of market opening that exposes all products to fierce competition in both export and domestic markets. Under these circumstances, it is imperative for government policymakers and organizations in any country to implement a support scheme for small- and medium-sized manufacturers to study technical support programs, schemes and results in other countries and select and adopt those suitable for the country with necessary modifications to reflect local conditions.

The benchmarking study for formulation of the action plan starts with government policies and schemes relating to non-financial, technical support for SMEs in the manufacturing sector in Japan. In essence, the Japanese scheme is a primary example that central and local governments assume a leading role in SME support. The Japanese case study is concluded with a selective SME support policy for the machine parts sector that is the subject of the model project.

Then, the benchmarking study moves to cases in Italy and Spain where favorable results are produced under a government/private joint support scheme led by the local private sector.

### **7.1 Non-financial SME Support Scheme in Japan**

For Japan, a small but heavily populated country (its land area is 14% of Argentina and population 3.4 times) with scarce natural resources, the manufacturing industry forms the foundation of its economy and industry. This is evident from the prominent position of the manufacturing sector in the Japanese economy. For instance, machinery and machine parts accounted for 78% of the country's exports in 2002, compared to 33% for Argentina (2001).

### **7.1.1 Definition of SMEs**

Definition of SMEs often becomes critical as it determines eligibility of a company for low-interest loans and other SME support programs. Official definitions in Japan and Argentina are identical in the number of employees while using different financial criteria. In Japan, working capital is used instead of sales because the latter is subject to business cycles and other economic conditions.

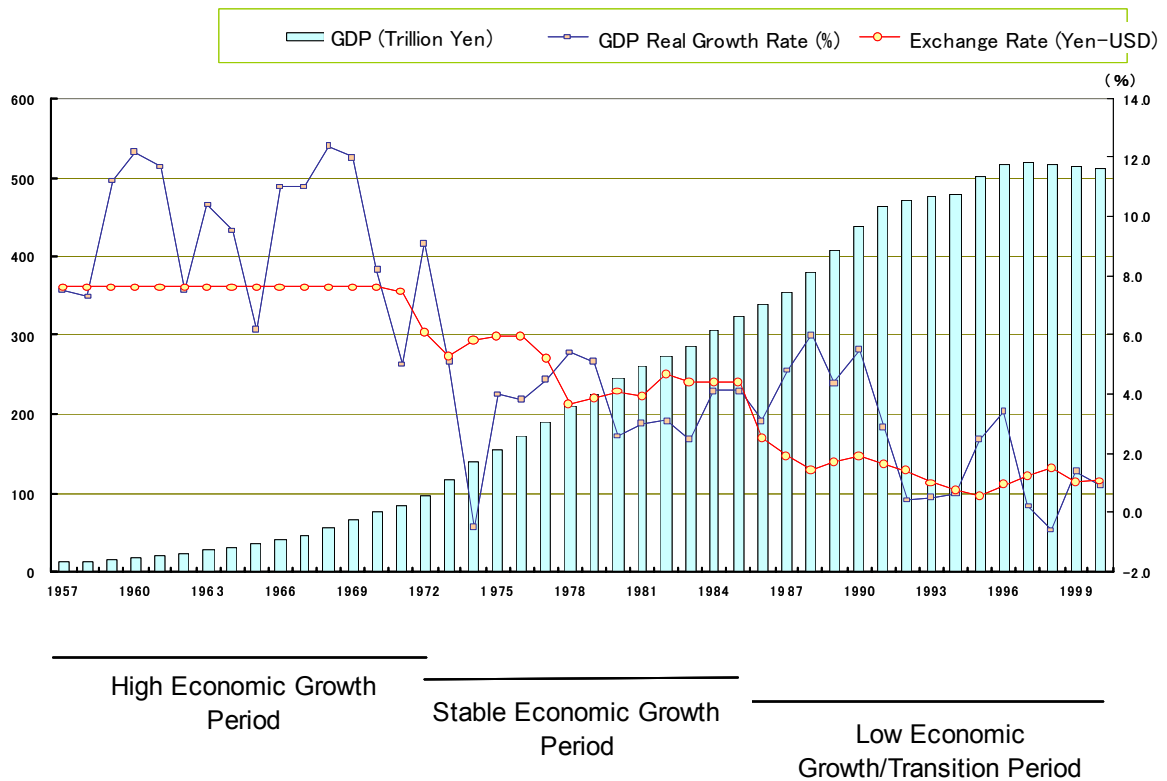
There is no significant difference in major characteristics of SMEs between the two countries, such as composition of large enterprises and SMEs in the numbers of enterprises and employees, while SMEs in Japan mainly supply parts to local assembly manufacturers that form the top layer of the pyramid structure, making a sharp contrast to those in Argentina. This difference is important when one thinks about promotion of SMEs that operate in the pyramid structure.

### **7.1.2 Economic Development in Japan and Basic SME Promotion Law**

Fig.7.1 summarizes post-war recovery of the Japanese economy in terms of yen-based GDP, which roughly represents recovery and development phases that the country has undergone. Essentially, the impressive recovery and development process has been enabled by the sound business environment that was a fruit of relatively stable political conditions (during the same period, Argentina went through significant political changes), which allowed companies to formulate and implement long-term policies and strategies<sup>1</sup>.

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<sup>1</sup> The World Bank's "East Asian Miracle" published in 1993 points out that "stabilization of national economic policy is the major factor for growth."



Source: JICA Study Team

Fig. 7.1 Economic Growth of Japan

Many of Japanese multinationals that are active in the international market have started as family-operated, back street workshops and have grown steadily from small enterprises to midsize and large enterprises throughout the post-war recovery period. Today, companies managed by founders or their families account for over 90% of SMEs in Japan. Also, it is noteworthy that 43% of large enterprises in Japan are owner managed.

While many countries are dominated by microenterprises and small enterprises with a small number of medium-sized enterprises, let alone a handful of large enterprises, Japan is one of a few countries that have a relatively large number of medium-sized enterprises in the manufacturing sector. This is partially attributable to a stable political system that allows sustainable development of companies based on long-term strategy, together with an effective support system. As a large number of SMEs in Argentina are family operated over several generations, policymakers are expected to provide an environment to enable SMEs to make successful transformation to modern companies with international competitiveness.

During the post-war recovery period, Japan has chosen an industrial development strategy focusing on promotion of selected subsectors that have potential to become leading industries.

The textile industry was one of them and established its prominent position for a certain period, and so were iron and steel, shipbuilding, and chemical. The machinery industry was chosen as a priority sector in 1956 under the Machinery Industry Promotion Law, which was in effect until 1985, with some amendments (expanding the scope to the electrical equipment industry). Meanwhile, the Basic SME Promotion Law was enacted as the legal foundation of SME policy.

### **7.1.3 Basic SME Promotion Law**

In Japan where the manufacturing sector is considered to be the country's basic industry, importance of SME promotion to support the key role of supporting industries for assembly manufacturers has been recognized and taken into account in the country's industrial policy since an early stage. The fact that development of SMEs leads to industrial development on a national scale, together with job creation and eradication of poverty, is well understood by many countries and their national development plans address the need for SME promotion. Nevertheless, not many countries have a SME promotion law that defines the positioning of SMEs in the national economy and that declares the needs for reinforcing their strengths and overcoming their weaknesses through long-term national efforts. Japan enacted the Basic SME Promotion Law in 1963, which was later than the counterpart law in the United States but much earlier than that in Europe.

The Basic SME Promotion Law defines SMEs as a key player in Japanese industry and at the same time as a vulnerable sector that operates in a dual structure dominated by large enterprises and requires government protection. The law emphasizes that SMEs play a critical role in job creation and government's active intervention is indispensable in providing a safety net for employment. Based on the law and its intent, a number of financial and non-financial policies have been implemented and a number of government agencies and organizations responsible for SME support, accompanied by actual support programs, have been created and put into place.

After the post-war recovery period and the enactment of the Basic SME Promotion Law, the Japanese economy has enjoyed strong growth, which is partially attributable to the law and accompanying support programs, at least in the areas of "correction of inequality" and "productivity improvement."

### **7.1.4 Amendment of Basic SME Promotion Law**

As the manufacturing sector changed its nature and characteristics over times, the basic concept of SMEs and their support also changed to necessitate a major amendment to the law, which

took place in 1999.

Major changes in the business environment surrounding SMEs, including their characteristics, are summarized as follows.

- Changes in the business environment
  - Characteristic shift of manufacturing industries from mass production to flexible production (small lot, large variety)
  - Progress of globalization and increased emphasis on local economy
  - Pervasiveness of IT and emergency of the information industry
  - Decline in the number of subcontracting companies
- Diversification of SMEs and their characteristics, including those highly competitive in a niche market and those capable of planning and proposing new products and markets

The amended Basic SME Promotion Law is thought to have an intention to follow the above environmental changes. Most importantly, compared to the old law that viewed SMEs as a vulnerable sector in the dual economic structure and requiring protection, the amended law assumes an effective use of a market mechanism and self-responsibility of individual companies and proposes the following policy objectives. It positions SMEs as a key player in the industrial concentration model, who plays an active role in the national economy.

- Policy objectives under the new law
  - Nurturing and development of SMEs that have diverse capability, vitality, and the spirit of independence
  - Government intervention should have the following objectives: 1) to develop a level playing field; 2) to support self-help efforts; and 3) to provide an effective safety net.

As for division of responsibilities between central and local governments, delegation of power to local governments is emphasized to reflect close association of SMEs with local community and industrial concentration in specified areas.

### **7.1.5 Characteristics of Non-financial SME Support Scheme in Japan**

The technical support scheme for small- and medium-sized manufacturers in Japan has the following three characteristics.

### **(1) Importance of government's role**

Industrial policy in Japan has undergone some failures due to excessive intervention and is recently revolving around the key concepts that are being internationally accepted, namely "small government," "decentralization of power" and "private initiative." It should be noted, however, that the government's industrial policy, together with various support mechanisms, enabled manufacturing industries to make an excellent take-off for remarkable development and prosperity, and that the Basic SME Promotion Law was amended after small- and medium-sized manufacturers successfully took off in the international market.

Today, the Japanese government is striving to privatize state enterprises that create substantial financial burdens due to inefficient operation. At the same time, it continues to play a certain role in implementation of SME support programs under the new law, in addition to the planning of support policy. While this partly reflects the Japanese culture that prefers public initiative and privatization, instead of pure private initiative, it also indicates that national consensus has been developed to consider basic education and training of human resources required by industry to be as essential as school education which is indisputably government's job in any country.

### **(2) Involvement of public organizations in dissemination of soft technology in addition to production technology and skills**

Non-financial SME support includes a wide range of technical support covering three areas, i.e., production technology (hard technology), soft technology including business/production management, and production skills such as machine operation and welding. Provision of industry and market information may be added to the three fields.

As for the three technical fields, importance of soft technology has been realized in Japan since early times and is considered as important as hardware technology and skills. In fact, the central government took leadership in disseminating soft technology through public organizations and developed a necessary support system in cooperation of the private sector. An organization to spearhead such support - Japan Productivity Centre - was established in 1955 after extensive research and study on advanced soft technology in other countries by sending a number of joint missions representing related government agencies and large corporations.

### **(3) Upgrading of technological capability and synergetic effect of the national**

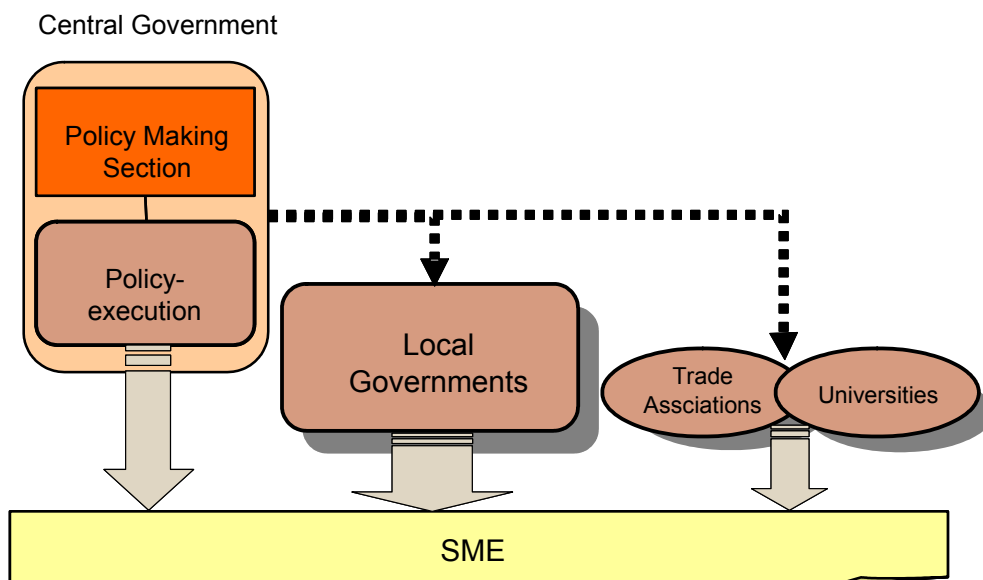
## certification system

The third characteristic is the presence of the national certification system in the fields of hard technology, soft technology, and production skills that are essential for the manufacturing industry. In particular, the certification system for hard and soft technologies creates professional qualification based on field experience and knowledge, in addition to engineering and other related degrees, thereby not only providing incentive for individual workers, but contributing greatly to the improvement and dissemination of technological capability in the entire country.

### 7.1.6 Three-tier SME Support

Fig.7.2 indicates that Japan has a three-tier SME support mechanism consisting of a nationwide support network led by the central government, a local network led by local government focusing on local needs, and individual projects initiated and/or implemented by private enterprises, trade associations, and universities, which target a specific theme or sector.

One of major characteristics of SME support in Japan is the central government's continued role in implementation of SME support and human resource development programs through responsible offices and organizations, despite the recent trend to rely on the market mechanism.



Source: JICA Study Team

Fig. 7.2 Three-tier SME Support

In the following sections, support schemes in the fields of hard and soft technologies are outlined.

Note that, as for production skills, detailed discussion is omitted here. Essentially, there are organizations responsible for skills education and training under the Ministry of Labor, which operate training institutes throughout the country. In addition, local governments have training institutes that offer programs to meet the needs of local industries.

### **7.1.7 Support in the Area of Hard Technology**

In relation to hard technology, central and local governments and private organizations conduct the following activities.

- Central government
  - Operation and management of national testing and research organizations covering basic government service (metrics) and demand-side policy agenda (energy, natural resource, etc.)
  - National certification system of professional engineers
- Local governments
  - Operation and management of public testing and research organizations for promotion and dissemination of technology to local industries
- Private organizations
  - Industry-academia projects

#### **(1) Public testing and research organizations**

There are technical support organizations under supervision of local government, which mission is to promote local industries. They provide a variety of technical support services for local SMEs, including consultation, guidance, training, inspection and analysis, and provision of technical information.

Today, rapid technological advancement made by the private sector prompts significant changes in the role of public technical support organizations. Previously, they assumed a leadership role in technological development in a specific industry, but they are mainly engaged in joint research projects with the private sector and provision of information service. Accordingly, they deal with appropriate technology that is widely demanded by local industries, rather than advanced technology that is the realm of fierce competition in the private sector.



At present, there are approximately 170 technical support centers throughout the country, each of which has an average of 40 employees. 40% of the centers are specialized in metalworking technology. This means each of 47 prefectures in Japan (equivalent to provinces in Argentina, with each prefecture having land area one tenth or less that of a typical province and population that is twice as much as the province) has three to four technical support organizations. They are operated under control of local government but receive subsidy from the central government for operation and maintenance of facilities and equipment.

## **(2) Professional engineer**

The professional engineer represents the most reputable and respected certification in the area of industrial technology and has history of 45 years. The certification is issued to persons who have passed a state examination. To be qualified for the examination, however, it takes at least seven years of relevant work experience for college graduates.

The professional engineer is certified for 21 categories, such as machinery, electrical and electronics, chemical engineering, metallurgy, construction, and information. The pass rate for the examination is around 15%. At present, approximately 40,000 professional engineers are registered.

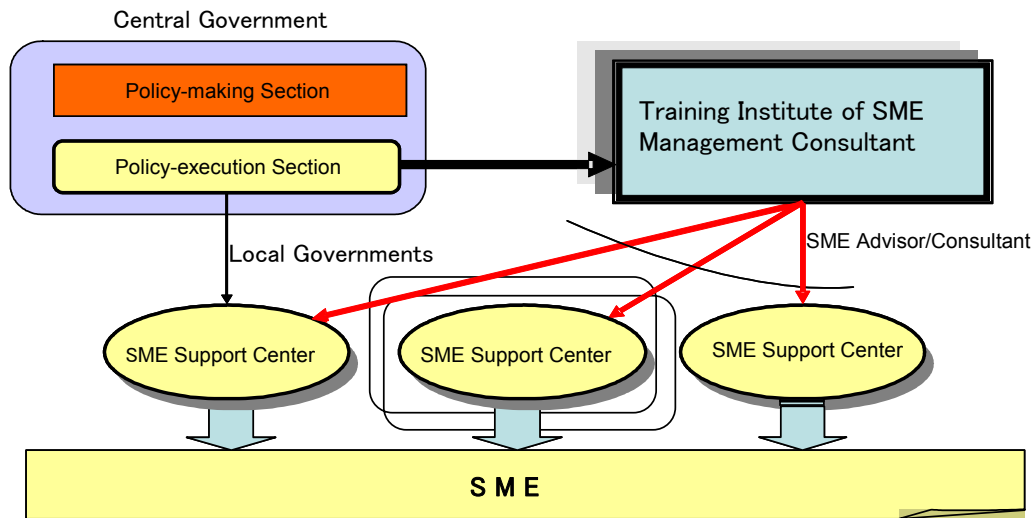
It is often the case that engineers working for large corporations obtain certification, and after retirement, they work as consulting engineers for SMEs. In this sense, they take part in technology transfer from large enterprises to SMEs.

### **7.1.8 Support in the Area of Soft Technology**

As mentioned earlier, Japan has recognized importance of soft technology relatively early, together with hard technology and production skills, and as a result, a public support system to promote dissemination of soft technology is well developed. The government-led system is now contributing greatly to dissemination of soft technology to SMEs, as well as technical assistance by large enterprises in part of supply contract and activities of the Productivity Centre. Fig.7.3 illustrates an organizational setup of the government-led system to promote soft technology.

The Small and Medium Enterprises Agency, under the Ministry of Economy and Industry, is responsible for planning SME promotion policies and supervises the Organization for Small and

Medium Enterprises and Regional Innovation, Japan (SMRJ) that implements public support programs.



Source: JICA Study Team

Fig. 7.3 Government-led System to Promote Soft Technology

Technical support including dissemination of soft technology is provided by SME support centers that are located throughout the country and are classified into three types in terms of ownership, namely those operated by the central government, those jointly operated by local government and the private sector, and those operated by trade associations or other private organizations.

### (1) Training Institute of SME Management Consultant

The institute was established in 1962 for the purpose of training extension officers of local government-operated SME support centers and has been operated for 40 years. The Organization for Small and Medium Enterprises and Regional Innovation, Japan (SMRJ) is operating nine institutes with accommodations throughout the country. Thus, the Japanese government produces SME support staff at various support centers.

The institute also offers a one-year training course for SME management consultant, which is certified by the Ministry of Economy and Industry and is specialized in consultation service concerning soft technology. A graduate of the training course is automatically certified as SME management consultant.<sup>2</sup>

<sup>2</sup> Tokyo Institute offers this course.

At present, the institute is mainly attended by: 1) persons who intend to become extension officers at SME support centers; and 2) persons who take a certification test for SME management consultant. At the same time, a wide range of short-term training programs that cover various subjects are open to SME managers and field supervisors and attract a large number of attendants.

The institute plays an important role in dissemination of soft technology to manufacturers in Japan, especially SMEs, and serves as a principal player in the country's SME technical support scheme.

## **(2) SME management consultant**

The SME management consultant is nationally certified with 50-year history and persons who have passed an official examination or have completed a one-year course at the institute receive certification. The pass rate for the examination is very low at around 3%, while the training course is very tough for many attendants who have their own work.

Originally, the SME management consultant was intended for extension officers of public SME support centers to perform corporate diagnosis and guidance service. Today, it is the most authoritative profession to provide consultation service for SMEs.

The results of questionnaire surveys conducted by the study team of SMEs in Argentina indicate that many enterprises want to receive guidance from a management consultant on the shop floor, rather than lecture-based training, which is the request made by SMEs in many countries. They also complain about presence of consultants having varied service qualities.

In Japan, national certification ensures that all certified consultants have certain levels of capability and experience, while establishing objective criteria for SMEs to evaluate quality of a specific consultant and encouraging a wider use of SME management consultant. At the same time, national certification requires the certified consultant to comply with specific rules of conduct, including non-disclosure obligation, so that SMEs need not to worry about disclosure of their confidential information to a third party in the course of consultation service.

It should be noted, however, that consulting service for SMEs in Japan is not limited to the certified consultant, unless required so in relation to the application for loans from a government or public organization.

### **(3) SME support centers**

The support centers provide one-stop service to solve a variety of problems faced by SMEs. As mentioned earlier, there are three types of support centers, namely those operated by the central government, those jointly operated by local government and the private sector, and those operated by trade associations or other private organizations. At present, there are eight centers of the first type, 59 of the second type, and 259 of the third type.

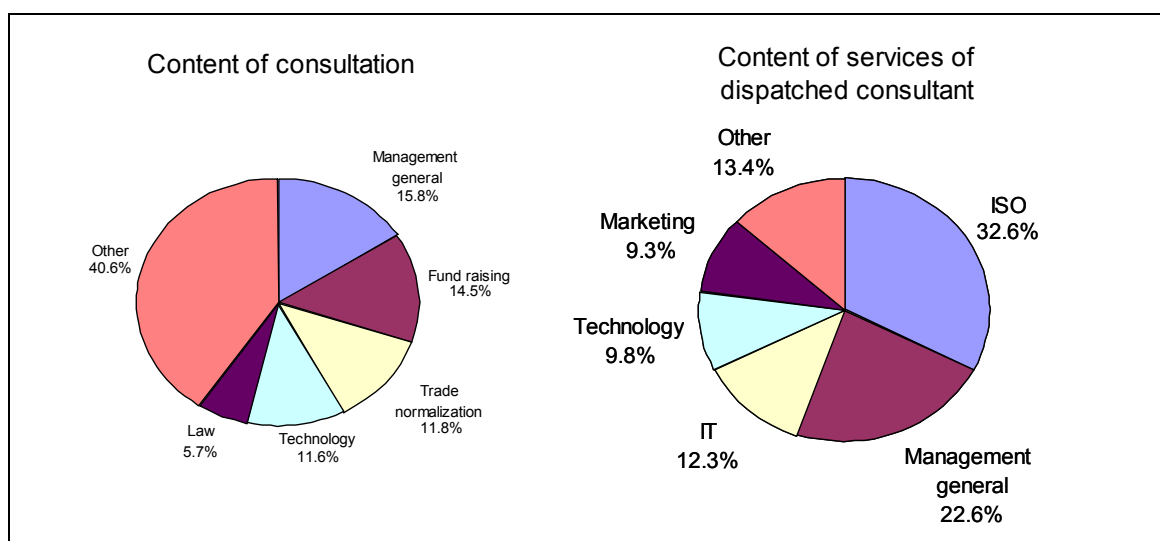
At each support center, extension officers who have received training at the Training Institute of SME Management Consultant answer questions from SMEs and provide guidance. The center sends, upon request, a qualified consultant selected from a pool of registered consultants to SMEs for field guidance. The center's advantages lie in a variety of financial and non-financial public support tools and linkage to consultants and experts including those qualified as SME consultant.

Table 7.1 presents the approximate number of requests brought to all the three types of support centers per year and the number of consultants sent by the centers. Fig.7.4 summarizes requests for consultation brought to support centers operated by local governments as well as content of service provided by consultants sent to SME clients. It suggests a significant role played by the support centers and the high level of reliance by SMEs on the centers.

Table 7.1 Activities of SME Support Centers

	Centers by Central Government	Centers by Local Governments	Centers by Trade Associations
No. of contacts for advisory services	6,000 per year	85,000 per year	50,000 per year
No. of dispatches of consultants	2,500 per year	15,000 per year	4,500 per year

Source: SME WEB



Source: SME WEB

Fig. 7.4 Activities of SME Support Centers by Local Governments

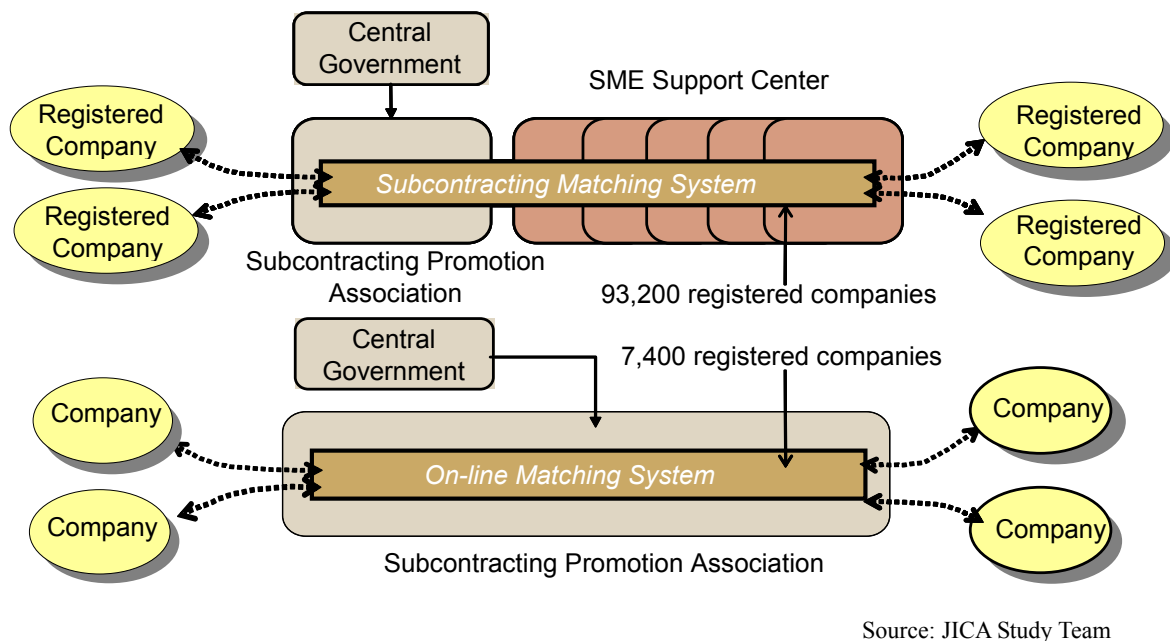
#### (4) Subcontracting promotion scheme

This scheme is underway in Japan for the purpose of promoting subcontracts between SMEs and large manufacturers (parts procurement or contract machining or manufacturing) as well as business matchmaking between individual companies. An ad-hoc association is set up to promote subcontracts under government subsidy and is currently operating two schemes. See Fig. 7.5.

The first scheme is operated in cooperation of local government-led support centers and serves as their important support tool. Companies are registered with the association upon application and examination, and matchmaking service is offered for the database of registered companies, which is in custody of the association as confidential. At present, 93,200

companies are registered and receive service under the scheme.

The second scheme is based on a similar database of registered companies, which is published over the Internet and is freely accessible. It is relatively new and registers approximately 7,400 companies. In the future, the association will use the database in place of the above closed database.



Source: JICA Study Team

Fig. 7.5 Subcontracting Support Scheme

## 7.2 Support for the Machine Parts Industry in Japan

The manufacturing industry has been and is the driving force of the Japanese economy, and in particular, the machine parts subsector forms an integral part of the supplier base to support manufacturers of a wide variety of products and is the exemplar and epitome of Japanese industry with meticulous and ingenious workmanship. While the Japanese machine and machine parts industries have been growing under incessant efforts of numerous manufacturers and workers, they also owe much to a wide variety of support by the Japanese government.

As discussed in 7.1, a variety of non-financial, technical support is provided for small- and medium-sized manufacturers. This section describes major programs that have been implemented for promotion of the machine parts subsector. It should be noted, however, that, given the progress of market liberalization, promotion programs and incentives for a specific sector – which have been extensively carried out in Japan – are no longer internationally

acceptable in many cases.

### **7.2.1 Sector-focused Support Program**

As explained in 7.1.2, the Japanese government designates a specific industry or sector and provides financial assistance for SMEs that belong to the sector for the purpose of promoting accumulation of capital and technology to narrow a gap between SMEs and large corporations and modernizing parts suppliers and their operation.

The machine industry was designated for the sector-based support program in 1956. At that time, the industry was recognized as a major pillar of the national economy but its productivity was very low due to the inability of small- and medium-sized suppliers – with their aging equipment - to meet demand for mass production of parts by large assembly manufacturers.

The program targeted the following three subsectors. A new law was enacted to authorize program implementation, originally valid for five year, and was continued up to 1985 with series of amendments. Over the program period, the value of shipments (nominal) by the machine parts industry grew around twenty times.

- Basic machinery subsector (machine tools, foundry and forging equipment, etc.)
- Standard parts subsector (bearings, gears, etc.)
- Spare parts for export machinery (sawing machines, automobiles, etc.)

Under the program, rationalization plans were jointly made by large enterprises and SMEs in each subsector and the government provided part of funds required for implementation. Thus, this program is designed for the sector having a pyramid structure headed by assembly manufacturers and its primary purpose is to improve the levels of technology of second- and their-tier suppliers.

### **7.2.2 Support Program for Selected Companies**

This program was implemented in 1963 and targeted SMEs that were exposed to competition from newly industrializing countries in a transition period to economic liberalization. The government designated target industries and formulated modernization plans for each industry as a whole. Then it provided financial support for selected SMEs that were willing to promote modernization within the above framework. The program is characterized by its focus on individual companies, rather than the entire SME sector.

The target industries were selected by taking into account the relative importance of SMEs in each industry and the program's possible effectiveness in terms of modernization of the industrial structure and improvement of international competitiveness. Key targets and approaches to achieve them that were set forth in the modernization plans are summarized as follows.

#### Modernization targets

- Product performance, quality, cost, optimal production volume, production method, export targets, etc.

#### Approaches to achieve the modernization targets

- Equipment modernization, rationalization of management, technology and skills, promotion of joint projects and businesses, grouping of factories and related establishments, development of level playing fields, improvement of subcontract and other business relationships, market exploration, etc.

### **7.2.3 Program to Promote Organization of SMEs**

The program provides guided policy financing for modernization projects initiated by cooperatives organized under the SME Cooperative Law, such as the grouping of factories and the provision of communal facilities. It consists of project loans and project evaluation and guidance services by qualified consultants from the planning to the operation stages. One example is the grouping of factories, for which several projects were planned and implemented, including the grouping of machining shops serving the same industry (casting, presswork, etc.) and complementary collaboration of diverse shops and suppliers to develop and manufacture automotive parts in order to maintain an optimum operation level and improve productivity.

SMEs participating in the program continued their business activities, while expecting cost reduction in relation to technology development and production activity by joining hands and sharing resources. During the program period, 458 industrial estates or 11,463 communal facilities were built and completed throughout the country.

### **7.2.4 Credit Insurance**

This was designed to encourage renewal or purchase of production equipment by SMEs by means of loan guarantee by public organizations. The comprehensive credit insurance contract is concluded with an equipment supplier or lease company for purchase by installment or loan, or equipment lease, in order to cover one half the purchase price if it becomes default.



### **7.2.5 Promotion of Industry-academia-government Cooperation**

This is promoted to encourage cooperation between local SMEs supported by local government, large enterprises, universities, and public technical support organizations, but not a program authorized under a specific law. To promote complementary collaboration between companies through information sharing and introduction of new technology, various activities are planned and conducted, such as the joint holding of seminars and joint research projects.

While it is not feasible for public technical support organizations to take a lead in technological advancement that is made by industries at an accelerated pace, promotion of industry-academia-government cooperation is becoming their key activity.

### **7.3 SMEs in Italy and Non-financial Support Schemes**

As pointed out earlier, the manufacturing industry in Japan has the pyramid structure led by large assembly manufacturers that consist of the first layer and SME support is largely provided by the government sector. In contrast, the manufacturing sector in Italy is characterized by well-developed networks of highly independent SMEs and geographical concentrations of specific industries. In particular, it is noteworthy that they maintain international competitiveness under a relatively decentralized industrial and economic structure.

#### **7.3.1 SMEs in Italy**

Italy has a higher percentage of SMEs, both in the numbers of enterprises and employees, than that in Japan and major European countries, including Germany, France, and the UK. In particular, the manufacturing industry has a characteristic structure led by SMEs. They lost share in the national economy during the high growth period when large corporations in heavy and chemical industries (including machinery and metal) grew strongly, but they went through the adjustment process that was necessitated by internal factors (rise in labor cost, etc.) as well as external factors (oil crises) and regained strong presence in the entire manufacturing sector. Today, the Italian manufacturing industry maintains international competitiveness in the field of consumer goods, especially high value added products.

Region-based industrial concentration is another distinguished, major characteristic of the manufacturing sector in the country. In particular, SMEs in the same industry or sector are concentrated in the region and a large number of small enterprises form a network to practice

division of labor within the region. Industrial concentration in Italy is said to have various strengths including the following: 1) internal marketing and product development capabilities; and 2) a flexible network of companies having different skills that support the production process in each industrial area and can meet the needs for product development.

Many SMEs are family operated and do not always aspire to frantic business expansion. Rather, they opt to expand business activity by maintaining their core competence and related functions, while providing additional manufacturing functions by means of outsourcing or developing a new value chain network with other companies.

The Central Bureau of Statistics (ISTAT) has selected 199 region-based industrial concentrations on the basis of criteria set by the Ministry of Commerce and Industry and using 1995 data (although they are dominated by traditional, life-related industries). Their percentage composition by type of industry is summarized as follows.

Textile and garment	34.7%
Leather and shoes	27.4%
Furniture	19.6%
Machinery	16.1%
Metal	0.5%
Chemistry	2.0%
Paper and Printing	3.0%
Foods	8.6%
Jewellery, Musical instruments	2.0%

The textile and garment sector that has the highest number of industrial concentrations has a commonly observed structure where “organizer” companies, which are responsible for supplying finished products to the market outside the industrial area and configure a production chain by combining various suppliers, form and practice a networked division of labor with suppliers that are specialized in certain process or parts. This network is not based on a subcontract (manufacturer and captive supplier) relationship. Rather it represents equal relationships between independent companies, each of which has a number of trade partners. Viability and growth of each concentration depends on the ability of the organizer company to establish and maintain product/service differentiation in the market place, rather than price.

Similarly, regional concentrations made by the machinery sector are not of pyramid structure led

by assembly manufacturers, such as automakers and their suppliers, and are largely dominated by manufacturers of machinery with limited applications as finished products. As in the case of the textile and garment sector, concentrations of the machinery industry are composed of organizer companies (assemblers) and a large number of suppliers. Suppliers are divided into three tiers and most of them are operated by former employees of organizer companies. Within each concentration, a tight-knit network of highly specialized companies and most of outsourcing is made to suppliers in the same region.

### **7.3.2 SME Support Policy and System**

As Italy's industrial structure is dominated by SMEs and the country has been implementing a variety of SME policies. The country's industrial policy was led by the Ministry of Commerce and Industry up to the middle of the 1970s. Under the Decentralization Law and the Decree of Delegation that were enacted in 1975, most of power and authority relating to industrial administration has been transferred to provinces under the new concept that the principal responsibility of the central government in the area of industrial policy is to establish conditions to promote fair competition by creating a necessary legal system and framework, and that actual implementation of industrial policy should be left to local governments under partnership with local industries and trade associations. Subsequent results are widely known as evidence to prove effectiveness of industrial policy.

#### **(1) Central government**

Importance of the central government in SME policy remains unchanged after the enactment of the Decentralization Law as it continues to assume responsibility for policymaking. Changes occur in the area of policy implementation because EU funds increase share in providing the financial base for program implementation and conditions of SME support and related programs are increasingly harmonized with those of the EU. For instance, any program to protect a specific industry is prohibited by the EU for obstruction of fair competition. At present, financial support (low-interest loan) forms a major instrument of the government's policy implementation, and with the progress of decentralization, moves are underway to further promote transfer of the central government's power and authority to local governments.

Technical support programs include low-interest loan and subsidy programs to cover research costs including consultation fees relating to product development and improvement of the production process.

However, unlike the Japanese government, the central government in Italy does not play a leading role in non-financial SME support that involves local governments. Also there is no national certification system for professional consultants specialized in hard and soft technologies based on field knowledge and experience, as in the case of Japan.

## **(2) Local government**

As discussed earlier, Italy's manufacturing industry is characterized by regional-based concentration including a well-developed network of SMEs. In particular, initiatives and activities of SMEs play a central role in development of such industrial concentration, while local governments supplement them by providing support programs to meet basic needs including human resource development, information service, and technical support. In fact, most of SME support programs and organizations are deployed at province or city levels, indicating that local governments cooperate with the private sector to develop and maintain the environment to facilitate industrial activities by meeting the needs of local SMEs.

It should be noted, however, that actual support activities vary greatly among regions and mainly consist of collection and provision of information as well as research and study. In addition, trade associations and educational institutions conduct their own activities in each region. Trade associations assume an important role in policy recommendation to reflect request of SMEs and consulting service for member companies.

## **7.4 Non-financial SME Support Scheme in Spain**

As seen in Italy, the manufacturing industry in Spain is dominated by SMEs, while there are a relatively small number of large enterprises. It is recognized that growth of SMEs holds the key to revitalization of the national economy, job creation, and the improvement of standards of living. While region-based industrial concentration seen in Italy is not rampant, the country's SME promotion policy is based on industrial support by local governments to reflect a high level of decentralization, which has progressed partially as a reaction to the previous centralized system.

### **7.4.1 SME Policy Framework**

The country's industrial policy framework is established in the following two plans and SME promotion policy is included in them. Both plans set forth, in addition to policy objectives and

principles, financial and non-financial support programs that are in line with technological promotion policies backed up by the national and EU budgets.

El Plan Nacional de Investigación Científica, Desarrollo e Innovación Tecnológica  
El Programa Marco de Investigación y Desarrollo de la UE

At the central government level, the Ministry of Economy, the Ministry of Industry, Commerce and Tourism, and the Ministry of Science and Technology are engaged in industrial policy including SMEs. Note that all policies relating to technological promotion are under jurisdiction of the MST. In addition, the Ministry of Labor and Social Insurance and the Ministry of Environment are working with technological promotion in their respective fields.

The Coordination Commission (Comisión Coordinadora) is responsible for policy making, budget allocation and implementation monitoring in line with PN. As for implementation of support programs at the central government level, CDTI (Centro para el Desarrollo Tecnológico Industrial) and various support organizations under the MST, and foundations are playing a leading role.

Promotion of local industries is led by municipalities (Comunidad Autónoma), and coordination between municipalities and between the central and local governments is made by General Council of Science and Technology (Consejo General de la Ciencia y la Tecnología), which provides guidance to ensure that support schemes comply with PN, proposes actual schemes and programs, and promotes the sharing of program information owned by municipalities and the central government.

Harmonization with the EU is progressed in the areas of the support system, support programs, and quality and other certification systems.

#### **7.4.2 Major Support Organizations**

##### **(1) Dirección General de Política Tecnológica para la PyME**

This is an organization under the MST and is established in each municipality. It functions as coordinator for activities by local support organizations, both public and private, and universities.

Also, it serves as the integrated consultation desk for SMEs to respond to their problems and provides intermediary service between SMEs and support organizations as well as consultants. Its functions are similar to those of SME support centers in Japan.

## **(2) CDTI**

CDTI is also an organization under the MST and is spearheading technological promotion and technical support in the country. Its mission is to improve levels of technology of companies in Spain. It is established in 17 municipalities. It implements its own technological promotion program under subsidy of the MST, while promoting a number of projects in collaboration with universities, some of which receive financial assistance from the EU.

In addition, CDTI provides financial support for SMEs through project implementation and evaluates feasibility of projects for which SMEs request financial support of the central government.

As for consulting service for individual companies, CDTI hires outside consultants. In Spain, there is no national certification for consultants specialized in soft technology, equivalent to the SME management consultant in Japan.

## **(3) Centros Tecnológicos**

This is a technical support organization operated under municipalities. Compared to CDTI, the center emphasizes promotion of local industries that are specific characteristics. In some regions, several centers specialized in different sectors are operated. The center's functions are similar to those of public testing and research organizations in Japan.

The center's activities include seminars, campaigns to promote technology dissemination, industry and market information service, support program information service. It provides consulting service for individual companies by using outside consultants.

## Chapter 8

# Promotion and Dissemination of Soft Technology in the Manufacturing Industry in Argentina

## **Chapter 8**

### **Promotion and Dissemination of Soft Technology in the Manufacturing Industry in Argentina**

This chapter outlines the current state of promotion of soft technology to small- and medium-sized manufacturers in Argentina.

#### **8.1 INTI-CIME**

##### **8.1.1 CIME**

INTI was established under a new law enacted in 1957 for the purpose of promoting industrial development in the country, especially providing support for SMEs to solve technical problems, and it started activity in 1958. At present, INTI is not very active in the area of soft technology and its promotion, but it initially spearheaded promotional activity by establishing CIME, as described below.

The productivity center in Europe was first established in 1951 and the Japanese center in 1955. In Argentina, the center was established in 1958, jointly by Banco Nacional de Desarrollo and trade associations. Then, under the proposal of the productivity center and the leadership of the Metal Press Industry Association, CIME was established in 1959. (Note that the original name, Centro de Investigaciones del Metal Estampado, was changed later to Centro de Investigación de Métodos y Técnicas para Pequeñas y Medianas Empresas.) Originally, there was the lack of understanding of soft technology and its importance, but the situation changed favorably after CIME staff had returned from training in the Netherlands. Training courses and seminars were widely held and technical support came from Ford Foundation, the OECD, and the UNIDO.

In 1965, the Argentina Productivity Center trained a group of consultants that were specialized in guidance and consulting service for SMEs. The group was later merged with CIME and renamed as AGE (Asesores en Gestión de Empresa). It conducted factory diagnosis, and made recommendations for improvement of productivity and competitiveness on the basis of findings from the diagnosis, and provided support for implementation of recommended actions. Its scope of service included factory layout, job management, production management, and maintenance. Note that the Argentina Productivity Center ceased its operation later and does



not exist.

CIME was very active in the initial stage and expanded its operation to other regions. The first regional center was established in Rosario, which was inaugurated in 1964 as CIME's local center specialized in business management and soft technology. Then in 1974, INTI's regional center, CITSAFE (Centro de Investigaciones Tecnológicas de la Provincia de Santa Fe), was established and incorporated CIME Rosario Center.

### **8.1.2 Rosario**

CIME in Rosario became stagnant for a specific period after it had become part of CITSAFE, and it was reactivated again after AGE consultants had joined. Its activities include corporate diagnosis, guidance in the areas of industrial and soft technologies, and the holding of training programs and seminars. One of the programs was PATI (Programas de Asistencia Técnica Integral para la Formación de Empresarios de la Pequeña y Mediana Industria) held in Pergamino, Reconquista and Rafaela.

A major issue relating to technical guidance for SMEs is the shortage of experts who can provide effective consultation and advice. To improve the situation, PATI was conceived by AGE consultants and its objectives are as follows.

- To improve productivity of SME managers through introduction of soft technology.
- To promote linkage between SMEs to ensure smooth dissemination of soft technology among them.
- To foster SMEs as the key to job creation and regional development.
- To nurture company groups that realize their role in regional development.

PATI was conducted between 1980 and 1986, and approximately 30 companies participated. In addition to PATI, CIME conducted an activity to promote linkage between companies. "Bolsa de Subcontratación", organization to arrange matchmaking between buyers and vendors (subcontractors), was operated on an experimental basis between 1981 and 1982. While "Bolsa de Subcontratación" was conducted partially for the purpose of INTI's promotion, it was intended as a model project for promotion of linkage between local companies. The Bolsa staff visited companies for promotion and approximately 170 companies were registered. However, the program failed to continue or expand due to problems relating to funding and updating of corporate data.

Later, CITSAFE's activities expanded to Santa Fe but dwindled due to major changes in

economic and political conditions as well as the decrease in staff, and it was merged with other organization in 1997 to become CEMROS (Centro Multipropósito Rosario de INTI), with its official name being INTI-Rosario.

With the decline of the manufacturing industry in the country since the late 1990s, CIME's activity subsided and only two original members of AGE remain at INTI.

After 1998, however, CIME has energized again due to the increase in demand for support service relating to ISO 9000 certification and as a result of technical assistance by Japanese experts. It started promotion and dissemination of the Japanese production management system under JICA's assistance and is currently implementing "Programa de Mejora de Productividad en PyMEs".

At present, INTI's SME support relating to soft technology is not very active, but CIME's activities seem to have been inherited by Rosario.

## **8.2 SSPyMEyDR**

While SSPyMEyDR does not have any program to provide direct guidance for SMEs, it operates an incentive program to allow partial tax reduction of training costs and a subsidy program for implementation of projects relating to soft technology.

### **8.2.1 PRE – Programa de Apoyo a la Reestructuración Empresarial**

This is designed to improve competitiveness of SMEs through a variety of services provided by outside experts and is financed by the central government, BID, and individual companies. Subsidy covers up to 50% of consultation fees due to experts. To get the subsidy, application with detailed project description should be approved as PDE (Proyectos de Desarrollo Empresarial).

### **8.2.2 DIRCON**

DIRCON is a directory of experts and consulting firms managed by SSPyMEyDR, which are registered upon application and after the review process that takes into account experience and other factors. To obtain the PDE approval, experts and consulting firms hired by SMEs must be registered with DIRCON. SMEs that intend to implement PDE under PRE's subsidy need

to search the directory for a qualified expert.

### **8.2.3 Agencias de Desarrollo Productivo**

As explained in Chapter 1, this is a nationwide network of “agencies” promoted by SSPyMEyDR to encourage linkage between the central government, local governments, and the private sector. Each “agencia” is a non-profit organization jointly operated by the public and private sectors with mission to revitalize local economies and create employment opportunities through the systematic development of SMEs. Its core functions are to introduce subsidy programs of local governments and SSPyMEyDR and assist applications, while it holds training courses and seminars by hiring outside experts.

### **8.3 Local Government**

In Argentina where decentralization of power is highly progressed, local governments – both provinces and municipalities – initiate and implement SME support programs. Generally, they are similar to PRE implemented by SSPyMEyDR and are designed to grant subsidy to projects requested by individual companies and approved by local government.

### **8.4 Trade Associations**

Trade associations in Argentina are classified into the following three grades.

- First grade: Sector-focused cámara or asociación, of which individual companies are members
- Second grade: Federación that organizes cámaras and asociaciones
- Third grade: UIA (Unión Industrial Argentina)  
CGI (Confederación General de la Industria)

Led by UIA and CGI in the third grade, a large number of national and regional organizations provide a wide range of services for member companies. However, soft technology is mostly taught in non-serial training courses and seminars, while few programs support factory improvement directly by applying soft technology.

Notably, up to the early 1990s when the manufacturing industry came to stagnation, CGI took a lead in dissemination of soft technology in Argentina, together with INTI-CIME mentioned in

## 8.1.

Since the 1980s, CGI has been taking a lead in dissemination of soft technology in Argentina, particularly the TQC move, according to government policy and under assistance of Japan (AOTS), Canada, and Germany. Vigorous activities were conducted, e.g., it published its own journal and sent corporate representatives to Japan for learning the Japanese style production management system, together with seminars being taught by Japanese and other foreign experts. Local experts who had overseas training and experience taught training courses and provided field guidance at factories. Meetings to promote exchange between companies were organized, as well as presentation meetings to create opportunity for member companies to talk about their kaizen experience. At that time, CGI operated Instituto Tecnológico and planned and implemented a variety of events for education and dissemination of technology. It also conducted jointly projects with INTI-CIME.

Then, the manufacturing industry in Argentina went to stagnation and decline due to frequent changes in industry policy caused by series of political changes and the increase in imports during the late 1990s. Meanwhile, INTI-CIME managed to continue activities in Rosario, which are coming back gradually. In contrast, CGI discontinued its activity and Instituto Tecnológico remains idling.

## **8.5 Support Programs by Large Enterprises**

Soft technology is generally derived from extensive production experience on the shop floor, including trials and errors. Many of well-known production management tools were originally conceived, tested and verified by individual companies. Then they were adopted by other companies and have become industrial standards. More precisely, large enterprises transferred production management techniques to SMEs in the form of technical guidance for subcontractors, which were refined and adapted to a wider range of applications, thereby allowing them to be disseminated to other industry sectors.

Assembly manufacturers generally have technical guidance programs for subcontractors in order to establish a reliable supplier base around their assembly plant. The guidance programs are generally related to production management at factory, such as quality control, delivery schedule control, and inventory management. In particular, technical guidance programs for local subcontractors conducted by foreign-affiliated assembly manufacturers have been playing a significant role in introduction and dissemination of new soft technology to various countries.

Examples of technical guidance programs for subcontractors by large enterprises in Argentina are those by Renault, French automaker, and Techin, local manufacturer.

### **8.5.1 Renault**

In 1990, Renault established “Instituto de Formación en Calidad Total” in Córdoba for the purpose of disseminating TQC techniques. Originally, the program covered its subcontractors. Later, it was made available to other local companies that showed interest. “Instituto de Formacion en Calidad Total” continued the training program and was received well by participants, but its activity discontinued when the national economy slumped and has not been resumed to this date.

### **8.5.2 Techin**

The company operates a technical guidance program, called “Plan ProPymes”, which was started in 2002. It set the goal of tripling sales through import substitution and export promotion, which has been mostly accomplished. The program was participated by approximately 250 SMEs, including Techin’s customers in various sectors (such as agricultural machinery, automotive parts, and household goods) and subcontractors.

The core element of support under “Plan ProPymes” is to provide loans for capital investment, mostly used for purchase of new equipment by SMEs that participate in the program. Furthermore, factory diagnosis and field guidance have been actively conducted, jointly with universities, to support quality control and kaizen activities of participating companies, which also conduct internal employee training, under INTI’s cooperation in some cases.

## **8.6 Universities**

Many universities offer seminars on quality control techniques and ISO certification for companies, but a few provide field guidance on the shop floor, as summarized below. Actual results of these guidance programs are not known.

As discussed above, promotion of soft technology – essential for the manufacturing industry in Argentina – has a relatively long history. In particular, a number of programs and projects to disseminate soft technology were carried out in the 1970s and 1980s under the leadership of

INTI-CIME and CGI, but activities have faded and remain stagnant.

At present, support programs are limited to the subsidy program for technical support by personal consultants and seminars conducted by universities, whereas there is no national organization that provides field guidance using soft technology in a systematic way, which is most needed by SMEs.

## Chapter 9

### Basis of Action Program

## Chapter 9 Basis of Action Program

### 9.1 Positioning of SMEs in the National Economy

In developing and proposing an action program for revitalization of small- and medium-sized manufacturers, the desirable role and positioning of SMEs in the national economy is analyzed and summarized below.

- 1) They play an affirmative role in sustaining the national economy, which cannot be expected from large enterprises. Dynamic activities of SMEs that hold a dominant share in the industry are the foundation to energize the national economy.
- 2) SMEs also play a significant role in terms of job creation. The bulk of employment opportunities are created by startup and growth of SMEs and lead to the stabilization of the people's livelihood and poverty reduction.
- 3) SMEs can be highly flexible and responsive to the changes in the market trends. In this connection, SMEs and a flexible network formed by SMEs have a clear advantage over large enterprises.
- 4) SMEs are closely associated with a local area where they operate, and as a result, they inherently form the core element of regional economy and industrial concentration. Revitalizing SMEs therefore serves as a driving force for the local economy and contributes greatly to the local community.

### 9.2 Small- and Medium-sized Manufacturers in Argentina

Generally, small- and medium-sized manufacturers are classified into subcontractor-type parts suppliers, independent parts suppliers, and SMEs forming local industries.

#### (1) Subcontractor-type parts suppliers

Subcontractor-type parts suppliers constitute the basis of the industry of pyramidal structure topped by assemblers (often transnational).

Traditionally, the relationship between the assembly manufacturer and the subcontractor is based on a long-term contract with fixed terms and conditions. Under this arrangement, the



assembler provides technical assistance for the subcontractor with the same care as practiced in the internal production line, for the purpose of improving quality of finished products, while demanding the subcontractor to rationalize its production line and process. A typical example is seen in the automotive parts industry that strives to improve hard and soft technologies so as to align their operation with the final assembly line while meeting demand for mass production of standardized parts.

Basically, the traditional subcontract relationship still continues in many assembly-type industries, but its stability is increasingly threatened as assembly manufacturers follow the global sourcing trend under the current waves of market opening and globalization. This means, assembly manufacturers opt to purchase parts from any source that meets their requirements, rather than relying on the fixed subcontract relationship, and at the same time, they demand a closer cooperation from selected suppliers, which are expected to participate in the product development process.

## **(2) Independent parts suppliers**

There are parts suppliers that do not have a fixed contractual relationship with the same assembly manufacturer. They are classified into two types, namely those that are truly independent on the strength of proprietary technology, and those that cannot establish a long-term relationship with assemblers.

In Japan, the first group is composed of SMEs that are specialized in value added products, such as prototyping, and those that have a dominant share in a specific market with proprietary technology. This group has been growing in number and presence within the Japanese manufacturing sector.

In Argentina, the first group represents a minority share of independent parts suppliers and the majority belongs to the second group. Typical examples are second- and third-tier suppliers that cannot establish a stable contractual relationship with customers, those supplying the REM (replacement equipment manufacturing) market, rather than the OEM market, and small- and medium-sized manufacturers of machine parts for consumer goods.

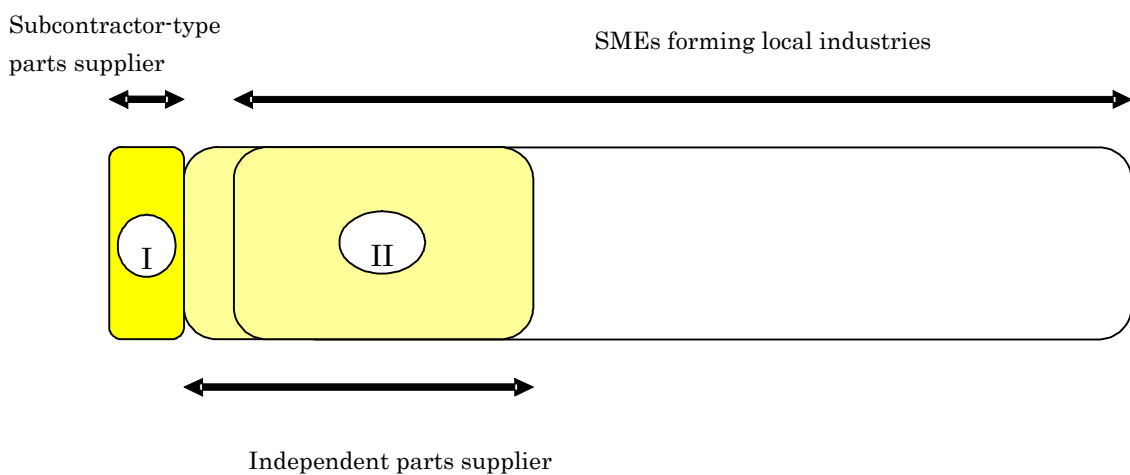
## **(3) Local SMEs forming local industries**

Belonged to this category are SMEs that constitute a local industry specialized in manufacture

of specific consumer goods, such as garment, furniture, shoes, and consumer equipment.

Notably, local industries that have traditionally been serving the domestic market can no longer remain shielded from the international market where the free market system becomes pervasive, and as a result, they are required to compete with the waves of imports. At the same time, the new market environment creates export opportunities for competitive products.

Fig. 9.1 shows a conceptual view of the composition of subcontractor-type parts suppliers, independent parts suppliers, and SMEs forming local industries.



Source : JICA Study Team

Fig. 9.1 Small- and Medium-sized Manufacturers in Argentina

Subcontractor-type parts suppliers having a long-term contractual relationship with assembly manufacturers represent a very small segment (shown as “I”) in the figure. Within the group of independent parts suppliers, SMEs serving the domestic and export REM markets are partly overlapped with SMEs forming local industries (shown as “II”). Most of parts suppliers continue to operate under unstable relationship with customers or strive to survive by expanding into the OEM and REM markets.

SME promotion policy should primarily cover these independent parts suppliers as well as SMEs forming local industries.

## **9.3 SME Support Scheme**

### **9.3.1 Japan and Italy**

Today, many countries emphasize the interindustrial (neutral) policy, rather than the selective policy that promotes a specific sector. This reflects the fact that the selective policy is no longer acceptable internationally because it inherently impedes free and fair competition. Furthermore, it has become apparent that it is very difficult for most countries to satisfy the above conditions for successful implementation of the selective policy. The action program proposed by the study team is therefore founded upon the conceptual framework of the interindustrial (neutral) policy.

Compared to the selective policy, the interindustrial policy has a wider target range and generally aims to create environmental conditions for local industries to enter the international market and improve competitiveness. It covers general themes, such as SME promotion, export promotion, science and technology promotion, and human resource development. In these areas, government can still play a significant role.

In Chapter 7, SME policies and schemes in Japan, Italy and Spain were reviewed and analyzed. In particular, Japan and Italy share the history of nurturing SMEs as part of industrial policy under the leadership of the central government during the post-war reconstruction period. Today, however, there are large differences in SME promotion policies of the three countries.

Japan, since its economic reconstruction period, has been fostering SMEs under the strong leadership of the central government with a view to promoting the rebuilding of the national economy by using the manufacturing industry as the driving force, especially the machinery sector. Its industrial policy was of selective type to use large assembly manufacturers in the automotive and electrical/electronics industries as a main engine for overall industrial development. As a result, the industrial structure consisting of large assembly manufacturers and captive suppliers (subcontractors), including local industries, was established and served as a major impetus for strong growth that was unprecedented in other countries. This highly centralized industrial system enabled highly efficient mass production by creating economies of scale. The centralized approach was also taken for SME support. The central government initiated a variety of support schemes that were gradually transferred to the hands of local governments and the private sector. A typical example is the SME consultant certification system that is based on the national examination.

Decentralization of power has been demanded and discussed since 1980 and the need for

delegation of power to local governments is voiced, actual progress has been relatively slow. Also, intensive discussions are raised and made to reduce government's role and involvement, i.e., the role of the central government should be limited to the interindustrial policy, but any substantial change in strategic direction has still to be seen.

On the other hand, Italy changed its policy direction in 1975 by taking drastic measures to effectuate decentralization and delegation of power to local governments. Notably, the central government dissolved SME Corporation that spearheaded SME support. Regional industrial concentration, the networking of companies in the same industry, and the support system operated jointly by local governments and universities have enabled SMEs to gain competitiveness and establish presence in the international market. Industrial policy is established on a regional basis by local governments according to characteristics of local industries and is implemented jointly by the public and private sectors. On the other hand, the role of the central government is limited to the interindustrial policy making and implementation.

Judging from the establishment of local "agencias" since 2001 and the current status of SME support programs led by province and/or municipality, the SME support schemes in Argentina are closer to those in Italy that is characterized by the decentralized industry policy.

### **9.3.2 Decentralization of Power**

Decentralization is clearly a worldwide trend, with its level and degree varying between countries. It is considered to be an important factor for driving progress of political democratization, in addition to promotion of economic growth.

Generally, decentralization means delegation and transfer of the central government's power and functions to local governments. Although transfer of basic services, such as elementary education, raises a major political issue in some countries because it may affect the foundation of the country, the majority of opinions today is based on the notion that it is more efficient and effective than uniform delivery of service by the central government, for local governments can decide on service content and quality by taking into account local conditions.

On the other hand, there are advocates for the big government, who claim that, if financial and other resources are limited, centralized policy implementation will be more effective than the decentralized one. However, there are concerns about a danger of affecting the progress of democratization, so that the big government is no longer a mainstream idea.

Needless to say, the level of progress of decentralization and delegation of power to local governments varies greatly among countries. In Spain, decentralization comes before everything as a lesson learned from damage inflicted by the centralized political system. In Italy, local government forms an integral part of the country's tradition and history. In Japan, decentralization is the subject of heated discussion from the viewpoint of ensuring quick and efficient response to global changes in the industrial structure.

### **9.3.3 Central and Local Governments**

As discussed in Chapter 4, government should take a lead in the following areas as part of its interindustrial (neutral) policy.

- 1) Improvement of society's ability to introduce and absorb technology
- 2) Reduction of service link costs
- 3) Development of an environment to promote the building of diverse relationships between individual enterprises
- 4) Formation of industrial concentration
- 5) Promotion of transaction between enterprises in the same region

Among the above rules, governments often take up the reduction of service link costs, such as simplification of administrative procedures, deregulation, and the securing of fair competition. For small- and medium-sized manufacturers, however, equally important is the "improvement of society's ability to introduce and absorb technology." In other words, they need "the upgrading of basic technological capability." The role assumed by the central government is to provide basic education and training, which is conducive to the upgrading of basic technological capability. Clearly, they cannot be left to the mercy of the market principle.

Another major challenge facing small- and medium-sized manufacturers is to develop the ability to explore markets and business opportunities. In this connection, government should also be responsible for development of an environment to encourage business relationships between SMEs and for provision of information on domestic and export markets.

Among the three types of small- and medium-sized manufacturers classified in 9.2, independent parts suppliers having no fixed supply contract and SMEs forming local industries need government support in the above two areas, namely the development of an environment to encourage business relationships between SMEs and for the provision of market information. Because these two types of SMEs are closely associated with their local areas, especially

industrial concentration, public support should be provided by respective local governments as part of support program for local industries, rather than the central government. Furthermore, the private sector familiar with local conditions should be involved to conduct it as a joint program.

The proposed division of functional roles of the central and local governments is summarized below.

	Central government	Local government
1) Improvement of society's ability to introduce and absorb technology	○	
2) Reduction of service link costs	○	
3) Development of an environment to promote the building of diverse relationships between individual enterprises		○
4) Formation of industrial concentration		○
5) Promotion of transaction between enterprises in the same region		○

Caution is required for the Italian case. The country enjoys high levels of industrial concentrations and local governments play a leading role in SME support. However, most of industrial concentrations are formed by manufacturers of consumer goods. Thus, the automotive parts and other assembly industries of the pyramidal structure (led by large assembly manufacturers) have a substantially different structure from that of Italy's industrial concentrations and are founded upon a multi-tier supplier base (subcontract system).

As discussed in 9.3.1, the SME support scheme in Argentina is close to the Italian one that is founded upon decentralization of power. In many countries, however, it is often the case that the central government opts to assign SME support activities entirely to local governments or the private sector for the reason of insufficient fund or manpower. However, the central government should not release itself from certain functions that must be left to its responsibility, such as the development of a nationwide support system. Now the manufacturing industry in Argentina is entering a recovery period after the long recession. Supposing that SME promotion should be led under initiatives of the private sector, central and local governments should discuss on their respective roles in developing the environment to support the private sector's activities and reach a certain level of agreement as a priority issue in the policymaking process of the future.

The next chapter proposes action programs that should be promptly implemented by the counterpart organization composed of the division in charge of SME support policy making and

the one responsible for implementation of the SME support scheme.

## Chapter 10

### Proposal of Action Programs



## Chapter 10 Proposal of Action Programs

In formulating model projects that are a core activity under the Study, the following rationales were presented in Chapter 4 as key elements of action programs that form the basis of designing the model projects.

- A. The establishment of a formal system to promote dissemination of soft technology to local SMEs, including education and training on basic knowledge and skills, is one of the important roles that should be played by government. In fact, it is as important as school education and should form an integral part of national industrial policy. Its importance remains unchanged under the globalizing environment. For this reason, the establishment of a system to disseminate soft technology is proposed as a key element of the action program.
  
- B. The operating status of 50 “agencias” varies greatly and some are reportedly inactive. As their intent and objective appears to serve the needs of the times, however, their activities should be enhanced. For this reason, the reinforcement of “agencias” is proposed as a key element of the action program.

The results of the model projects under the Study was discussed in Chapter 6. The results of the corporate diagnosis and follow-up field guidance indicate that small- and medium-sized manufacturers in Argentina can improve their productivity significantly by introducing proper production management techniques, instead of making new investment. Clearly, the country has strong potential demand for soft technology, together with the need for establishing a support system to help its dissemination.

While the model project has been implemented for small- and medium-sized, machine parts manufacturers, as explained in Chapter 9, there is strong demand for soft technology by independent parts suppliers and local manufacturers of finished products, which account for major portions of SMEs in Argentina.

Under the above framework, the following action programs are proposed to promote and disseminate soft technology to small- and medium-sized manufacturers in Argentina.

Action Program A - Reinforcement of INTI as soft technology support center

Action Program A1: Establishment of a soft technology support section within INTI

Action Program A2: Training of INTI's soft technology support staff and expansion of staffing

Action Program A3: Establishment of an expertise/experience certification system for "Extensionista PyME"

Action Program A4: Implementation of INTI's soft technology training courses

Action Program A5: Formulation of a plan to develop soft technology dissemination system

Action Program B - Dissemination of soft technology by "agencia"

Action Program B1: Training of "agencia" staff as "Extensionista PyME"

Action Program B2: SSEPyMEyDR's subsidy system for certified "Extensionista PyME" of "agencia"

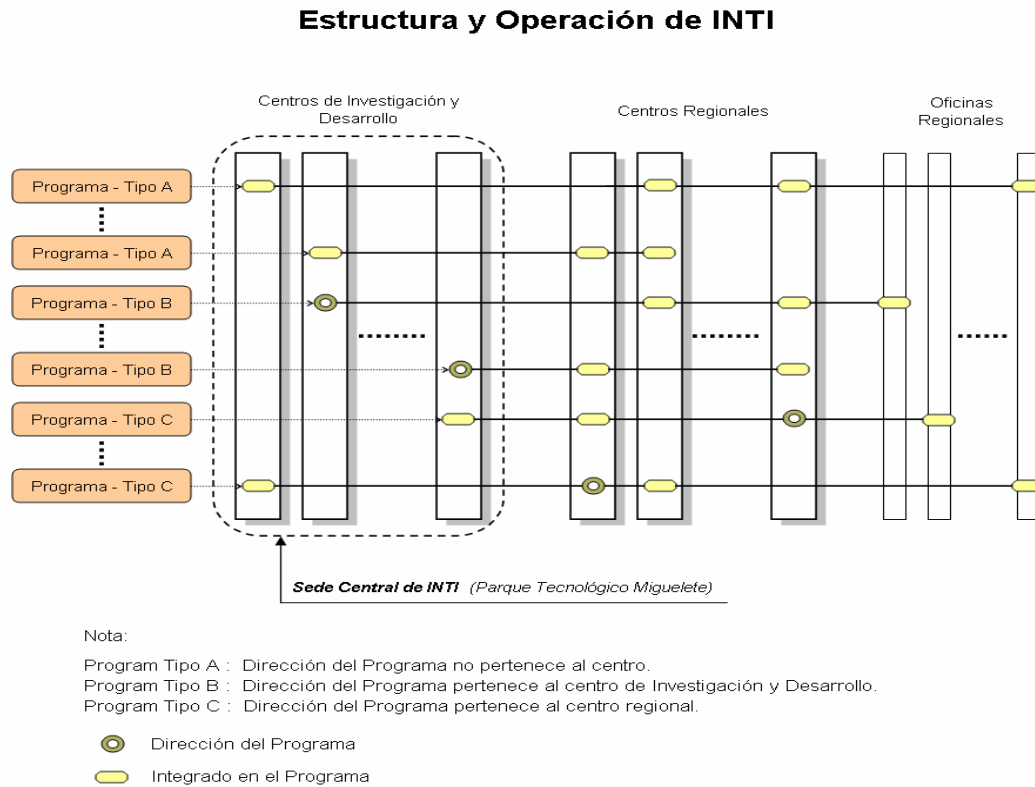
Action Program C - Operation and promotion of use of a SME support tool (Bolsa de PyME)

## 10.1 Action Program A - Reinforcement of INTI as Soft Technology Support Center

### 10.1.1 Rationale for Proposal

Importance of soft technology is strongly recognized in many countries that aim to develop manufacturing industries, where there are organizations playing a key role of dissemination and promotion of soft technology. As discussed in Chapter 8, such support activities in Argentina have once emerged but are now virtually dormant, e.g., there is no organization that is engaged in systematic dissemination of soft technology.

INTI has been spearheading technology promotion in the country since 1957 and is a widely known technical support organization. Fig.10.1 illustrates INTI's organization and its operation.



Source: JICA Study Team

Fig. 10.1 INTI's Organization and Operation

INTI's organization was originally led by departments and bureaus, while centers had their own policy and financial source under the so-called "center system." At present, however, it is operated around "programas" that links the headquarters and individual centers. There are

seven “programas”, each of which is composed of an execution organization and participating centers. The “programas” are classified into three types according to the belonging of the execution organization: type A that the execution organization does not belong to a specific center; type B that the execution center belongs to the headquarters’ technology center; and type C the execution center is under a regional center.

In the 1950s when Japan made national efforts to develop manufacturing industries, including dissemination of soft technology, a new organization was established within INTI under assistance of the Netherlands, for the purpose of providing SME support in the area of soft technology. CIME, as discussed in Chapter 8, was engaged in various activities up to 2003. It retains its original name but organizationally it is under “Programa de Extensión”.

“Programa de Extensión” is designed to upgrade technological capabilities by propagating knowledge common to a specific region or sector. Its main activities are training programs for individual enterprises and entrepreneurs, currently centered on those for microentrepreneurs. It is also expected to provide soft technology-related training and guidance for enterprises, as transferred from old CIME, but the activity is not widely carried out. Note that, within INTI, “Extensión” is often considered as a function to spur and identify demand for INTI, rather than field guidance for individual enterprises.

Thus, INTI has some experience in SME support using soft technology and posts it as one of its main activities, but there is no formal system or organization to support it with its overall resources.

What is needed in Argentina is a nationwide organization that plays a central role in providing support in the area of soft technology. INTI is expected to form and maintain such organization by leveraging its nationwide network and meeting diverse demand from manufacturing sectors as an organization spearheading dissemination of soft technology enterprises that have achieved significant kaizen effects using soft technology.

#### **10.1.2 Action Program A1: Establishment of a soft technology support section within INTI**

This action program proposes the establishment of a technical support system in the area of soft technology and the startup of continuous activity by establishing a section containing “soft technology” in its name. In fact, INTI has already moved to establish such section by taking an opportunity created by the model project. It is highly desirable to have a support center

which name includes words “soft technology, even if promotion of soft technology is carried out as one of “Programa”.

As details of the action program are to be left to INTI because they are concerned with its internal organization, the study team only presents the following plan as reference.

Alternative 1: To establish “Soft Technology Center” as one of technology centers at headquarters

Alternative 2: To convert Centro de Extensión y Desarrollo to “Soft Technology Center”

Alternative 3: To convert Rosario Regional Center to “Soft Technology Center”

In the course of the present Study, various initiatives are taken as part of joint efforts by the study team and the counterpart, such as the sharing of experience and resources relating to field guidance between regional centers and mutual visits by individual enterprises. However, these activities are not necessarily conducted systematically because a core organization of soft technology support is not clearly defined within INTI.

INTI has not yet accumulated sufficient soft technology. To maximize effectiveness on the basis of insufficient expertise and resources, INTI has to centralize and share them within its organization. In particular, the organizational sharing of expertise and experience is very important when a new organizational activity is started. This proposal is intended to accumulate know-how of the old CIME, experience of Rosario Regional Center, and knowledge and experience transferred from the study team as part of the Study at a new “Soft Technology Center,” thereby to allow the center to conduct integrated activities through a formal “Programa”.

### **10.1.3 Action Program A2: Training of INTI’s soft technology support staff and expansion of staffing**

Four organizations have participated in the model project as counterpart for study team members, namely Centro de Extensión y Desarrollo, Rosario Regional Center, Rafaela Regional Center, and Córdoba Regional Center. More precisely, about 15 persons – some of them participated in the middle of the project – provided guidance service for model enterprises, jointly with experts of the study team. Note that 2 out of 15 participants were members of AGE (Asesores en Gestión de Empresa) under the old CIME.

In fact, these 15 persons are INTI's entire resources specialized in soft technology support. They have contributed to the outcome of the model project and should be partly credited for it. And they will become a central force of "programa" implementation by the newly formed "Soft Technology Center."

It should be noted, however, that the counterpart staff, except for the formal AGE members, includes those with experience in providing guidance in the area of soft technology before the start of the Study, and those who have newly joined INTI for the purpose of the Study. For the latter, one year experience in the model project is far from sufficient to address and solve a variety of problems brought by SMEs. It is therefore important to link the valuable experience effectively to the development of expertise in soft technology support. In fact, the future of "Soft Technology Center" depends upon this first generation of support staff.

To make up for the shortage of experience of some counterpart staff and help them to acquire expertise required for the center to provide support service on its own, it is imperative to conduct internal education and training on a continuous basis by inviting outside experts with rich experience in field guidance service (including Japanese ones) and in cooperation of AGE members under the old CIME. In light of the fact that it needs some time for young counterpart staff, who has joined INTI on the occasion of the Study, to become capable of providing consultation service for SMEs by themselves, outside experts need to be hired for at least one year, desirably two years.

As for enhancement of the soft technology support organization, the study team proposed, during the study period, promotion of INTI staff to the organization. In providing field guidance for small- and medium-sized manufacturers, a combination of the expert of soft technology and the expert of hard technology that is used in an actual production line becomes very effective in many cases. As hard technology covers a wide range of fields, the next challenge is to establish a flexible support system within INTI that allows formation of a team of soft and hard technology experts from various departments, which meet the diverse needs of recipient companies.

#### **10.1.4 Action Program A3: Establishment of an expertise/experience certification system for "Extensionista PyME"**

In Argentina, consultants, both individuals and firms, provide a variety of services for SMEs, and DIRCON maintains a registration system for consultants in the area of soft technology. However, there is no certification system to assure the consultant's ability or experience, which

is prerequisite to the consultation contract.

INTI intends to provide soft technology support by working together with a company to solve a problem for the purpose of improving productivity at its factory. Therefore, INTI staff who provides the service is required to have the ability to understand the customer's needs and give appropriate guidance or advice, including reference to outside experts as required. This is equivalent to skills and experience required for SME extension service staff.

This action program proposes the establishment of a certification system for SME extension service personnel ("Extensionista PyME"), which may be positioned as a junior consultant. Originally, the certification system will be operated as INTI's internal certification system and will be used to raise motivation of staff who is engaged in soft technology support. Then, obtaining the certification should be reflected in salary and other working conditions. Needless to say, the certification system is to assure INTI's customers of its service quality in terms of expertise and experience.

The fact that a widely recognized public technical support organization INTI assures its extension service staff's ability and experience has a significant effect in spurring demand for soft technology support by creating a general confidence in service quality. It also helps improve an environment to support private consultants.

The study team assumes the level of expertise and experience of "Extensionista PyME" can be reached by INTI counterpart staffs, if they receive training from outside experts for one year after the end of the Study and perform field guidance service jointly. Preliminary qualifications for "Extensionista PyME" are summarized as follows.

**Knowledge and skills required for "Extensionista PyME"**

Production control technology consists of a number of tools, including those developed by individual companies, which can be classified to basic and applied techniques, as listed below. Of these diverse techniques, "Extensionista PyME" is expected to have received theoretical training on basic production control techniques, together with skills to apply them to the shop floor as well as certain experience in corporate diagnosis and guidance.

Basic production control	
5S	Measures against Muda, Muri, Mura
Material handling	ABC analysis

Preventive maintenance	Quality control and QC tools
ISO 9000 series	Small group activity
Production planning	Low cost automation
Inventory management	Plant layout
Production cost	KAIZEN
Applied production control	
Industrial engineering	Quality assurance
JIT-Kanban System	Total Preventive Maintenance (TPM)
Material Requirement Planning (MRP)	
Value Analysis/Engineering (VA/VE)	
Flexible Automation (FA)	Application of IT
Environment	Cost management

### 1) Training hours

Training hours required for certification of “Extensionista PyME” are summarized below. They include instructor’s lecture, case study, and field tour.

<u>Training item</u>	<u>Training hours</u>
5S	6
Measures against Muda, Muri, Mura	3
Material handling	6
ABC analysis	6
Preventive maintenance	6
Quality control and QC tools	12
ISO 9000 series	3
Small group activity	3
Production planning	9
Low cost automation	3
Inventory management	9
Plant layout	12
Production cost	6
KAIZEN	6
Total	<hr/> 90 hours

### 2) Experience in field guidance



To be certified as “Extensionista PyME”, at least two cases of field guidance service (each case consisting of factory diagnosis of a company followed by continuous field guidance for one year) are required as practical experience.

Now, INTI should start a certification system for “Extensionista PyME” and certify the counterpart staffs by providing them with the training. The ultimate goal is to develop the certification system for “Extensionista PyME”, who is the country’s first professional (junior) consultant in the area of soft technology, to a national certification system.

#### **10.1.5 Action Program A4: Implementation of INTI’s soft technology training courses**

This action program proposes a future goal for INTI after “Soft Technology Center” has been established and its staff has started to serve as “Extensionista PyME”, when INTI is expected to have its own training program. The proposal is to expand the training program to make it available to participants from outside and to make INTI fulfill the role as a public organization to lead dissemination of soft technology.

The action program has the following objectives:

- To certify staff of SME support organizations other than INTI as “Extensionista PyME”
- To disseminate soft technology to company owners, factory managers, and employees

#### **10.1.6 Action Program A5: Formulation of a plan to develop soft technology dissemination system**

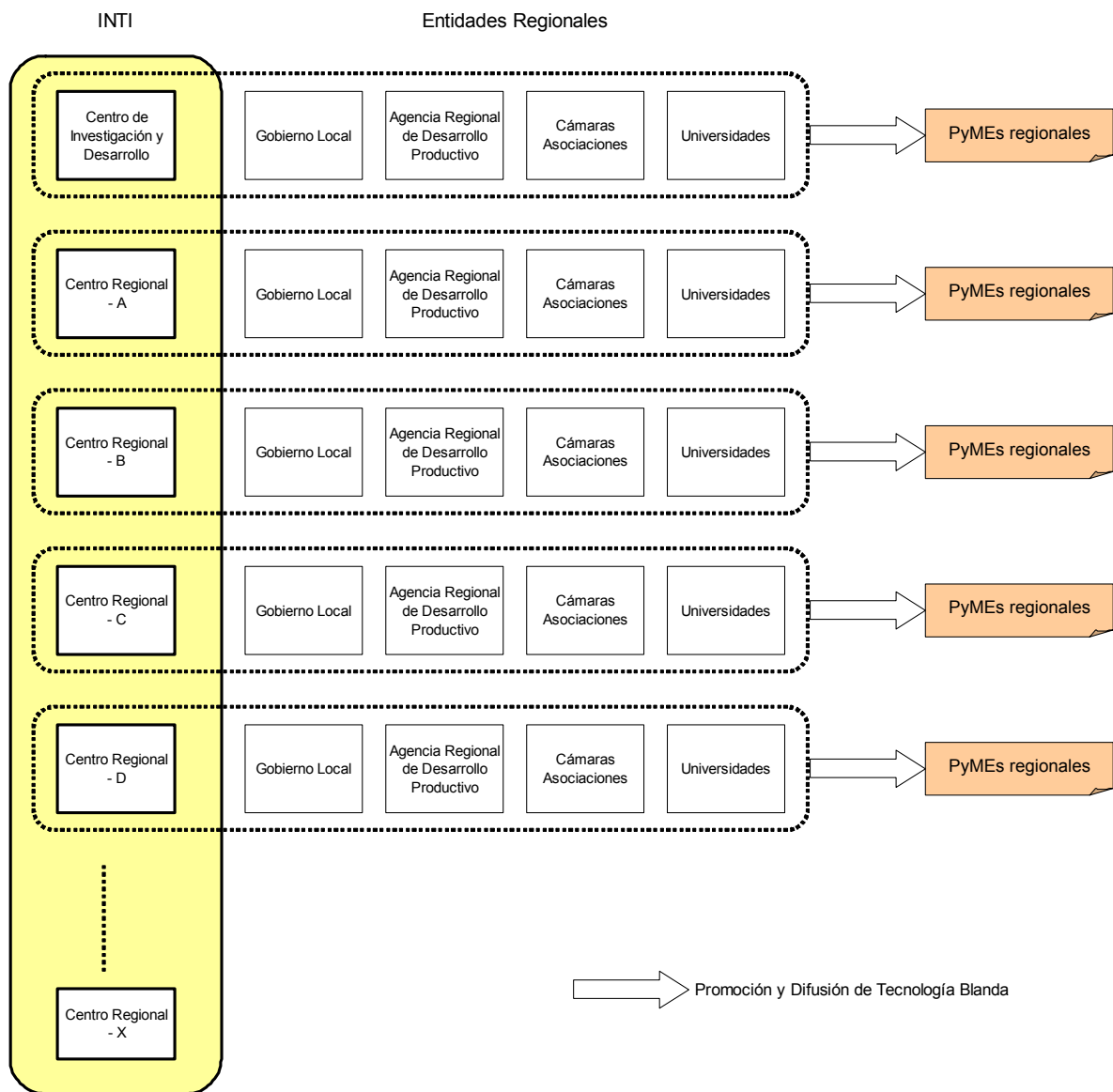
Action Programs A1 through A4 address the issues to be dealt with by INTI as the leading agency to promote further dissemination of soft technology in Argentina.

To ensure smooth dissemination of soft technology to small- and medium-sized manufacturers throughout the country, it is imperative to establish a nationwide promotion system under the strong leadership of INTI and the full-scale participation of SME support organizations, trade associations, and universities at national and local levels. In particular, it is proposed that the INTI work together with related government offices and organizations to formulate a plan to develop the soft technology dissemination system in the country, not to mention the reinforcement of its internal organization and resource to support day-to-day dissemination activities.

Potential partners for the INTI in such joint planning effort are local governments, trade associations such as Cámara, educational institutions including universities, and “Agencia” mentioned in Action Program B.

In Argentina, support for local industries has traditionally been provided under the leadership of local governments and other related regional organizations. The plan should therefore envision a soft technology dissemination system that is suitable for each region by taking into account the region’s characteristics and the current state of local SME support.

Fig.10.2 presents a conceptual image of the future soft technology dissemination system in Argentina, where INTI plays a central role.



Source: JICA Study Team

Fig. 10.2 Conceptual Image of Future Soft Technology Dissemination System

### 10.1.7 Time schedule for Action Program A

Fig. 10.3 presents preliminary time schedules for the above five action programs that are proposed to INTI.

Action Program – A		1 <sup>st</sup> Year	2 <sup>nd</sup> Year	3 <sup>rd</sup> Year	4 <sup>th</sup> Year	Onward
1	Establishment of a soft technology support section within INTI	■				
2	Training of INTI's soft technology support staff and expansion of staffing	■	■	●●●●●	●●●●●	●●●●●
3	Establishment of an expertise/experience certification system for “Extensionista PyME”	■				
(3)	First certification of INTI's “Extensionista PyME”		▲			
4	Implementation of INTI's soft technology training courses		■	■	■	■
5	Formulation of a plan to develop soft technology dissemination system	■	■			

Source: JICA Study Team

Fig. 10.3 Time Schedule of Action Program - A

## 10.2 Action Program B - Dissemination of Soft Technology by “Agencia”

### 10.2.1 Rationale for Proposal

SSPyMEyDR has been operating Red de Agencias Regionles de Desarrollo Productivo since 2000, which is modeled after a similar program in Spain. For SSPyMEyDR that does not have any regional office, “Agencias” serve as an important policy tool to achieve the dual purpose of SME promotion and regional development, although they are an independent non-profit organization that is jointly established by local government and the private sector. At present, approximately 50 “Agencias” are in operation throughout the country and are steadily increasing. And they form a nationwide network under SSPyMEyDR, while maintaining their independence.

“Agencias” vary greatly in their level of activity as well as service content. SSPyMEyDR sets forth standards for their activities, which are either financial or non-financial in nature. As for non-financial activities, most important one is promotion of inter-company alliances in the same region. Also “Agencias” conduct corporate diagnosis and consulting service and hold training programs and seminars for individual companies, although actual services are rendered by outside consultants who are hired by “Agencias”.

Although SSPyMEyDR does not provide financial support for Agencia’s operating budget, it

has been implementing various programs to strengthen the functioning of “Agencias”, including those under assistance of foreign donor organizations. These programs include training for Agencia’s managers and general employees.

Action Program A proposes the strengthening of INTI to become a national organization promoting dissemination of soft technology. INTI has been selected as the leading agency because it has a national network of offices and related organizations that is considered to be suitable for implementation of the dissemination activity, as well as INTI’s capacity.

“Agencias”, as specified in their mission, are in a position to keep close contact with local MEs and SMEs and to provide support that meets their needs. Their personnel is expected to get acquainted with various support schemes targeting SMEs, serve as intermediary for their use, and have expertise and experience in identifying and dealing with specific issues facing SMEs.

The action program is to build up an organization and system consisting of “Agencias” that constitute a national network - similar to that of INTI, which is capable of promoting dissemination of soft technology.

#### **10.2.2 Action Program B1: Training of “Agencia” staff as “Extensionista PyME”**

At present, recruitment of “Agencia” staff is entirely left to each “Agencia”, and SSEPyMEyDR does not set forth any standard commonly applicable to all “Agencias”. Generally, employees are recruited in consideration of Agencia’s service that focuses on promotion of use of various financial support schemes as well as promotion of inter-company alliances.

In many countries, governments and/or private organizations operate counters to address such problems. These consulting desks serve as one-stop counter capable of addressing both financial and non-financial problems. Argentina should have this type of service, which should then be provided by “Agencias”. To maximize the service’s effectiveness, the ability of consulting staff who first contacts SMEs plays an important role.

The study team visited several “Agencias” and found that many of their employees were familiar with financial support schemes and were primarily engaged in service to introduce such schemes to SMEs, as well as promotion of inter-company alliances and export promotion. They were less interested in problems relating to internal operation management, e.g., production lines in the manufacturing sector. This is probably because “Agencias” usually hired outside experts to deal with problems facing individual companies.

From the viewpoint of promoting small- and medium-sized manufacturers, however, it is important for “Agencia” staff who communicates with them directly to have basic knowledge on essential technologies for manufacturers, especially soft technology that holds the key to successful business and production management. Such knowledge allows “Agencia” to deal with problems facing SMEs more effectively and refer them to proper service provided by outside experts.

Action Program A proposes the establishment of INTI’s Extensionista PyME training program. As “Extensionista PyME” is considered to be a junior consultant in soft technology, the proposed training program is suitable for “Agencia” staff with little or no experience in factory work or operation.

The proposal has the following two goals: 1) “Agencia” staff acquires basic knowledge on soft technology for manufacturing industries by participating in INTI’s Extensionista PyME training program, thereby to improve Agencia’s ability to provide adequate support service for customer companies; and 2) Agencia becomes, together with INTI, a core element of promoting dissemination of soft technology in the country by leveraging its nationwide network.

### **10.2.3 Action Program B2: SSPyMEyDR’s subsidy system for Agencia’s certified “Extensionista PyME”**

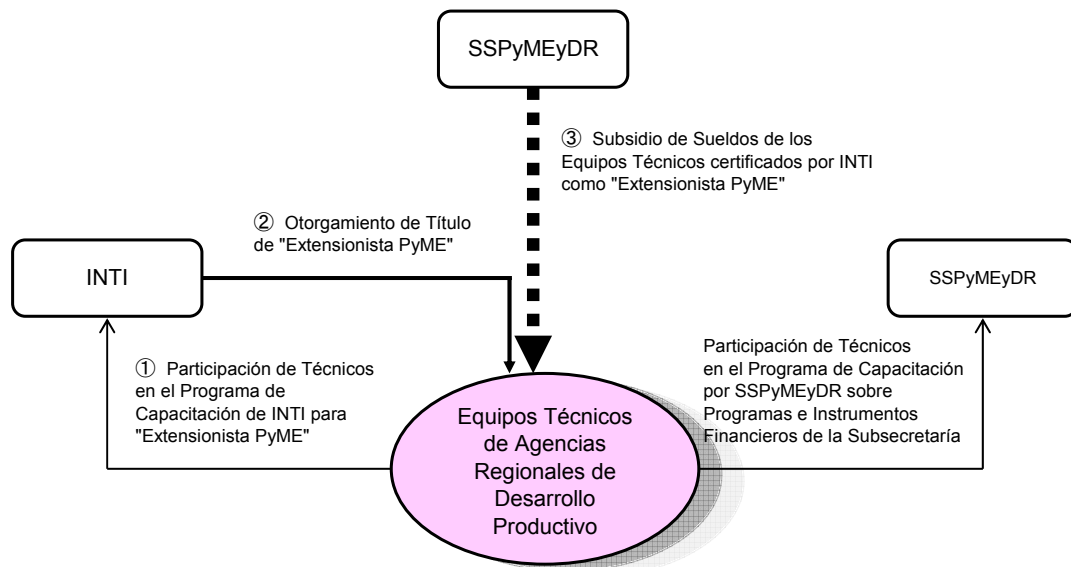
SSPyMEyDR has once financed labor costs for “Agencia” managers for a short period of time but has not provided financial assistance for Agencia’s operation ever since. At present, a plan is underway to supply computers and other office equipment to each “Agencia” under a formal agreement.

In Argentina where decentralization is given of high priority, it is not readily acceptable that SSPyMEyDR sets forth and/or enforces to “Agencias” general standards for their activities or scope of service. Yet, it is very difficult for an organization specialized in support of MEs and SMEs to achieve its objective on its own, financially and otherwise.

Thus, “Agencias” are expected to play a significant role, while there is a strong need for reinforcing their resources and capabilities. At the same time, the central government should play a vital role in supporting independent and continuous activities of “Agencias” that should meet local needs. It is therefore proposed that SSEPyMEyDR bear labor costs for “Agencia” staff with professional skills.

To evaluate skills of “Agencia” staff, it is desirable to use the “Extensionista PyME” certification system, which is proposed as Action Program A3. More precisely, SSPyMEyDR will give subsidy to cover Agencias’ labor costs under the condition that Agencia staff participate in the training program relating to a loan scheme provided by SSPyMEyDR and in INTI’s Extensionista PyME training program.

Fig. 10.4 shows a conceptual view of the SSPyMEyDR’s subsidy system that is proposed as Action Program B2.



Source: JICA Study Team

Fig. 10.4 SSPyMEyDR Subsidy to “Agencia” Staff Certified as “Extensionista PyME”

#### 10.2.4 Time Schedule for Action Program B

Action Program A4 assumes that INTI’s soft technology training course will be offered to other organizations in the second year after the end of the Study, i.e., when the first-generation of “Extensionista PyME” is certified within INTI and they become ready to serve as instructors for the subsequent training course.

Participation of “Agencia” staff in the INTI’s Extensionista PyME training program is assumed to occur two years after the end of the Study.

### **10.3 Action Program C - Operation and Promotion of SME Support Tool (Bolsa de PyME)**

#### **10.3.1 Rationale for Proposal**

“Bolsa de PyME” is an SME database that is accessible via the Internet and developed by the study team and SSPyMEyDR as part of the model project. The database system has a unique feature that enables a company registered with the database to register and update its own data via the Internet.

Unique features of “Bolsa de PyME”, not seen in existing databases, are described as follows.

It has two major objectives, namely “promotion of subcontracting” and “publication of recruit information.” It publishes data information on companies that want to expand sales channels for their own products by finding customers, those that build the network with other companies, and those that are troubled by the shortage of the workforce, including production capacity data and recruit information. Potential users of “Bolsa de PyME” are: 1) assembly manufacturers of finished products and components, which look for suppliers; 2) companies that want to build a production chain with others that have complementary production processes; and 3) job seekers. Actual contact and negotiation with registrants is left to potential customers.

As discussed in Chapter 9, the development and promotion of the environment to facilitate inter-company trade is strongly demanded by independent parts suppliers and local industry type SMEs - which are closely associated with local communities and economies, and it should therefore be carried out under the leadership of the local government. In Argentina, Agencias Reginales de Desarrollo Productivo set forth policy to promote inter-company linkages as a core element of their non-financial support activities for local industries. The inter-company linkage, in this sense, is not simply limited to subcontracts in the production process and has a broad coverage including materials procurement, market exploration, and HR development. One of the basic support tools is company information and database covering each area. In the case of manufacturers, the company database must contain data indicating production capacities, such as the list of machinery and equipment, factory size, and the number of skilled workers, in addition to general profiles.

SSPyMEyDR, representing the central government, supports “Agencias” mainly through staff training and the development and provision of support tools. As part of its support activities, it plans to build a SME database covering both the manufacturing and non-manufacturing sectors and to use it as a SME support tool through Agencia’s activities, but the plan has not been



materialized for various reasons. The development of “Bolsa de PyME” under Model Project 2 reflects the agreement between the study team’s idea based on the results of the basic study and SSPyMEyDR’s desire to realize the above plan.

Bolsa de PyME’s second objective - “publication of recruit information” – intends to address the situation facing many companies in the manufacturing sector that is in the recovery phase after the long recession, i.e., they are facing the shortage of skilled workers, engineers and factory operation staff. At present, no database containing updated recruit information is available. Companies registered with “Bolsa de PyME” will be able to recruit employees for both production and administrative divisions.

The original implementation plan for Model Project 2 included system development, publication of the system based on sample data, PR activities, and the establishment of the operation system after publication of the database. As discussed in Chapter 6, however, collection of sample data took a longer period of time than expected, and PR activities and the establishment of the operation system were not completed within the project period, while “Bolsa de PyME” was published officially.

For collection of sample data, cooperation of “Agencias” was expected but it was less than satisfactory due to time and budget constraints. Fortunately, cooperation was obtained from trade associations and local governments, which understood the objective and effect of Bolsa de PyME and requested member companies or local companies to provide data.

In the next section, an operation and maintenance system for “Bolsa de PyME” is proposed as an action program.

### **10.3.2 Operation and Promotion of “Bolsa de PyME”**

Under the model project, a prototype of “Bolsa de PyME” was developed and published. It will be linked to SSPyMEyDR’s Web (portal) site. As SSPyMEyDR is already operating a database on export-related companies, ProArgentina, which is on the same Web site, users will be able to access from SSPyMEyDR’s portal site to both ProArgentina and “Bolsa de PyME”.

To ensure that “Bolsa de PyME” is widely used to meet its objective, it must be operated and maintained by team efforts of SSPyMEyDR, its local staff, and Information System Unit (Unidad de Sistemas de Información: USI). Note that USI is responsible for database maintenance of ProArgentina.

## **(1) Procedures of use of “Bolsa de PyME” (Fig. 10.5)**

### 1) Application for database registration

Companies and individuals, who intend to be registered with the database, need to input their identification, mail address and provisional password on Bolsa de PyME’s registration screen.

### 2) Examination

SSPyMEyDR examines the application and identification information received from the applicant, and if the application is considered to acceptable, it issues formal ID and password to the applicant by ordinary or electronic mail.

### 3) Data input

The applicant who has been accepted for registration can log in the registration screen of “Bolsa de PyME” and input the company name, profiles, products, equipment owned, and recruit information. Note that data so inputted are stored in a temporary file until data examination is completed. The formal ID and password can be used for data updating by the registered company.

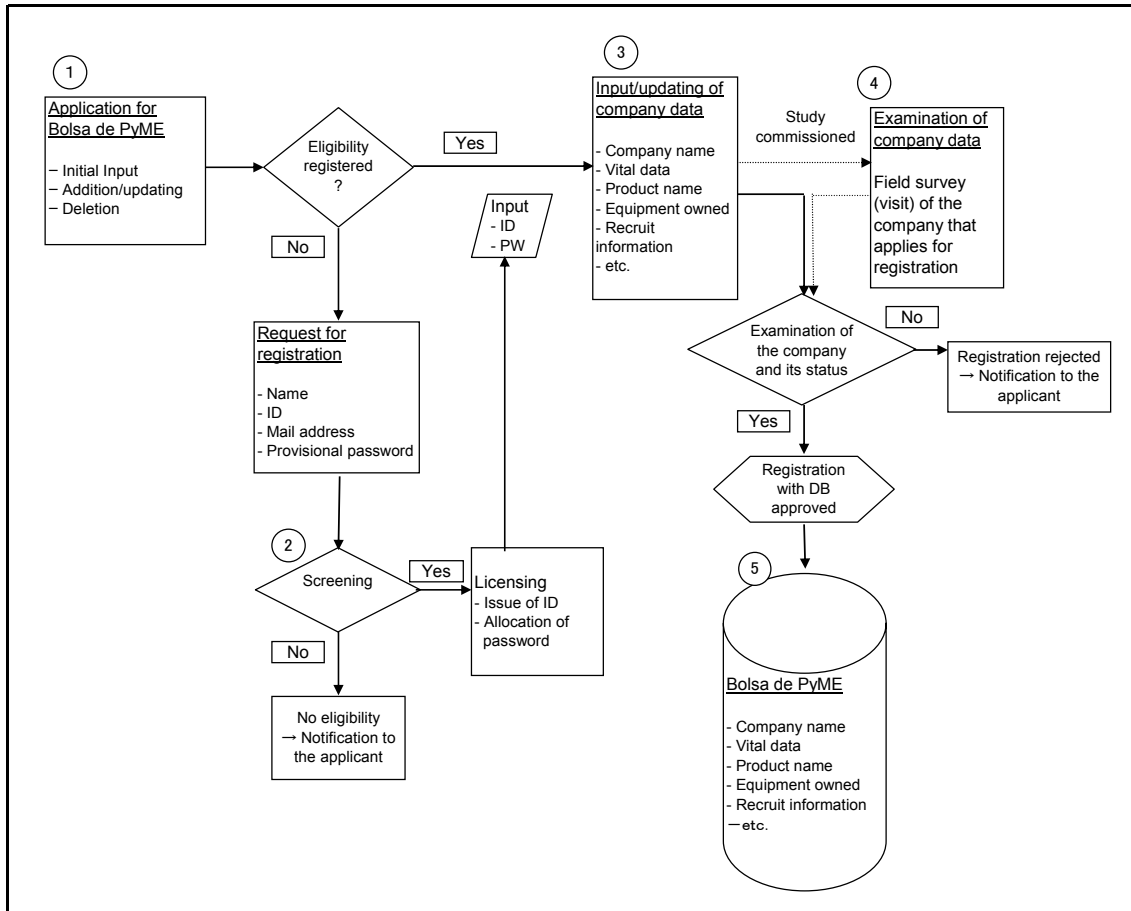
### 4) Data examination

Data on the registered company, which have been sent to SSPyMEyDR and stored in a temporary file, are checked by local staff, who visits the company to see if the data agree with the company’s actual state and conditions.

### 5) Data registration

The data submitted by the registered company and accepted by SSPyMEyDR in the above examination process are registered with “Bolsa de PyME” and are published.

### 6) Bolsa de PyME is indicated in Spanish and English and can be accessed from SSPyMEyDR’s portal site by users in and outside Argentina. A company or an individual who is interested in a company registered in the database is free to make a direct contact.



Source: JICA Study Team

Fig.10.5 Procedures of Use of “Bolsa de PyME”

## (2) Operation system of “Bolsa de PyME”

For smooth operation of “Bolsa de PyME”, SSPyMEyDR will establish its operation system that integrates local staff and USI, with a necessary budget allocation.

As discussed in 10.3.1, “Agencias” promoted by SSPyMEyDR set forth promotion of inter-company linkages for supporting local industries, and one of key support tools for the promotional activity is company information and database covering each area, but it is not available now. “Bolsa de PyME” will become an effective tool for “Agencias” to promote inter-company linkages, and its operation and maintenance will require fieldwork and PR activities of local staff who has a close contact with local companies.

“Agencia” will use “Bolsa de PyME” as a local SME support tool, and it will render service required for system operation and maintenance on behalf of SSPyMEyDR.

Division of responsibilities shared by SSPyMEyDR, local staff, and USI is described as follows.

#### 1) SSPyMEyDR

The primary responsibility of SSPyMEyDR is to establish an operation system for “Bolsa de PyME” and to secure a system operation and maintenance budget. Registration and use of “Bolsa de PyME” will be free of charge, and the operation budget should cover registration examination, system maintenance and expansion, and PR activities.

In fact, the next important duty is PR activity to make “Bolsa de PyME” known to the private sector in order to find new registrants and promote use of the database service. As pointed out earlier, PR activity was included in the original implementation plan for Model Project 2, but it was not carried out due to time constraint. SSPyMEyDR’s PR activities will be carried out by the following methods.

Finally, to ensure reliability and freshness of registered data, examination and communication to request a timely update will be required. While actual tasks will be commissioned to local staff and USI, as described in the following sections, SSPyMEyDR will appoint one full-time personnel in charge of PR activities for “Bolsa de PyME” as well as system maintenance.

#### 2) Local staff

As discussed in the procedures for use of “Bolsa de PyME”, the company that has received the formal ID and password inputs and sends company profiles, product names, equipment list, and recruit information from the registration screen of “Bolsa de PyME”. However, experience gained from operation of the similar databases in other countries indicates that registration and publication of transmitted data without examination creates a risk of accepting misleading or incorrect information. Thus, the examination process to verify the agreement of registered data with the company’s actual state is essential in maintaining public confidence on “Bolsa de PyME” and its data and promoting wider use.

The examination will be carried out by local “Agencia”, which will visit the registered company on behalf of SSPyMEyDR to check accuracy of submitted data. “Agencia” will use “Bolsa de PyME” as a SME support tool and will also be involved in PR activity such as recruitment of new registrations, in addition to data examination.

### 3) USI

USI will be responsible for the following system operation and maintenance tasks relating to “Bolsa de PyME”.

#### a. Database operation and maintenance

Operation and maintenance of the database system, security management of data content, access control, and maintenance and improvement of response performance

#### b. Operation and maintenance of the application system

Patching of program defects and corrective measures, including development work to meet improvement requirements

#### c. Network operation and maintenance

Security management to prevent illegal access, sabotage, and virus invasion that may occur in the course of access and use of the database system from inside and outside via the Internet/intranet, and traffic monitoring to maintain and improve access service

#### d. User ID and password control

Users of “Bolsa de PyME” are authorized, upon examination, to access the database for data registration and update. The person in charge of the system organization (system administrator) controls the access right by issuing an appropriate ID and password<sup>1</sup> and prevents unauthorized access to data or data tampering/destruction.

Sample data registered on “Bolsa de PyME” at the time of its publication have been collected by SSPyMEyDR and the study team. Now, a formal ID and password should promptly be issued to each of registered companies and a request for examination of registered data and necessary update should be carried out.

#### e. Request for data update

Data registered on “Bolsa de PyME” are updated by each user who has a formal ID and password. As a result, some users may not update data for a long period of time, resulting

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<sup>1</sup> “Bolsa de PyME” can set three levels of access rights, namely system, module, and optional levels. According to the access level setting, various limitations can be imposed, such as “input only,” “authorized to update (rewrite),” and “authorized to view all information.”

in publication of old or incorrect data. To ensure timely updating of registered data, a periodical request should be made to registered companies.

There are various methods for requesting data update, such as the sending of a broadcast message to all registered companies on the same date every year, or the sending of a request mail to companies who are found to have not updated their data for a certain period of time (monitoring of the update status is required). The latter method is suitable for finding data on companies who have gone out of business.

### **(3) System expansion**

SSPyMEyDR plans to expand the coverage of “Bolsa de PyME” into all manufacturing sectors including local, traditional sectors.

“Bolsa de PyME” is designed to achieve “promotion of subcontracting” as the major objective. The model project limits the coverage to automotive, agricultural machinery, and food processing equipment mechanical parts sectors. In the next stage, the system coverage will be expanded to the respective vertical industry sectors led by assembly manufacturers other than mechanical parts suppliers. In Chapter 9, small- and medium-sized manufacturers were classified into subcontractor-type parts suppliers, independent parts suppliers, and SMEs forming local industries. Under this classification, sectors to be covered by the expanded system are subcontractor-type parts suppliers, together with independent parts suppliers that operate on a spot contract basis.

If the future system is to include local industries that supply consumer products and SMEs in the non-manufacturing sector, the objective of the database and data content need to be reviewed and modified.