CHAPTER 3

OUTLINE OF PROBLEMS AND ANALYSIS

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3.1 Outline of Problems of SI

3.1.1 Problems Found by Diagnosis of SI Companies

The results of the simple diagnosis conducted at 103 companies are compiled in Table 3-1. The score for each item is based on the evaluation (scoring) criteria shown in Appendix II-9.

Table 3-1 Simple Diagnosis Results for 103 SI Companies

Evaluation Items	Score (Full Score: 10)								
	Average	>9	>8	>7	>6	>5	>4	>2	>0
< Human Resources >									
Level of Management (Business Stance of Owner)	7.20	8	31	12	20	2	1	1	0
Level of Managers	6.48	2	18	22	17	11	1	3	1
Level of Technology (Staff Capability)	6.67	3	16	23	23	6	3	1	0
Level of Quality Control	6.27	1	19	18	10	17	8	2	0
Level of Production Control	5.84	0	7	23	14	18	9	4	0
Level of Skills	6.04	2	13	13	21	18	6	0	2
< Systems >									
Technology Control	5.97	1	14	17	18	11	11	0	3
Quality Control	6.19	3	16	16	18	9	9	3	1
Production Control	5.77	0	10	17	18	15	9	5	1
Inventory Control	5.61	1	4	21	18	15	10	4	2
Equipment Control	5.92	0	10	21	18	15	7	2	2
< Finance >									
Rate of Sales Growth	5.33	16	12	6	7	4	1	13	16
Pre-Tax Profit Ratio to Turnover	2.19	2	8	4	3	4	1	4	49
< Equipment >									
Rate of Added Value	6.00	10	11	19	13	7	3	4	8
High Performance Machinery (NCs, etc.)	5.83	7	18	6	11	15	6	9	3
Instruments	5.84	4	10	16	14	18	7	3	3
< Quality >									
Proportion of Defects in Processes	5.73	0	19	14	12	14	3	10	3
Proportion of Defects at Client's Acceptance Inspection	6.29	4	28	10	12	12	1	2	6
< Production >									
Materials Inventory Factor	5.97	0	11	23	18	13	6	1	3
Product Inventory Factor	6.35	1	21	21	13	12	2	2	3

The problems of SI in Penang as identified by the above simple diagnosis and the detailed diagnosis of 17 model companies are explained below by category.

(1) Human Resources

Many company owners lack knowledge and understanding of business management and other areas even though they do have knowledge and skills obtained through their past working experience with MNCs or other companies. Meanwhile, some small SI companies (with up to 30 employees) are very young companies which have only been established in the last few years and the young staff members in their twenties and thirties are led by relatively young owners who are very forward looking and even adventurous. 35% of the companies studied have such forward looking and aggressive owners and generally enjoy a high level of competitiveness, maintain their business profitability and have excellent staff.

Even though the business stance and will of the owners are highly evaluated, their immediate subordinates, particularly those responsible for production control, score much lower. This explains the tendency of these companies towards one-man management. In contrast, companies with a high score for both the management and manager levels enjoy a high general score for the general evaluation of the company.

(2) Systems

The score for each system is relatively low with the score for the production control system being particularly low. With the added weakness of human resources, there is a general lack of integrated production control.

(3) Finance

The subject companies appear to be bipolarised into those performing well and those facing recession. Particularly noticeable are excellent companies which have been rapidly recovering from the currency crisis and those of which the business performance has been steadily declining due to their hesitant business stance. In terms of the important business aspect of profitability, only a few companies enjoy steady profits because of the adverse impacts of the bursting of the bubble economy and the strong demand for cost reduction by MNCs. Most companies are either in the red or just above the break-even point (in FY 1999, 38 companies recorded a profit rate of less than 1% and 10 companies recorded 1 – 2%. See Appendix IV for further details).

(4) Trade with MNCs

As the business environment is becoming increasingly tougher, MNCs are concentrating on "quality, cost and delivery terms (QCD)" more than ever. MNCs are proceeding with rationalisation of the production system, cost reduction of procured parts and general cost reduction to improve their competitiveness. Meanwhile, SI companies with inferior corporate management capability, technological capability, cost competitiveness and quality level are facing dwindling orders from MNCs as orders tend to be placed with more competitive companies. The drastic shift of order placement is expected to continue, accelerating the trend of bipolarisation with strong SI companies becoming stronger and weak companies becoming weaker. Medium size companies (30 - 99 employees) with relatively good equipment, technological capability and a well-appointed work environment are now showing signs of a gradual recovery after suffering from a considerable fluctuation of orders in the last two or three years. Many SI companies which have a direct or secondary subcontractor relationship with MNCs are still struggling to secure a stable work volume because of the difficulty of regulating the work volume in view of order-based production.

(5) Business Integration

There has been a confirmed move among Chinese-run SI companies to form new groups around core companies for share-holding, technical cooperation and the integration of work volumes as such a move is believed to be necessary in view of the increasing severity of the business environment. For example, some MNCs have begun to entrust a plastic moulding company to conduct the detailed design and manufacture of dies (see Table 3-2 - Examples of Business Integration) for the purpose of reducing in-house expenses and the time for subcontractor control so that the surplus manpower and time can be used to improve their own business strength.

Table 3-2 Example of Business Integration

A Industries Sdn. Bhd. (Holding Company)			
Name of Enterprise	Share-Holding	Number of Employees	
A Manufacturing Sdn. Bhd.	100%	1,194	Plastic moulding
A Tool Sdn. Bhd.	51%	80	Tool die making
A Plastics Sdn. Bhd.	68%	166	Engineering plastic moulding
A Moulds Sdn. Bhd.	51%	44	Engineering plastic moulding
A Manufacturing, Indonesia	60%	—	Plastic moulding
A R & D Sdn. Bhd.	51%	Just started	Tool Die Engineering

(6) Business Management

In regard to business management, the breakeven point analysis technique and financial statements, etc. were explained to each model company and the relevant analysis was conducted. Some company owners understood the importance of these and showed a willingness to learn and apply them while others showed little interest, indicating a varying degree of understanding of the importance of financial analysis and financial statements among different companies. Some model companies are small and the preparation and analysis of financial data can constitute a heavy burden. In order to reduce this burden, it is important to select only those management items which are appropriate for the company concerned so that management efforts can be concentrated on these items to achieve a high level of management capability and thorough management.

1) Financial Accounting

As there is a statutory requirement for the involvement of an external auditing body, the accounting documents are in order. However, there are not many companies of which the owners have a detailed understanding of cost, cost reduction analysis, cost control and management accounting, etc. The owners of only four of the 19 companies subject to the detailed diagnosis (17 model companies and two parent companies) are involved in accounting. In most cases, accounting or the settlement of accounts is conducted by the manager or person responsible for accounting. In terms of cost control, general cost accounting featuring the entire cost of factory operation is the common practice. Even if the production cost is calculated for each product, it is simply based on man-day data. This means that there is no practice of explaining the real figures to the owner so that they can be reflected on the corporate management and management policies.

2) Management Accounting

Even among the relatively modernised excellent companies, there are few companies of which the owner decides the business guidelines and targets based on a sound understanding of the financial reality, business characteristics, advantages and shortcomings of the company, in turn determined by financial accounting and cost control. Of the 17 companies subject to the detailed diagnosis, guidance was provided for 6 companies possessing a good range of business data. Firstly, the characteristics of the business were explained using three basic indices, i.e. Profitability, Safety and Productivity, and corporate management techniques (break-even point analysis, machine charge calculation, cost calculation for each product

and examination of the product mix, etc.) suitable for the reality of each company were suggested together with the provision of guidance on the establishment of business targets and business improvement methods. (See Appendix IV for further details of the company diagnosis regarding corporate management.)

(7) Situation of IT Utilisation

All of the model companies and those subject to the simplified diagnosis for which some form of guidance was provided by the Study Team members have introduced personal computers to run the company, including for production control, process control, quality control and corporate management purposes. The scope of PC use, however, is restricted to the classification and totalisation of gathered data and partial analysis. There is a common lack of a total system under which information/data is integrated and analysed in an effective manner with a view to reflecting the analysis results on the formulation / implementation of corporate management, management policies, profit targets and business plan, etc.

A total of 73 of the 103 companies (approximately 70%) diagnosed have their own e-mail address and use the Internet for business purposes although only 10 companies (approximately 9.7%) have their own home page. Most owners actively use a mobile phone, partly because of the limited availability of telephone lines and partly because of their busy business activities outside the company.

(8) Technologies and Skills

1) Shortage of Skilled Staff

Many companies are trying hard to recruit and secure the services of skilled staff. At present, however, only 17 of the 103 companies have a reasonable level of skilled staff. Many companies rely on in-house OJT to improve the skill level of their employees. Although some companies have a training programme, training is neither regularly nor continuously conducted.

Some 60% of the SMIs engaged in machining have already acquired the necessary basic technologies and skills. The lack of talented technicians and leaders, however, means that even if high performance machine tools are available, they are not used to their full capacity. To be more precise, the inadequate understanding of the basic operational capabilities of such high performance machine tools makes their use for applied operation practically impossible.

2) Machining

While the fact that young technicians skilfully use the aged general-purpose machine tools is a positive factor, their lack of basic knowledge of the latest machine CNC tools and the lack of capable leaders mean that such machine tools are not fully utilised. While the machining conditions and jigs/tools used are directly controlled by technicians, the actual use of machine tools is not necessarily adequate. There is a strong need for technical education of machining methods to match the required level of precision and diverse use of tools, etc.

The situation of machining work is often characterised by (i) deep cuts and a fast cutting speed, disregarding the finishing process, (ii) imperfect use of jigs and tools and (iii) fast machine cycle for forming, etc. This suggests emphasis on quick and efficient production without taking the overall productivity improvement while preserving the quality/performance into consideration.

3) In-House Technical Education

Even if the top executive (owner) has sound technical expertise acquired during his career with a MNC, this technical expertise remains his own. Busy business activities and the lack of high level technical staff cause a delay of in-house technical education and the transfer of technology with the result that improvement of the technological strength of the company is not achieved (only some 14 companies of the 103 have ever conducted in-house technical education or the transfer of technology).

4) Design

All SI companies manufacturing parts conduct their work in accordance with the instructions and drawings of MNCs and they do not design their own products. If dies are required, these may be supplied by MNCs or may be ordered from third-party die manufacturers based on drawings provided by MNCs. In the latter case, MNCs pay the die manufacturing cost. Die manufacturers have their own in-house design engineers and dies are designed using CAD/CAM software. However, these manufacturers lack a sufficient number of such engineers and are making strong efforts to secure the services of capable design engineers.

(9) Processes and Maintenance

1) Line Balance

Even if high performance machines (CNC machine tools and others) have been introduced, work improvement in the pre and post processes or processes linking machines has been slow, resulting in the assignment of many workers to such processes and an imbalance between processes. Despite the particular importance of process design in the case of production to meet individual orders, little examination is conducted to ensure high production efficiency.

2) Procedures Manual

While some 20% of SI companies have a procedures manual, the actual work is not necessarily conducted in accordance with this manual. In addition, daily start-up checks and other important procedural requirements are not strictly implemented on a daily basis.

3) Shopfloor Management System

The information management system for shopfloor work is not clearly established, resulting in uncertainties regarding the person in charge, the person to be reported to and the person responsible for issue instructions for remedial measures.

4) Equipment Maintenance

Many machine tools are second-hand or aged general-purpose tools although the latest CNC or similar machine tools are also used. These CNC machine tools, however, are used as if they were general-purpose tools and few SMIs use their high precision and high productivity functions to the full. Few SMIs conduct the regular maintenance of these tools, causing problems in terms of machine precision as well as product precision.

Hardly any rules exist in regard to equipment maintenance. Because of the lack of clarity regarding the person responsible for each item of equipment, preventive maintenance and the regular inspection of each item of equipment are not properly conducted, resulting in the inefficient use of equipment.

(10) Precision Machining

1) Equipment

Most companies use low precision and low performance machine tools manufactured in intermediate industrialised countries (there is a high proportion of second-hand machine tools and the precision level is one-half to one-tenth of that of machine tools made in Japan). The level of machining precision is in the order of some 10μ and a precision level of the 1μ order (for engineering plastic dies) is unattainable. There is a general shortage of high precision measuring instruments. Even if such instruments are available, they are not effectively used due to the lack of sufficient training on their proper use.

2) Tools, Measuring Instruments

Tools, equipment and measuring instruments are not properly controlled and the quality control is inadequate because of the following reasons.

- Precision surface plates and the minimum range of measuring instruments which comprise the basis for precise measurement are unavailable.
- There is no established system for the regular calibration of measuring instruments.
- There is no strict tool control, including the timing for the regrinding of cutting edges and the dressing of grinding stones.

(11) Production Control

There are only a few full-time personnel assigned to production control. As their professional knowledge is insufficient, the level of the control systems and techniques used is low. As the evaluation results of the simple company diagnosis indicate, the scores for human resources and systems in the field of production control are both low.

1) Delivery Control

In reality, production simply responds to orders received without considering the production lead time or plan for each process. In short, delivery control in conformity with the production lead time and delivery schedule is not practiced in most cases.

Some MNCs demand the delivery of products to suit their JIT (Just in Time) system. As the control system of SI companies cannot cope with this demand, these

companies build up an inventory equivalent to 1 - 2 months of production to meet the JIT demand. Delivery is instructed on the actual day or the day before and instructions are frequently issued on a daily basis or even twice a day which is beyond the control capability of SI companies.

2) Control Techniques

Many companies fail to control production based on the actual performance of the production schedule and inventory control plans, resulting in a delay of the implementation of measures to solve such problems as delayed delivery, order volume fluctuation and equipment breakdown. There is a general imbalance between the volume of orders received and the production capacity of equipment at most relatively small companies and these companies conduct production based on the anticipated order volume. However, the planned production volume does not include an appropriate surplus level and the work load arrangements for each piece of production equipment are not properly made. As a result, operation involving many pieces of equipment tends to be irregular, resulting in a poor equipment operation rate.

3) Progress Control

As production activities are mainly based on orders from customers, most companies fail to indicate the actual work progress using a wall-mounted chart or other means vis-a-vis the planned schedule. This causes a mismatch between the actual production volume and the planned production volume and the production efficiency is adversely affected.

4) Materials Storage

At many companies, there is no inventory control with the proper storage of raw materials and neither any acceptance records nor records on items which have been stored for a long time. The situation of mixed storage or storage on the floor suggests the absence of proper control.

In general, the materials storage situation is disorderly as materials are not stored by type. At some companies, materials are kept directly on the floor. In extreme cases, materials which are kept in the aisles are walked upon. This disorderly storage of materials inevitably causes damage or even rust on the material surface, possibly affecting the processing results.

Plastic materials in particular could degenerate depending on the manner of storage and the absorption of moisture considerably affects their quality at the processing stage.

5) Setting Time

The setting time for the exchange of dies is approximately 45 - 60 minutes in Malaysia for both stamping and plastic moulding (approximately 10 minutes in Japan). Job analysis of the setting work, advance preparation and improvement of the die storage conditions, all of which are essential to improve the productivity, are virtually non-existent.

(12) Quality Control

1) Maintenance of Quality

In the field of quality control, the general practice at all of the surveyed SMIs is to assign a high level of manpower to final inspection to conduct 100% inspection in order to ensure the desirable quality of the products for delivery, indicating the lack of any concept of maintaining product quality throughout the production processes. Even though some SMIs have received awards for their high product quality due to strict selective shipment with the checking of all products prior to shipment, the high proportion defective of processes suggests that true high quality has not yet been achieved. While quality data is gathered, there is no statistical techniques/control, including analysis of the quality data, feedback of the analysis results to the production floor and lot control, etc. As a result, no quality improvement activities using the established quality data are conducted.

In principle, quality should be achieved and maintained throughout the production processes and product inspection is only a means of verify the quality. Despite this fact, however, 100% inspection is conducted at the shipment stage and a large labour volume is used for this purpose.

Some 10% of the SI companies have already acquired ISO 9000 status. In all cases, although the documentation to acquire the said status is properly prepared, the lack of subsequent maintenance works were not made properly, therefore, positive effects of acquiring ISO 9000 status have not yet been felt.

2) Data Processing

While many companies gather various types of data (for example, sampling inspection data and shipment inspection data), this data is not properly analysed for its effective use to pursue the causes of defects, to examine measures to eliminate the causes of defects and to feed back the analysis results to the production processes.

(13) Working Environment

1) Seiri/Seiton

Although 5S activities (Seiri, Seiton and the other Ss) can be widely observed, they tend to be formal in that, for example, the shopfloor is not tidy or properly arranged despite the presence of slogans on the walls. It appears to have been forgotten that 5S activities can be a prime mover in the production of good quality products through their contribution to improved productivity and a good working environment.

2) Equipment Layout

The equipment and machinery at many companies are randomly placed because of continual expansion. Improvement of the productivity has been hampered by their inefficient layout and obstructed view of the work and product flows. In general, the shopfloor commands priority in examination of the working environment and auxiliary areas (materials storage, preparatory work and inspection areas) are relatively ignored. As a result, the working environment (ventilation, lighting and dust removal, etc.) in such auxiliary areas is inadequate.

3) Working Posture

The height of the work tables and surface plates, etc. is inappropriate and workers are forced to adopt an uncomfortable posture, resulting in difficulty of maintaining concentration. This situation illustrates the lack of proper consideration of worker safety and the maintenance of product quality.

4) Safety Measures

While the slogan of “Safety First” is displayed on the shopfloor, safety consideration is still insufficient as indicated by such facts as (i) exposure of workers to rotating parts of machinery, (ii) absence of clearly marked safe passages, (iii) splashing of cutting oil, (iv) absence of arrangements to prevent the falling of heavy items and

(v) wearing of soft shoes or sandals by workers handling heavy goods at the machining shop.

In general, the safety awareness and maintenance of a good working environment are insufficient, resulting in unsafe work all of the time.

(14) Human Resources Development

From the viewpoint of developing human resources for manufacturing, there is a problem of an inadequate number of skilled technicians/managers (many opt to become independent entrepreneurs as soon as they believed that they are ready), resulting in failure to foster senior personnel in-house and to further enhance their capabilities through mutual enlightenment. Some SMIs owners believe that the technical levels relating to the skill and management/control systems are inadequate and are trying to develop such systems together with the provision of training for technical/management staff members. Many SMIs in SI, however, are by definition of a small size and cannot employ a sufficient number of such staff members. Moreover, SMIs owners themselves are often uninterested in fields other than those of their own expertise and tend to rely on simplified control/management techniques to achieve an immediate gain. At the time of the detailed diagnosis, the improvement of various items was recommended to the model companies. In some cases, however, improvement efforts were hardly made, mainly because of a shortage of suitable staff members.

To maintain a stable business situation, SMIs owners should be continually aware of the existing problems and make constant efforts to develop capable staff members. Such efforts will eventually lead to improvement of the technological as well as managerial performance of the company. However, it is practically impossible for companies with less than 30 employees to employ such staff members.

3.1.2 Problems Found in Process of Technology Transfer

As part of the Study, workshops on precision machining and die design technologies for plastic injection moulding were held and the following problems of SI in Penang were found at these workshops.

(1) Precision Machining

At the precision machining workshop with 17 participants from various SI companies, common problems among machining SMIs in Penang as discovered by the simple

diagnosis were pointed out and improvement measures were explained. The common problems pointed out are described below (see Appendix V for further details).

- Application of Own Techniques Ignoring the Basics

  Such basic techniques as chucking of the workpiece, re-grinding of the cutting edge, dressing of the grinding stone and the use of cutting/grinding oil are somewhat ignored and the work is conducted by own preferred techniques.

- Use of Machine Tools with Poor Precision and/or Performance

  Many of the general-purpose milling machines and surface grinding machines are made in Taiwan and lack an automatic feeding device, constituting a bottleneck for the achievement of high quality machining and productivity improvement.

- Shortage of Highly Accurate Measuring Instruments

  Such highly accurate instruments as stone surface plates (made of synthetic granite) and digital height gauges providing reference for height measurement are often not used.

- Insufficient Tool and Cutting Edge Control

  At present, breakdown maintenance where regrinding or dressing of the grindstone is only conducted after the occurrence of large burrs, measurement defects or poor surface roughness is employed.

- Lack of Awareness Regarding Safety Control and Workplace Environment Control

  At almost all of the visited workplaces, neither safety caps nor safety shoes are worn. Other safety measures, such as the use of protective goggles for cutting work and the use of dust masks for grinding work, etc. are absent. In addition, the luminous intensity at most of the workplaces is inadequate while the level of care taken for workplace environment control is insufficient.

The general impressions gained at the workshop are described next.

- Technical Level of Participants

  Most of the participants were frontline technicians or machinists and not many specialise in both milling and surface grinding. The technical level appears to widely vary from one company to another. Those from Company A showed the highest

technical level. While this does not necessarily indicate that Company A has a very high technology level, it cannot be denied that Company A has excellent human resources.

- Attitude of Participants

  All of the participants, including those with a low technical level, were very committed. Some even skipped lunch to try again when mistakes were made during the earlier training. However, some engineers simply watched the machining practice without participating, indicating a wall between engineers and technicians just as in the case of American/European countries.

- Understanding Capability

  What is important for machining work is the familiarisation of the body with the required movements instead of simply understanding them. “The application of own techniques ignoring the basics” and “the absence of safety awareness” pointed out as problems by the diagnosis are directly applicable to the work performed during the workshop. Proper mastering of the basics is essential for everyone to further improve their skills.

(2) Die Design Techniques for Plastic Injection Moulding

Nine and seven participants attended the lecture part and the test moulding part of the workshop respectively. As in the case of the precision machining workshop, common problems among plastic injection moulding SMIs in Penang as discovered by the simple and detailed diagnoses were pointed out and improvement measures were explained. The common problems pointed out are described below.

- Increased Inventory

  Many moulding SMIs have an excessive level of intermediate products as well as final products because of their efforts to respond to the JIT delivery demands of MNCs through increased inventory in order to avoid late delivery caused by problems with dies, etc.

- Insufficient Die Technology Strength

  The die technology level is generally low among moulding SMIs and die maintenance or die modification for improved productivity is insufficient. The problem of increased inventory is also a cause of this insufficient die technology strength.

- Long Arrangement Time

  The arrangement of materials or dies usually takes 30 – 60 minutes, constituting a factor for the low productivity. The poor machine layout is another factor, partly because of the use of a movable gate crane rather than an expensive overhead travelling crane.

- Shortage of Workers

  Every company is facing a shortage of moulding machine operators and foreign workers from Indonesia an Bangladesh, etc. are recruited to fill the shortage. However, the work permit quota for Bangladeshi and other foreign workers has been decreasing, making it likely that the worker shortage will continue.

The general impressions gained at the workshop are described next.

- Technical Level of Participants

  Even though the workshop mainly featured die design, only one die designer participated. As the other participants included technicians involved in moulding and die operation and engineers of the production engineering department, it is difficult to generalise their technical level. In regard to die design, the theoretical understanding was found to be inadequate and the lecture prior to the practical training included guidance on the key points of basic die design techniques.

- Attitude of Participants

  Not many of the participants had previous experience of using CAD and, therefore, the practical training on die design using CAD made slow progress. Nevertheless, many of the participants were committed to learning more and skipped lunch in order to familiarise themselves with CAD.

- Understanding

  The die designer and production engineers showed a higher level of understanding of the subjects of the workshop than the floor technicians.

3.1.3 Summary of Problems of Model Companies and Guidance Items for Improvement

The problems found by the detailed diagnosis of the model companies and the guidance items for improvement are shown in Tables 3-3, 3-4 and 3-5.

Table 3-3 Improvement Recommendations for Model SMIs
(Business/Financial Management)

Item	Present Situation	Improvement Recommendations
Financial and Accounting Management Systems and Organisational Structure	- There are few examples of SMIs owners who have a proper understanding of the financial strength and advantages/shortcomings of their business to establish a proper management strategy. - There is a lack of integral management accounting which incorporates cost management, budget management and profit management, etc. Neither are there any management targets regarding cost and profit and instructions to fulfil responsibilities.	- SMIs owners should properly understand the ideas of modern corporate management and management techniques and should actively implement them. - Business policies and a profit plan should be clearly established and announced to strictly enforce target-based management in all departments. - The size of plant/equipment investment and the investment timing should be examined and planned from the viewpoint of a medium to long-term corporate management plan.
Financial Statements	- The work to prepare financial statements is entrusted to an external auditing body, causing problems in terms of the efficient and speedy settlement of accounts. - Some aspects of accounting and financial management practices can be described as inadequate or inappropriate.	- The rate of depreciation and accounting criteria for expenses should be clearly established. - Data on corporate management indices should be established in order to establish improvement targets based on comparison with other companies and to implement improvement activities.
Financial Strength	- Some SMIs are still in the red because of the after effects of the currency crisis in 1997 and failure of the business strategy. - Many SMIs are struggling with a low profit rate.	- A corporate management improvement plan which takes the business characteristics, size and strength of the company into proper consideration should be formulated and implemented. - There should be a deeper awareness and understanding of the advantages and shortcomings of the company.
Production Cost Control	- Cost information and production control information are not fed back for break-even and financial analysis and corporate management. - There is no concept or categorisation of variable cost or fixed cost. Neither is there any awareness or understanding of the break-even point. - No cost calculation by department or product is conducted. - The distinction between the production cost and general administrative cost is not clearly established.	- Accounting and cost data and information should be effectively used for corporate management purposes. - The financial analysis and break-even point analysis techniques should be utilised. - The character, purpose and effect of each cost item should be properly understood. - Machine charge techniques should be understood and utilised.
Production Cost	- Some SMIs account for the auxiliary material cost and other costs on an actual payment basis. - Some SMIs account for the unpaid cost and advance payment of cost, etc. on an actual payment basis.	- The accounting rules should be clarified as well as unified.

Table 3-4 Improvement Recommendations for Model SMIs (Production Technology)

Technique	Current Status	Items Requiring Improvement
Machining technique - Cutting - Grinding - Polishing	- All companies have an intermediate level of machining technique, although there are some technical gaps between their factories. - Tools are used quite simply, without adequate consideration for workpieces, working accuracy etc. - Cutting conditions are not fitted to cutting tools. - Dry grinding, instead of wet grinding, is performed in many companies. - Tool accuracy control is inadequate. - Machine functions are not properly used with continued accuracy. - High performance machines are not efficiently used.	- There is no leader with advanced technical abilities. - Training is necessary regarding tool types and use of each type. - Instruction should be provided regarding standard cutting speed. - Instruction should be provided in the basic knowledge of mechanisms and properties of machines. - Greater awareness of machine productivity should be developed.
Press working technique - Stamping - Bending - Drawing	- Very few auxiliary jigs and tools are used, causing problems with safety and product accuracy. - Die accuracy control is inadequate. - Very few composite molds are used (progressive dies, transfer dies etc.).	- Development of auxiliary jigs and tools should be promoted to improve safety, product accuracy and productivity. - Accuracy maintenance should be secured by controlling the number of shots. - A training program in die improvement should be provided for productivity enhancement and cost reduction.
Molding technique	- Material management is inadequate (in terms of storage conditions, management by material type, etc.). - There are some cases where molding conditions (die pressure, temperature, injection pressure etc.) are inappropriate. (General and engineering plastic materials)	- An education and training program in basic knowledge concerning materials and molding should be provided (in particular, practical knowledge that fits the current conditions in Malaysia).
Secondary processing technique - Coating - Silk screening - Hot stamping	- There are many cases of contamination with foreign matter due to lack of dust control measures. - Adequate consideration is not given to process design. - Many companies are slow to take automation and labor-saving measures.	- Spray booth design should be improved. - Technology of flexible manufacturing lines and mixed production lines should be introduced.
Die technique	- Many companies are lagging far behind in die design technique. - Many companies lack the ability to develop NC (numerical control) programs. - Due to lack of sharing and consistency of jigs and tools between processes, it takes too long to set up a processing standard, resulting in difficulty in accuracy assurance and productivity improvement. - Jigs are not yet in wide use in the manual finishing processes. Very few companies are provided with established manuals for these processes. - Die design lacks consideration of workability in molding and assembly processes.	- A training program in die improvement should be provided. - Simulation software should be introduced. NC programs should be developed in-house. (Technological accumulation and added values) - Systematised CAD/CAM-CNC (computer numerical control) should be developed. - Jigs should be shared between machines. Cutting tools should be reviewed. - Mechanisation and automation of manual finishing processes should be promoted. Jigs and tools require improvement. - Guidelines and know-how (shape design etc.) should be introduced for the improvement of workability in post-processes. - Information on customer needs should be organised. Manuals should be prepared.

Table 3-5 Manufacturing Technique Improvement Plan
(Control Techniques)

Management Item	Current Status	Items Requiring Improvement
Production Control	- There is no comprehensive production planning (customer planning, inventory planning, production capacity etc.). - Production lead time is too long. - Production performance is not adequately grasped. (Performance data is maintained, but not analysed.)	- A production control training and lecture course should be provided. - It is necessary to determine theoretical lead time and keep track of actual lead time. - More efforts should be made to reduce lead time. - Just-in-time (JIT) production planning should be made possible by lead time reduction. - Production control index is not posted up. Follow-up is not performed.
Product inventory control	- Careful calculation is not performed in inventory planning. (Inventory is above the proper level in many cases.) - Long-term inventories are mixed up with others.	- Information should be always available concerning delivery planning and actual lead time, and based on such information, inventory planning should be determined. - Minimum inventory planning should be formulated to meet the requirements of the just-in-time system. - Revaluation of long-term inventories is necessary.
Material inventory control	- Inventories are mixed up. - Long-term inventories are mixed up with others. - No FIFO (first in, first out) system is applied to storage and delivery. - Lack of material identifying indications and material inventory records (inventory volume, storage time etc.) is leading to inappropriate use and loss of materials. - There are many cases where storage environment is inappropriate (humidity, ventilation etc.).	- Inventory control technique should be introduced. - Storage places and cabinets should be secured and improved. - Storage environment requires improvement.
Quality control	- Control data are collected, but not effectively utilised for quality improvement. - Sampling inspections are conducted, but without lot acceptability judgement in many cases. - The idea of “elaborating quality through production processes” has not yet taken root. (Many companies depend on final inspections to maintain quality.) - Some companies are not provided with an appropriate quality inspection environment (inspection jigs and tools, lighting, work posture etc.).	- Review of basic quality training/lecture courses is necessary (for thorough lot and process inspections). - An appropriate inspection environment should be secured.
Safety management	- There are many cases where safety equipment and tools are not adequately provided. - There are many cases where safety shoes and wear are not used. - No safety passage is provided in some companies. - Work environment is inferior (in terms of noise, lighting intensity, work posture, ventilation etc.). - There are some cases of operation with wiring on the floor.	- Rules as to safety equipment and tools should be prescribed in operation standards. - Standardisation of safety education and training is necessary. - Safety tools should be supplied to workers for free. - Work environment should be improved (noise, lighting intensity, work posture, ventilation, safety passage etc.). - A power supply system for mobile equipment should be provided (for safety).

Observation and analysis of the situation of the model companies identified the problems faced by SI companies. These SI companies have learned management and control techniques and have introduced machinery and technologies from advanced industrialised countries. Some owners have experience of working at a MNC and have developed their companies to the present form under the guidance of MNCs while benefiting from their past working experience and human connections. However, SMI owners and senior executives generally lack basic practical experience of business management, technologies and control techniques despite their general knowledge. As such, even if management (control) techniques and new technologies are introduced in response to the demands of MNCs, their application will only be superficial. In reality, while most companies record production and quality data, etc., this data is not effectively used for improvement at the production floor or for business management. This results from the inadequate recognition of the importance of business management on the part of owners. At the same time, the lack of capable staff members with responsibility for management/control is another significant factor.

3.2 Results of Survey on Support Programmes and Analysis of Problems

3.2.1 Summary and Analysis of Problems of Support Programme Implementation Organisations

A questionnaire was sent to SMI promotion organisations and bodies to clarify the present situation of these organisations/bodies and their awareness of the existing SMI support programmes was confirmed. The questionnaire and its results are included in Appendix VI.

(1) Questionnaire Results for Federal Government Organisations

The following description is based on analysis of the replies to the questionnaire by 13 SMI promotion organisations and bodies. Some organisations failed to answer some questions and some questions gave multiple choice answers. Accordingly, the total number of replies is not necessarily 13. The 13 organisations/bodies which were sent the questionnaire are listed in Table 3-6.

Table 3-6 Organisations Responding to the Questionnaire

Abbreviation	English Title
BITM	Bank Industri & Technologi Malaysia Bhd.
BPIM	Bank Pembangunan & Infrastruktur Malaysia Bhd.
CGC	Credit Guarantee Corporation Malaysia Bhd.
FOMFEIA	Federation of Malaysian Foundry & Engineering Industries Association
HRDC	Human Resources Development Council
MATRADE	Malaysia External Trade Development Corporation
MIDA	Malaysian Industrial Development Authority
MIDF	Malaysian Industrial Development Finance Bhd.
MOED	Ministry of Entrepreneur Development
MTDC	Malaysian Technology Development Corporation Sdn. Bhd
NPC	National Productivity Corporation
SIRIM	Standard & Industrial Research Institute of Malaysia(former name)
SMIDEC	Small & Medium Industries Development Corporation

1) Recognition of SMIs

How these organisations view SMIs was questioned from the viewpoint of their developing SMI support policies and with what image. The replies were almost equally distributed among three answers, i.e. “as subcontractors for MNCs” (8), “as excellent small-scale independent entities” (7) and “as venture companies with unique skills” (6). This suggests a different image of SMIs on the part of different SMI promotion organisations. Other replies included “as entities providing employment opportunities” (by the SMIDEC).

2) Desirable SMI Support Measures

- To the statement that “the central government should play a main role” in the development of SMIs, an overwhelming majority of 11 respondents agreed while two disagreed. The MATRADE stated that “the development of SMIs should be jointly conducted by the central and local governments” while the MOED stated that “self-help efforts on the part of SMIs are more important although the support of the central government is also necessary”.

- To the statement that “the authority for and control of programmes should be transferred to the local government”, only two organisations agreed. Their reasons are that local governments can monitor SMIs more closely (MTDC) and that local governments should play a proper role in the development of SMIs (SIRIM).

- To the question of "should the government play a more active role in the development of SMIs in line with the Manufacturing ++ Concept", 12 respondents agreed. The only exception was the SIRIM which stated that such a role should not only be played by the government but also by the private sector, including SMIs.

- To the statement that "support programmes are unnecessary and things should be left to the free economy", all of the respondents disagreed, illustrating their belief that SMIs are still too weak to be independent and require government support.

- To the statement that "Bumiputra-owned companies should be given preferential treatment", an overwhelming majority (nine) agreed compared to three which disagreed. As most staff members of government agencies and financial institutions are Bumiputra (hence most of the respondent were Bumiputra), such a result may have been inevitable. Meanwhile, the three organisations which disagreed expressed such reasonable opinions as all companies should compete on equal grounds (MTDC), special support should be restricted to business establishment (MED) and all companies should face the same risks in business matters irrespective of their ethnic background (FOMFEIA).

- To the statement that "companies owned by non-Bumiputra should be afforded equal treatment as Bumiputra", the replies were equally divided, indicating the existing of a fair number of organisations which oppose the improved treatment of non-Bumiputra companies.

3) Problems of SMI Support Programmes

To the question of "what do you think are the overall problems of existing SMI support programmes", eight organisations pointed out that there is a lack of cooperation among the various government agencies involved in SMI development. The second largest answer was that there are not enough officers with sufficient knowledge of industrial needs (seven respondents). The third answer, i.e. no monitoring and feedback system after programme implementation, was selected by five respondents. Other opinions expressed include "SMIs should make efforts to establish closer relationships for cooperation with the government" (MATRADE and MED), "SMIs are not well informed about support programmes" (Bank Industries and Technology) and "the low programme implementation rate of government organisations and ignorance on the part of SMIs" (MIDA and FOFEIA).

4) Evaluation of SMI Support Programmes

- To the question of "what has been the best practice/programme implementation so far", it is no surprise that each organisation cites its own programme. The cited examples are the ITAF (SMIDEC), the Venture Capital, Technology Acquisition Fund and Commercialisation of R & D Fund (MTDC), the Trade Advisory and Clinical Session (MATRADE), the Vendor Development Scheme (MOED), the Business and Export Development Programme/Training (MOED), Financial Assistance (BITM), various loan schemes (MIDF, BITM and BPIM), the New Principal Guarantee Scheme (CGC), Quality Improvement/Management Services (NPC) and tax incentives (MIDA).

- The cited reasons for success include "grant without repayment requirement" (SMIDEC), "loans with attractive conditions" (BITM, MIDF and BPIM), "programme suitable for the demands of industries" (SIRIM) and "exemption of all or part of tax" (MIDA) rather than self-congratulation. To the question of "what is one programme which was withdrawn (or may be withdrawn) due to lack of success", only the MIDF cited "the Bumiputra Industrial Fund". All of the other organisations stated that no programme has yet failed, illustrating their strong confidence.

5) Entrepreneurship and SMI Support Programmes

- To the question of "what is your opinion of the development of an entrepreneurial ability/spirit among SMIs by your present support programme", two options, i.e. "the present support programmes are operating well and any problem lies on the user side" and "it is possible to promote entrepreneurship among SMIs by adjusting the present support programmes" were selected by eight respondents each. Despite the rather detached opinion of blaming users, it must be emphasised that the forward looking opinion of seeking a better role for support programmes by means of their improvement was equally shared. Two respondents selected the answer that "it is impossible to expect any support programme to promote entrepreneurship among SMIs". No respondent agreed with the answer that "the present support programmes are failures and a new paradigm for support programmes is required".

- To the question regarding the required improvement to upgrade support programmes, the following answers were given.

  ① Increased ceiling for loans (SMIDEC)

② Emphasis on market development and relaxation of the loan conditions (MTDC)

③ Closer liaisoning between agencies to reorganise programmes to made them more comprehensive (MATRADE)

④ Implementation of more detailed surveys to identify the needs of SMIs (MED)

⑤ Education for SMIs to facilitate their understanding of the usable programmes (BITM)

⑥ Introduction of a mechanism to enable the following up and monitoring of the achievements of support programmes (MIDF)

⑦ Wide publicity of support programmes to SMIs

(2) Desirable SMI Promotion Measures from Viewpoint of Federal Government

Judging from the questionnaire results, federal government organisations view SMI promotion measures in the following way.

At present, there are enough support programmes and the introduction of new programmes is of little necessity. It is, however, a natural obligation for the federal government to play a central role in the development of SMIs. The federal government organisations are strongly confident of developing SMIs through guidance on the direction for support programmes in line with a long-term strategy, the provision of loan schemes, strengthening of the linkage with MNCs and the creation of markets. Conversely, there appears to be a lack of a concept to stimulate vigorous business activities by the private sector through the implementation of support programmes.

The promotion of SMIs led by local governments is accepted at the federal level on the grounds that local governments have sufficient knowledge, capability and trust to bear the responsibility for the development of SMIs. The prospect of local governments actually playing a leading role, however, is slim at present.

In the case of preferential treatment for Bumiputra companies which is controversial in relation to the promotion of SMIs, the majority opinion is that such treatment is necessary. Such special support is considered necessary because Bumiputra companies are inferior to non-Bumiputra companies in all aspects. This is an expected result given the fact that most government officials are Bumiputra.

Meanwhile, several directions for improvement are indicated in reflection of the poor performance of support programmes in the past. These include “the horizontal liaisoning of support organisations”, “training to make government officials understand business needs” and “publicity to make SMIs understand the various support programmes”.

In regard to SMI support programmes in the future, it is recommended that they should be innovative and should reflect the anticipated demands and that package programmes which incorporate financial assistance, market promotion, education/training and technical guidance are desirable.

3.2.2 Problems Found by Human Resources Development Survey

(1) Problems of Educational/Training Organisations

Having partially adopted British systems, the education and training systems in Malaysia are well development, providing high level education and training in general. A proportion of the population which high educational qualifications is a major characteristic of Malaysian society.

In Penang, the PSDC has a long history as a human resources development organisation, providing education and training for people prior to employment as well as for those in employment by means of cooperating with MNCs and the state government. At first, its main task was to train technicians to fill the shortage of technicians at MNCs. Its activities have since widened to include more ambitious programmes, such as the GSP which aims at upgrading the technological level of local companies to make them internationally competitive.

In general, however, the following problems can still be observed.

1) Uniformity and Inflexibility of Training Menu Due to Instructor Shortage and Centralised Control

The federal government is aware of the necessity to recruit excellent instructors to provide advanced vocational training and is looking at the possibility of introducing education/training schemes in collaboration with universities and research institutions.

The existing training courses of such nationwide organisations as the FMM, NPC and SIRIM for people in employment appear to be very similar and there is little evidence of originality. Each organisation shows a relatively strong tendency

towards centralised control as the head office plays a key role in the preparation of the training curriculum. Local branches which are the closest to the beneficiaries should play an active role in the identification of local needs while being more closely involved in curriculum preparation.

2) Insufficiency of Technology Transfer

Efforts to advance the technological capability of SMIs have been lagging behind the planned schedule, causing concern that SMIs will simply remain subcontractors with the present speed of their technological advancement. Unfortunately, SMI owners little rely on the technology support menu of the government.

It appears that educational organisations tend to look to large companies as they can expect a large number of participants in their education/training courses from these companies. As a result, publicity for SMIs is unsatisfactory. A lack of knowledge of training courses on the part of SMIs was found by the questionnaire survey during the First Field Survey. The GSP provided by the PSDC aims at SI companies with a relatively high technological standard as a result of their close relationship with MNCs and, therefore, cannot be expected to have the direct effect of improving the technological level of SMIs lying at the bottom.

As far as training for factory management is concerned, there are several comprehensive courses, including the GSP of the PSDC and the manufacturing management course of the ARGI. Other organisations also provide an a la carte type training menu. Nevertheless, there are only a few training courses which are designed to level up manufacturing technologies and skills. Rare examples of this type of training course can be seen among the short courses of the PSDC shown in Table 2-21. It is hoped that retraining courses on manufacturing technologies and skills for those in employment will be consolidated once the operation of Politeknik and the JMTI are on the right track.

(2) Problems on SMI Side

The history of the electrical and electronics industries in Malaysia is still only short and, therefore, many SMIs acting as SI are quite young. These SMIs have many problems which are described by the hierarchical class within a company.

1) Insufficient Managerial Capability of Top Management

Many SMIs have been established by owners using the technical expertise and savings accumulated during their employment at MNCs. Although they have the technical skills to produce specific products, their knowledge of managerial techniques is not necessarily adequate, resulting in a struggle to enforce the proper management/control of finance, labour, quality and production.

2) Inconsistent Capability of Middle Management

The quality of middle management's support of the owner considerably varies from one company to another. Some companies enjoy a high level of management in all aspects through good team work between the owner and the middle management while others only achieve incomplete management as the owner is responsible for everything from factory management to product marketing and fund raising because of an inability to recruit capable managers.

3) Insufficient Technical Upgrading and Accumulation Among Technical Staff

The quality of technical staff also considerably varies from one company to another. Although technical staff apply the knowledge and experience acquired through school education, including university education, and employment at MNCs, they appear to have few opportunities to learn new technologies from outside. At most companies, the investment priority is given to production equipment, resulting in a virtual absence of equipment for product development or improvement. Even if the level of technical staff is high, it is seldom utilised for better results. Moreover, there is a problem of job-hopping by technical staff for better pay with the end result of companies failing to accumulate technical expertise in-house.

4) Workers Given Little Opportunity for Advanced Technical Training

While skilled workers are systematically trained by the PSDC and other vocational training organisations, there are still many unskilled workers. Opportunities for basic upgrading training for those in employment are provided by the PSDC and others but such general training is insufficient for workers with a certain level of skill. Further strengthening of the training/guidance system of training organisations is, therefore, highly desirable. The problem of job-hopping for better working conditions after acquiring higher skills also exists as in the case of technical staff, making it difficult for companies to accumulate in-house skills.

The reality of SMIs is that even if their owners feel a strong need to improve the managerial, control and manufacturing techniques/skills at every layer of the company, they cannot find the necessary manpower, time or money because of their pressing daily work. In addition, many owners are not aware of the educational and training opportunities for their employees provided by various organisations or support programmes to subsidise the education/training cost.

3.2.3 Problems Seen from Company Side and Their Analysis

A questionnaire survey with multiple choice answers was conducted with the subject SI companies for the simple diagnosis on SMI promotion organisations and existing SMI support programmes. The questionnaire sheet and compilation results are given in Appendix VI of this Report.

Although this questionnaire survey is limited in terms of the population (103) and business types, it is believed to be useful to disclose the present situation of SMI support programmes in Malaysia and Penang due to the involvement of top executives of companies in the Study Area. The findings of the survey are outlined below.

(1) Awareness of SMIs Promotion Organisations and SMIs Promotion Programmes

The SIRIM, PSDC, SMIDEC and other organisations which implement SMIs promotion programmes are generally well-known. In contrast, however, the IPM and PTTC are not very well known despite the fact that they have been established in the well-known PSDC. Moreover, government-affiliated development banks and such venture capitals as the BIMB, BTVC and BPIM are also not very well-known. In the case of SMIs support programmes, such government-backed programmes as the ITAF and others are well known. The ILP, which is believed to have a promising future, is less well known than the VDP.

(2) Use of Support Schemes

More than half of the companies which responded have used one support programme or another. The programmes offered by the SMIDEC appear to be particularly popular. The attraction of these programmes appears to lie with their accompanying consultation services, seminars and low interest rates. While 70% of the companies which have used the support programmes say that the programmes lived up to their expectations, 40% say that they fell short of their expectations, mainly because of the very complicated procedure and long time required for approval.

The most commonly cited reasons for companies not to use the support programmes are as follows: “It is a waste of time. Even if we apply, we will probably not be accepted”, “There is a lack of flexibility in the way that the funds can be used” and “The application procedures are too complicated and troublesome”. Few companies cited “Government assistance is unnecessary” or “Reluctance to make disclosure” as a reason for not using the programmes. The main reason for not being able to use a support programme despite willingness to do so is a lack of knowledge of the available programmes. Some companies cite a lack of time to research the programmes.

(3) Expectations of SMIs of SMIs Support Organisations and Support Programmes

The most popular answer to the question regarding what SMIs expect from the federal and state SMIs support programmes is “introducing business contacts”, followed by “working capital financing” and “technical guidance”.

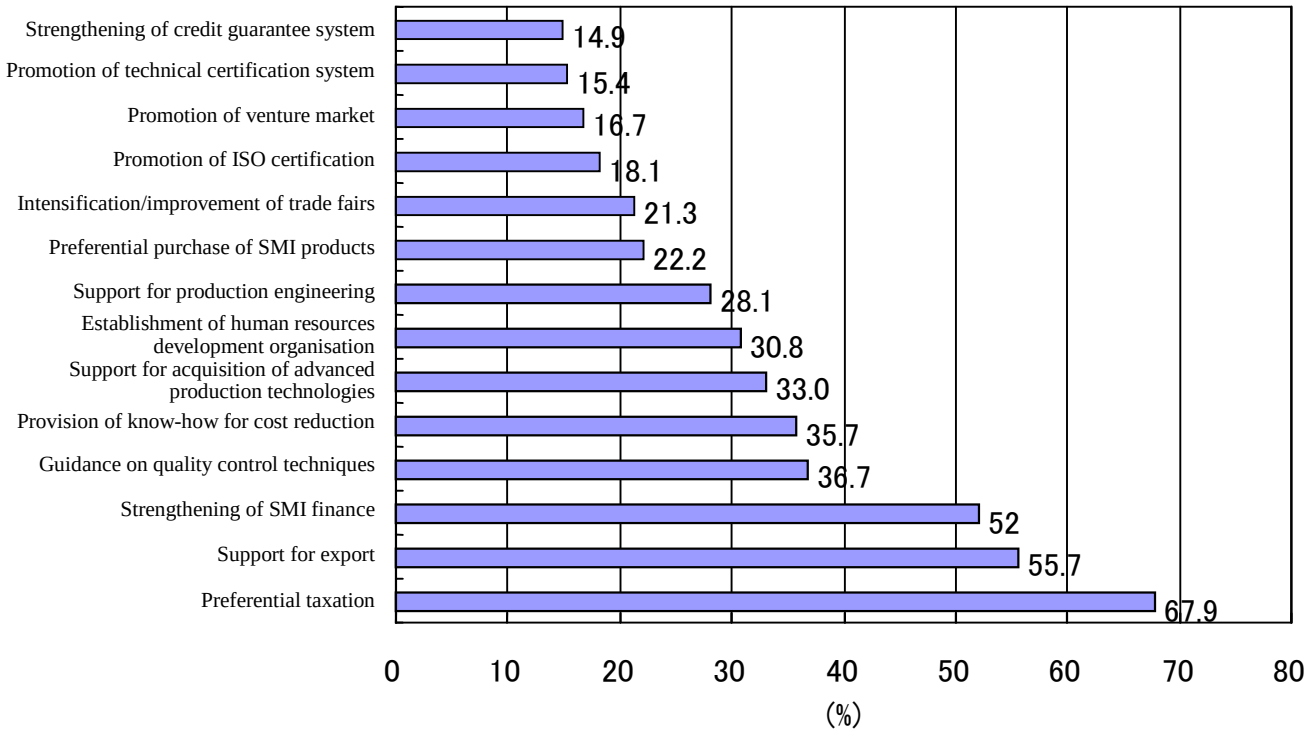
What are expected from the introduction of business contacts are export opportunities and linkage with overseas customers. Strong expectations are also expressed in regard to finding business opportunities through technology transfer and the establishment of joint ventures.

In regard to working capital financing, an easily accessible, low interest loan programme is naturally the preferred choice. It appears that SMIs aim at improving their productivity and expanding their business with such finance.

Technical guidance is required for, among others, an increase of the added value of products, technology transfer, certification for ISO 9002, technical training at overseas companies and an increase of technology trade.

The questionnaire survey conducted by the JBIC[1] found that the most desired SMI support measures are preferential taxation (67.9%), support for export (55.7%) and strengthening of SMI finance (52.0%) (see Fig. 3-1).

[1] JBIC Research Paper No. 8, Tasks for Sustainable Development of East Asia, January, 2001



Source: JBIC, Overview of Small and Medium-Size Industries in Malaysia

Fig. 3-1 Requested Support Measures of the Government

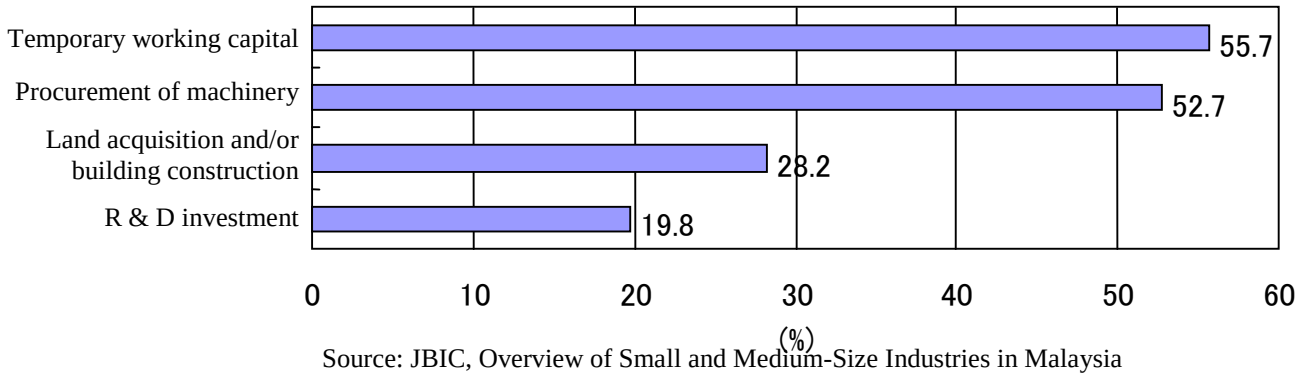
3.2.3 Problems SMIs Want to Solve

The problems which have emerged through the above-mentioned questionnaire survey and interview survey and which SMIs want to solve are described below.

(1) Financial Assistance Measures

1) Restriction to Equipment Investment

Seven types of public financial assistance services are available to cover (i) equipment and start-up cost, (ii) working capital, (iii) marketing cost (market research and others), (iv) ISO certification cost, (v) R & D cost and (vi) technical guidance cost in addition to (vii) tax reduction or exemption. However, financial assistance for working capital, the most desirable form of financial assistance from the viewpoint of SMIs, is not readily available as assistance is almost totally restricted to equipment procurement, constituting a mismatch between lenders and borrowers. The reasons for this restriction of public financial services to the equipment procurement cost are (i) easy checking of fund use, (ii) secured collateral and (iii) division of work between public and private financial institutions.



Source: JBIC, Overview of Small and Medium-Size Industries in Malaysia

Fig. 3-2 Purposes of Fund Raising

Table 3-7 Main Fund Raising Sources

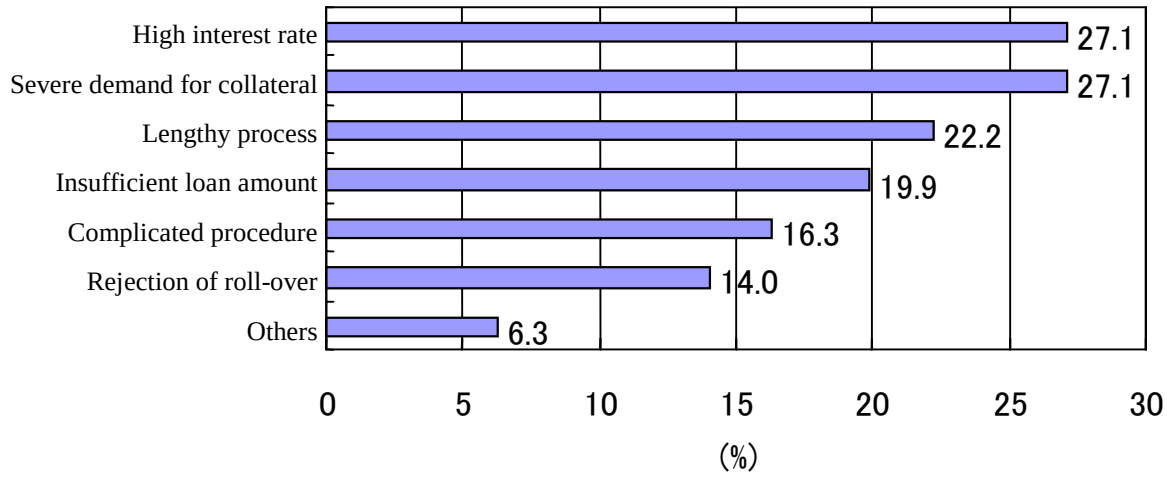
(%)

Source	Working Capital				Investment Fund			
	1996	1997	1998	1999	1996	1997	1998	1999
Governmental Financial Institution	3.2	2.7	3.2	4.1	6.8	5.9	4.1	3.6
Commercial Bank	59.3	62.4	63.3	62.4	20.4	21.3	20.8	20.8
Finance Company	6.8	6.8	5.9	6.8	17.2	17.6	16.7	15.8
Government Funds	0.9	1.8	1.8	4.5	0.9	0.5	2.3	3.6
Informal Finance	10.4	11.3	11.3	13.6	4.1	3.6	4.1	6.3
Offshore Borrowing	2.3	3.2	3.6	3.2	0.9	1.4	0.5	0.9
Other Financial Institutions (Leasing, etc.)	2.3	2.3	2.3	1.4	3.2	2.7	2.7	2.7
Sales Income	31.7	32.6	33.5	33.5	11.3	11.8	13.1	13.1
Internal Reserve	17.6	17.2	22.2	22.6	11.3	10.9	17.2	15.4

Source: JBIC, Overview of Small and Medium-Size Industries in Malaysia

2) Insufficient Borrowing Due to Insufficient Collateral

In the case of term loans, collateral must be secured because of the need to procure land and buildings. The inefficiency of the Land Office which is responsible for the securing of collateral is a bottleneck because 6 – 12 months are required to secure adequate collateral. Insufficient collateral means insufficient borrowing. The JBIC survey found that “a severe demand for collateral” is the strongest complaint together with “high interest rates” (see Fig. 3-3).



Source: JBIC, Overview of Small and Medium-Size Industries in Malaysia

Fig. 3-3 Complaints Regarding Financial Institutions

3) Lengthy Process from Application to Disbursement

Because of the lengthy process,[2] the short-term funding demand of SMIs is not properly met. The public organisations providing financial assistance services do not understand the severity of the business situation faced by SMIs where a delay in fund raising may mean the loss of a business opportunity. Their efforts to understand the important of swiftly providing loans are inadequate.

4) Problems Seen by Financial Institutions

According to the JBIC survey, the finance schemes of the government are provided and run by many bodies and eligibility for finance considerably varies. As a result, it is difficult for even lenders to explain the characteristics of all schemes to potential borrowers. In the case of credit guarantee, the general opinion is that the demand for repayment after subrogation is too harsh. There are many cases where it takes more than one year for subrogation to take place after the occurrence of a non-performing loan. It is extremely difficult to recover debts by the CGC afterwards. As the original request for credit guarantee by the CGC is made by SMIs because of insufficient collateral or creditability, the CGC cannot be blamed for the failure of debt recovery.

[2] There has been a case where more than three months were required from initial application to loan execution.

(2) Market Promotion Measures

1) VDP and ILP

When the jurisdiction for SMIs-related policies and measures was transferred from the MITI to the newly created SMIDEC in 1996, the VDP (Vendor Development Programme) was transferred to the MOED established in 1995 to promote the Bumiputra policy. As a result, the SMIDEC launched the ILP (Industrial Linkage Programme) serving all ethnic groups. However, the ILP has so far failed to gain much popularity. The reason for this appears to be that the scheme has little advantages for MNCs because of insufficient matchmaking facilities to establish linkage between MNCs and SMIs. In general, MNCs are little concerned with whether or not SMIs are run by Bumiputra or non-Bumiputra and the VDP and ILP launched by the government mean little difference for MNCs.

(3) Problems to be Solved by SMIs

1) Shortage of Time

Most SMIs are run by one-man management and their owners are too busy to carefully study the available SMIs support programmes. Even if they are aware of such programmes, they lack the time for the essential paper work to use the programmes. Consequently, if one or two visits to a government office and/or financial institution do not produce a favourable result, they tend to give up, opting for a private sector loan despite the higher interest rate because of the quick decision-making process.

2) Distrust of the Government

Many SMIs owners harbour a sense of grievance towards the government as they feel victimised by their omission from the scope of SMIs support programmes. Many SMIs owners are reluctant to disclose the technologies and know-how possessed by their companies and, therefore, cannot fully meet the application requirements for support programmes. There is a tendency among SMIs owners not to submit reliable financial statements because of the fear that it may lead to an additional tax burden.

3) Illegal Activities

It is not exception for SMIs to invade government land to illegally build a factory. There are cases where factories are built on agricultural land without changing the designated land use to industrial use. One plating company was found to have

constructed an illegal factory on illegally occupied land. In such cases, there is a strong tendency for companies to minimise any contact with both the federal and state governments in case they are demanded to leave their illegal premises. Because of this or other reasons, these companies cannot possibly use any SMIs support programme.

4) Lack of Marketing Ability

The only known marketing method is conventional reliance on known contacts. What are lacking are the preparation of an attractive product catalogue, the creation of a persuasive estimate and the appealing presentation of one's own company. Marketing for export is almost beyond the ability of general SMIs.

5) Problem of Language

Some application forms must be completed in Malay which is off-putting to Chinese-run SMIs. Some SMIs have not received any higher education and writing may be a weak point.

3.3 Problems to be Solved for Strengthening of SI

3.3.1 Problems to be Solved by SI Companies

When the causes of the problems identified in 3.1 are analysed, the following factors impeding the development of SI shown in Table 3-8 emerge, presenting viewpoints to solve the problems in question.

Table 3-8 Factors Impeding Development and Measures to Eliminate Such Factors

Area	Subject	Impeding Factors	Measures/Targets [Note]
Human Resources	Owners	・Business management on extension of experience accumulated up to the point of business start-up ・Insufficient vision for business development	・Learning and implementation of scientific business management techniques ・Training of owners equipped with business vision
	Employees	・Shortage of middle ranking managers ・Insufficient commitment to precision and quality ・Insufficient utilisation of machine capability (particularly NC machines)	・Training of job leaders ・Thorough enforcement of TQC principles ・Thorough implementation of skill training for operators
Technology	Elements	・Insufficient response to the element technologies required by MNCs ・Absence of integrated capability to solve design problems and defective processing ・Insufficient capability to improve quality and productivity through the partial improvement of technology	・Precision machining, precision dies and surface treatment, etc. ・Learning and implementation of production engineering ・Improvement of simple R & D capability
	Control	・Lack of use of much control data (simply stored without use)	・Thorough implementation of industrial engineering
	Skills	・Intermediate level of machining skill (accuracy of approximately 10 microns)	・Skill advancement (Target: approximately one micron)
Market	Domestic	・High dependence on large companies (acting as subcontractors to conduct entrusted processing work)	・Departure from subcontractor status by establishing own technologies
	Overseas	・Insensitivity to international market and technology trends	・Diversification of information sources using IT

Note: The use of "the degree of eliminating an impeding factor" is recommended as an indicator to assess the degree of progress of the action programmes described in Chapter 4.

Although many problems facing SI companies in Penang should be solved by means of self-help efforts, it will be quite a lengthy process to master modern business management techniques and new manufacturing techniques through in-house education and training. In view of the fact that for electrical and electronics industries-related SI companies which are facing harsh competition in Southeast Asia which is the main procurement source for MNCs engaged in a severe battle in the global market, their survival depends on their successful battle against time, strong external guidance is essential to ensure the rapid transformation of business awareness and strength on the part of SI companies to enable the solving of the above problems.

3.3.2 Problems of Support Programmes

The analysis results of the existing problems of SMI support programmes as described in 3.2 indicate that following problems which must be quickly dealt with.

(1) Three Mismatches Involving Programme Planning and Implementation Bodies

There is already a sufficient number of SMIs support programmes and schemes to suit the capacity of the Malaysian economy. The question is how to make them function efficiently as well as systematically. Unfortunately, the existing SMIs support programmes cannot be described as functioning well as a whole because of the complicated entwinement of many problems.

Once these problems are sorted out, however, it is apparent that the three mismatches described next are preventing the smooth operation of SMIs support programmes.

1) Mismatch Between Policy/Programme Planners and SMIs Owners

There is a large gap between the supply side and the beneficiaries, i.e. SMIs owners, of SMIs support programmes. For example, although the programme planning and implementation bodies claim that they provide wide-ranging support programmes, the reality is that few SMIs are aware of them and efforts to publicise these programmes vis-à-vis SMIs are inadequate. Those in charge of SMIs at government-affiliated financial institutions and government organisations involved in SMIs support programmes do not really understand the basics or reality of business and, therefore, cannot provide a proper response to the business needs. A typical example of such inefficiency is the length of time required for loan approval. It is common for the approval procedure to take three months or more because of bureaucratic red tape even though a SMIs owner may apply for a loan to meet his financial needs one month later. This practice indicates the lack of awareness of business opportunities. Another example is the use of land as collateral. In this case, the Land Office must be involved. As the procedure is time-consuming and often takes several months, the actual disbursement of loans to SMIs is considerably delayed. It is also said that government-affiliated financial institutions often approve loans on the basis of political considerations or nepotism, creating a sense of mistrust among both Bumiputra and non-Bumiputra companies. Despite the existence of these problems, government leaders simply bemoan the lack of use of support programmes by SMIs. The policy/programme planning and implementation bodies must closely liase with the intended beneficiaries and operate support programmes with a full understanding of the needs of SMIs.

2) Mismatch Between Federal Government and Local Governments

This mismatch relates to the division of work between the federal government and local governments in regard to SMIs support programmes. The attitude that programme decision-making at the federal government level should be sufficient hampers vital reform. Local governments should demand the rectification of support programmes with a much stronger voice if they find such programmes to be the products of misconceptions or posturing by the federal government. Needless to say, the federal government has strong pride in the implementation of SMIs support programmes. This pride originates from the capability of the federal government to direct SMIs promotion policies in line with a long-term strategy, to provide loan schemes, to strengthen the linkage with MNCs and to coordinate market development.

Here, it appears to be a good idea to examine whether or not the SMIDEC, which was established with great promise, has been functioning well. The main promise of the SMIDEC at the time of its establishment in 1996 was to centralise the SMIs promotion administration which had been implemented by 30 departments of 13 ministries/agencies in an uncoordinated and piecemeal manner up to that point. The present reality of the SMIDEC, however, cannot be described as having fulfilled this promise. It is practically impossible for its 60 staff members to be fully responsible for nationwide SMIs administration. When the SMIDEC became independent from the MITI in 1996, the MOE established the previous year took the VDP from the MITI, forcing the SMIDEC to introduce the ILP as an alternative. In theory, the MOE is responsible for Bumiputra companies while the SMIDEC is responsible for SMIs of any ethnic background. It is difficult to understand the reason why SMIs support programmes were placed in the hands of two different organisations when the SMIDEC was established. It can be easily imagined that the main objective of the SMIDEC to centralise SMIs promotion activities collapsed at the very beginning. As a result, neither programme is functioning well, at least at present. In addition, the situation of various organisations being involved in the SMIs administration has not been improved, indicating the lack of a coherent axis for the promotion of SMIs by the federal government.

Meanwhile, the federal government naturally lacks the concept of stimulating the vitality of the private sector through SMIs promotion policies and support programmes as it is each local government which has a detailed knowledge of the businesses of private companies operating in its administrative area. Local governments must not only have a proper knowledge of what is required for the

promotion of SMIs but also the capability as well as credibility to fulfil their responsibilities. As far as the present situation is concerned, it is asking too much of local governments to quickly establish the required regime to rival that of the federal government. For the time being, therefore, it appears essential for the federal government to play a leading role although it is highly desirable for the opportunities for local governments to put forward their needs and to feed back vital local information to the federal government to be increased in order to enhance the status of local governments in the future.

3) Mismatch Regarding Incentives

There is no uniform understanding within the federal government regarding the fundamental issue of its industrial policy, i.e. whether Malaysia plans to specialise in high-tech industries or aims at creating an export-based national economy. There is concern that recent moves may indicate the foreshadowing of SMIs promotion by the strong voice for the promotion of IT and other high-tech industries. It is certain that the government preference for the knowledge economy (K-economy) proposed by Prime Minister in March, 2000 will be further consolidated and that the next five year plan is likely to be a master plan of which high-tech and IT industries comprise the central axis. Nevertheless, SMIs promotion policies must be actively implemented for the advancement of the industrial structure in Malaysia together with efforts to strengthen the competitiveness of high-tech industries.

The support schemes of venture capitals appear to focus on the fostering of IT and biotechnology-related companies and many generous incentives are available. Even though SMIs are typical 3K companies, their important supporting role for export promotion must be recognised. There must be a clear message that both high-tech industries and SI (SMIs) are essential so that any mismatch of incentives does not occur.

CHAPTER 4

SI PROMOTION STRATEGIES AND ACTION PROGRAMMES TO BE ADOPTED BY THE PDC

CHAPTER 4
SI PROMOTION STRATEGIES AND ACTION PROGRAMMES TO BE ADOPTED BY THE PDC

4.1 Targets of Support Programmes

Although many different kinds of companies constitute supporting industries (SI) in the electrical and electronics sector, the business scale of these companies is restricted to either small or medium-size companies (industries) (SMIs) because of the primary condition that the subjects of SI promotion are local companies. The recommendations for SI promotion strategies in this chapter should, therefore, be understood to mean those for the promotion of SI consisting of SMIs.

4.2 Recommendations Regarding SI Strengthening Measures

4.2.1 Strategies

The implementation of the following four strategies is recommended.

Strategy 1: Assistance for production engineering activities to increase the added value of products and to efficiently use the managerial resources of a company

Strategy 2: Promotion of diversification of the production activities and consolidation of the various services of SI to meet the diverse needs of MNCs and large local companies in Penang and its surrounding area

Strategy 3: Active promotion of the use of IT by SMIs and assistance for the application of IT to customer development, access to market and technological information and procurement of materials, etc.

Strategy 4: Strengthening of the education system for SMI owners in regard to modern business management techniques together with the promotion of management rationalisation for the purposes of securing the trust of large corporations and banks as equal business partners and expanding trade opportunities

The background of these strategies is described below in detail.

Strategy 1:

Assistance for production engineering activities to increase the added value of products and to efficiently use the managerial resources of a company

Background

Voluntary activities relating to (i) the examination of the machinery and processing technologies in possession, shapes of products for easy machining and easy assembly methods and ways of maintaining the quality and reducing the cost while preserving the functions and shapes of the final products to reflect the examination results on product planning and design in the upstream and (ii) the possible introduction of new processing/machining technologies and machinery to rationalise production are defined as "production engineering activities".

In Penang, many SMIs are engaged in simple manufacturing work as subcontractors of MNCs. As they tend to rely on MNCs for guidance on technology improvement or receive guidance as part of the VDP or ILP, not many SMIs are aware of either the significance and effects of production engineering activities or the necessity for the introduction of such activities.

Meanwhile, MNCs hope that SMIs themselves will make the effort to master production engineering in order to reduce the burden on MNCs of providing guidance. Examples of concrete efforts can be observed in the plastic moulding industry where the supply of completed dies or the lending of shop drawings of dies by MNCs to SMIs is a common practice. Some MNCs now place a blanket order for moulded plastic products, including production engineering activities from die design to trial manufacture, by simply giving the shape and specifications of the final product to processing companies.

Needless to say, production engineering is the core technology for manufacturing industries and SMIs must introduce the minimum production engineering activities which are appropriate for their business type and size in order to reduce the production cost through rationalisation. These activities include measures to prevent the recurrence of defective processing work by the analysis of its cause(s) and requests for the partial revision of a design to a MNC if such revision is deemed necessary to make processing and assembly work easier.

However, as production engineering activities require the input of experienced personnel and appropriate time, it is practically impossible for SMIs to act alone despite their awareness of the need for production engineering.

This situation makes the development of a suitable environment and the provision of the necessary facilities by the PDC necessary for the introduction and extension of production engineering activities in order to generally improve the productivity in Penang.

Strategy 2

Promotion of diversification of the production activities and consolidation of the various services of SI to meet the diverse needs of MNCs and large local companies in Penang and its surrounding area

Background

SI companies for the electrical and electronics industries can largely be classified into the following groups.

- Parts manufacturers (machined parts, stamped parts and moulded/machined plastic parts, etc.)
- Processing subcontractors (circuit boards, small assemblies and surface treatment, etc.)
- Material suppliers (adhesives, metal materials, plastics and electrical cables, etc.)
- Manufacturers of such capital goods as dies and manufacturing machinery (including maintenance and repair) and such auxiliary items as jigs and tools

It is desirable for these SI companies, excepting those producing parts and materials for mass consumption and those producing capital goods which demand a high level of technology, to have production as well as service bases near set makers (mainly MNCs). The survey on the distribution of SI companies in Penang and its surrounding area from this point of view found that the business strength of SI companies is weak in precision machining, precision stamping, surface treatment, precision dies and machine maintenance and repair services.

Among the above, business fields in which entry appears to be relatively easy by SMIs are precision machining, precision dies and the manufacture/assembly/maintenance/repair of simple manufacturing machinery. The PDC and other policy implementation bodies are, therefore, required to develop a suitable environment for SMIs to newly advance into these business fields.

The strengthening of weak supporting business areas to develop wide-ranging supporting industries will reinforce the local activities of MNCs and will firmly establish Penang as a production base for MNCs.

Strategy 3

Active promotion of the use of IT by SMIs and assistance for the application of IT to customer development, access to market and technological information and procurement of materials, etc.

Background

The use of IT is now rapidly spreading in the manufacturing sector with the arrival of an age in which information exchange and trading on a global scale have become viable due to the shrinking barriers posed by geographical distance. In such a changing world, SMIs must actively use IT to expand their scope of business beyond the geographical framework of Penang.

Fortunately, the PDC has already cooperated with the private sector to establish the Penang Network Service and has made such systems as e-SMI and e-Niaga (e-Business) available for use by SMIs. However, the number of SMIs which have joined this network is still limited while reinforcement of the system is judged necessary to provide certain functions which are currently missing.

The findings of the visit survey to companies do not suggest the active use of IT. This makes the strengthening of the functions recommended in 2.9 of this Report urgently necessary to promote the use of IT to acquire new customers, to gain access to market and technical information and to efficiently procure materials.

MNCs are increasingly willing to procure materials from any part of the world provided that the quality, cost, delivery terms and services, etc. are suitable instead of the more conventional local procurement. This trend has been aided by the progress of IT and the global development of the distribution mechanism. The active use of IT by SMIs in Penang in response to the trend of global procurement among MNCs is expected to expand the scope of product trading (one necessary condition for this is improvement of the technological level based on Strategy 1 described earlier).

Strategy 4

Strengthening of the education system for SMI owners in regard to modern business management techniques together with the promotion of management rationalisation for the purposes of securing the trust of large corporations and banks as equal business partners and expanding trade opportunities

Background

The findings of the visit survey to companies indicate a marked difference in the business approach between SMI owners trading with Japanese MNCs and those trading with American/European MNCs.

In the case of the former, many (except those in the materials industry) have a historical background of business growth as subordinate companies, relying on large companies for finance, human resources and technologies. As such, they often lack an independent spirit in terms of business management.

In contrast, American/European MNCs tend to treat SI companies as independent, equal partners and establish trade relationships based strictly on business interests. These SMIs have gained the trust of large corporations by absorbing new knowledge, continuing improvement efforts and employing modern management techniques to ensure efficient as well as transparent management with self-help efforts for survival. As a result, some of these companies have gained sufficient strength to operate as independent companies.

Because the success or failure of a SMI depends on its owner, education to improve the business capability of owners is an important issue. The present efforts to achieve human resources development, however, are biased towards technologies and skills and there is no opportunity for company owners to learn modern business theories. It is, therefore, hoped that the PDC will provide opportunities for active learning and will develop an environment for life-time learning by business owners.

At present, SMI owners are heavily oriented towards technology and tend to rely on others for financial and accounting matters because of their lack of knowledge in such fields. This sometimes leads to a lack of transparency of business management. Intensification of the education for owners is expected to make SMIs good partners for MNCs by equipping their owners with healthy business principles.

4.2.2 Action Programmes to Materialise Strategies

The implementation of seven action programmes is recommended to materialise the four strategies designed to strengthen SI by the PDC. The relationship between the strategies and the action programmes is shown in Table 4-1 below.

Table 4-1 Divided Roles for Strategies and Action Programmes

Action Programme		Strategy				Division of Responsibility	
		1	2	3	4	Planning and Coordination	Implementation
AP1	Production Engineering R & D Unit	○				PDC	PSDC-IPM
AP2	Travelling Guidance Unit	○				PDC	PSDC-Guidance Unit
AP3	Technology Advancement Advisory Committee	○	○			PDC	USM
AP4	Council for Improvement of Local Content		○	○		PIKS	DCT (Technology) Penang Net (IT)
AP5	Supply Chain Management System		○	○		PIKS	Penang Net
AP6	Strengthening of Business Management Education				○	PIKS	PSDC-COE (Education)
AP7	Management Consultant System			○	○	PIKS	DCT

AP1: Establishment of Production Engineering R & D Unit

Responsible Bodies

Planning and Coordination : PDC
Implementation : PSDC-IPM (expansion of the present organisational structure to newly create the R & D Unit)

Purpose

The R & D Unit will be responsible for finding scientific solutions to the production engineering problems encountered by SMIs on the production floor, advice for improvement of the technological strength and the provision of consultants/guidance for the introduction of new production technologies.

Activities

The R & D Unit will conduct the following activities.

■ Information gathering and preparation of teaching materials for the extension of production engineering

- Preparation of a manual for improvement of the work on the production floor
- Preparation of a manual for production design
- Preparation of a database on work and design improvement examples

■ Lectures and workshops for the spread of production engineering

- Lectures on the latest trends of technologies by academics and researchers
- Lectures on the trends of products and production by persons working for industrial associations
- Seminars on the trends of production machinery and rationalisation

■ Workshops on the training of production engineering techniques

■ Technical consultations to facilitate the use of production engineering techniques (case studies)

- Guidance on concrete solutions to the problems faced by the production floor on receipt of a consultation request
- Guidance on evaluation of machine rationalisation and modernisation programmes on receipt of a consultation request
- Guidance on value engineering to realise a design for easy manufacture

Targets

For an initial period (of approximately three years), R & D on production engineering will focus on the following two areas with a view to expanding the scope once the operation of the R & D Unit is on track.

■ Die design and processing

■ Plastic moulding

Reasons for Selection

As die technologies are key technologies which play an important role not only in the electrical and electronics industries but also in the machining industry, the size of the die market is relatively large (approximate annual production value: ¥440 billion of which press dies and plastic moulding dies account for 40% each). The die industry is characterised by the predominance of SMIs. As a supporting industry for the electrical and

electronics industries, the die industry in Malaysia shows little strength as some 70% of the dies required locally are imported with domestic production being confined to relatively simple dies.

Meanwhile, the Malaysian die industry has been lagging behind the trend of small, precise and thin moulded plastic products and cannot fully meet the demand for small precision parts, etc. Die manufacture and moulding are essentially two sides of the same coin and their combination through production engineering activities produces much better results. In this context, dies and moulding are selected as the targets for the practical application of production engineering techniques.

Operation

■ Responsible Body: The IPM (Institute of Precision Moulding), part of the PSDC, will be reinforced to act as the responsible body for the operation of the R & D Unit.

■ Facilities : The existing facilities (building and equipment) of the PSDC will be used.

■ Personnel : Manager (preferably a value engineering expert): 1
Die design and plastic moulding experts: 1 each
These experts will be recruited through the Silver Hair Programme.

Effects

The implementation of this programme is expected to solve the following (technical) problems hampering the strengthening of supporting industries shown in Table 3-8 in 3.3.1.

■ Lack of integral capability to solve problems relating to design and defective processing

■ Insufficient capability to improve quality and productivity through partial improvement of technology

Problems

■ Cost : The operation of the PDC is based on funds contributed by companies in Penang and income from training courses. The success of this programme depends on how much SMIs use the services provided by the R & D Unit for which a fee will be charged. In addition to the reorganisation of the IPM, assistance for

the activities of the R & D Unit, i.e. expansion of the application scope of the ITAF, should be considered by extending the targets to include transport machinery parts so that the programme can become a policy-based project involving federal government funding.

■ Recruitment of Experts : As the die industry in Malaysia does not have a long history, it may be difficult to recruit silver hair die design experts. It may, therefore, be necessary to invite foreign experts.

AP2: Establishment of Travelling Guidance Unit

Responsible Bodies

Planning and Coordination : PDC
Implementation : PSDC Guidance Unit (a new unit to be created)

Purpose

It is difficult for the employees of SMIs to visit the PSDC and other educational/training bodies for guidance because of constraints in terms of time and money. In order to overcome these constraints, technical advisors will visit the production floor to provide guidance on skill improvement and new technologies by means of OJT.

Activities

The Travelling Guidance Unit will conduct the following activities.

■ A guidance theme(s) will be selected approximately every four months to enhance the guidance efficiency of the experts and a travelling guidance vehicle will be sent to companies to provide guidance, mainly in the form of OJT, at the production floor.

■ The following themes will be selected for guidance in the form of case studies to solve the problems encountered at the production floor.

- Production Control
  - Preparation of a production schedule for each process, taking the available machinery/equipment into consideration
  - Guidance on target control, progress control and inventory control
  - Improvement of the machine operating time through the introduction of outside prearrangement and inside arrangement

- Quality Control
  - Improvement of the productivity by means of the effective use of jigs and tools (suitable for the machines)
  - Rationalisation of the inspection method and inspection data gathering corresponding to the production lot size
  - Establishment of study techniques in regard to the causes of defective products and damage and also of a recurrence prevention mechanism
  - Establishment of daily control and management techniques for measuring instruments

- Machining
  - Establishment of jig and tool maintenance and control techniques
  - Guidance on various skills for improvement of the machining precision

Reasons for Selection

A common shortcoming found by the company diagnosis is insufficient emphasis on an integral approach towards productivity improvement and quality assurance as many SMIs prefer such easy options as the achievement of a high precision level through the introduction of the latest machinery and the achievement of an increased production output by means of a faster processing speed. It is, therefore, judged that the re-education of employees in the form of OJT will be the best method of providing guidance on the above items which are the basis for productivity improvement and quality assurance.

During the course of the Study, the OJT provided by the team members responsible for precision machining for workers on the shopfloor achieved positive results very quickly.

Targets

Member SMIs of the PIKS (in principle, guidance will be provided on an application basis).

Operation

■ Responsible Body: A new body will be created within the PSDC. Business management guidance will rely on travelling guidance using the business consultant system (AP7).

■ Facilities : A travelling guidance vehicle carrying the teaching materials and equipment required for guidance will be used together with the

facilities of the visited companies. The equipment required for guidance on die technologies (as an initial guidance target) is listed below.

- Precision machining training vehicle (mini-precision machining workshop)
  Universal precision machine tools and various measuring instruments (dimensions, surface roughness and hardness, etc.)
- Plastic moulding training vehicle (mini-moulding workshop)
  Ultra small injection moulding machine (seven tons), weighing instrument (reading scale of 0.1 grammes), dimension gauge and radiation thermometer)

These travelling guidance vehicles will be 20 feet or 40 feet long container type vehicles and their specifications will be finalised after the selection of the machine tools and moulding machine.

■ Personnel : As in the case of the AP1, the Silver Hair Programme will be relied upon for the supply of technical experts. In the case that suitable silver hair experts are unavailable for certain guidance themes, the cooperation of MNCs operating locally will be sought.

Effects

The implementation of this programme is expected to solve the following (technical) problems hampering the strengthening of supporting industries shown in Table 3-8 in 3.3.1.

■ Insufficient commitment to precision and quality

■ Idle use of much control data

■ Insufficient exploitation of the machine capability (particularly in the case of NC machine tools)

■ Intermediate level of machining skill (improvement of the machining precision in the order of 1 micron)

Problems

■ Cost : As in the case of the AP1, there will be a problem of recovering the guidance cost. Some consideration is necessary in regard to making the beneficiaries of the guidance share the cost as in the case of the

SMI evaluator scheme in Japan. In this context, extension of the existing ITAF scheme is desirable.

■ Recruitment of Experts : As it will be necessary to secure the assistance and cooperation of MNCs for the recruitment of experts through the GSP, etc., it will be essential to thoroughly discuss this action programme with such industrial associations for MNCs as the JACTIM and FREPENCA.

AP3: Establishment of Technology Advancement Advisory Committee

Responsible Bodies

Planning and Coordination : PDC
Implementation : USM

Purpose

This committee aims at assisting SMIs to grow into good partners for MNCs by departing from their subcontractor status through the establishment of their own technologies and the development of highly value-added production activities.

Activities

The Technology Advancement Advisory Committee will conduct the following activities to provide guidelines for SMIs to achieve the above-mentioned purpose and will report the measures to develop and improve the necessary environment to the PDC.

■ Surveys and research on the technological trends of final products (products of MNCs) to indicate the technical areas of which the future growth is predicted and the product areas of which the markets SMIs may be able to enter

■ Preparation of a guide map[1] showing the required level of processing (machining) technology in regard to products capable of entering new markets to provide guidelines for the improvement of the technological standard to be achieved by SMIs

[1] One example of a technology map is shown in Appendix XI.

■ Analysis of new technological trends and the impacts of new technologies on products using linkage with the databases of various research organisations to provide guidelines for the necessary preparations by SMIs to respond to changes

■ Reporting of the strategies to be adopted by the PDC in regard to the support and development of the business environment required for the creation of new businesses and venture businesses to be developed in line with the guidelines

Targets

Precision parts for household electrical appliances, peripheral equipment for computers and semi-conductor-related parts

Reasons for Selection

As the labour cost in Malaysia has become comparatively higher than that in neighbouring countries, labour intensive industries have lost their competitiveness, making their shift to highly value-added production activities essential.

Meanwhile, parts industries hardly exist in Malaysia and technological advancement can open up the route for local SI companies to enter the market of parts produced in large varieties and small quantities.

Operation

The Technology Advancement Advisory Committee will be established as a sub-group of the SMI Council which is an advisory body for the PDC. The members of this Committee will be selected by the MITI, MTDC, MIDA and the Northern Branch of the SIRIM to represent the government, the USM to represent academic circles and the Sansui-Kai (Japanese subsidiaries), FREPENCA (American/European subsidiaries) and FMM (local companies) to represent industrial circles. The Committee will be managed by the USM.

Effects

The guidelines to be established by the Committee will assist company owners to prepare a future vision for business management while the technology map will provide SMIs with increased opportunities to enter niche markets. As technological advancement will lead to the accumulation of specific technological expertise at each SMI, departure from the subcontractor status characterised by labour-intensive work can be expected to take place.

Problems

The activities indicated here can be regarded as constituting a SMI version of R & D activities for product planning which is usually conducted by individual MNCs. Accordingly, the contents could involve business secrets of SMIs. The prior development of a business environment in which SMIs, which are unaccustomed to acting as a group, can actively participate in the above-mentioned activities will be essential.[2]

AP4: Establishment of Council for Improvement of Local Content

Responsible Bodies

Planning and Coordination : PIKS
Implementation : DCT (technology); Penang Net (IT)

Purpose

The Council for Improvement of Local Content aims at intensifying information gathering activities to accurately identify the needs of MNCs, to develop production activities in accordance with changing needs and to manufacture new products locally in order to increase the trading opportunities with MNCs.

Activities

- A survey will be regularly conducted (approximately once a year) to gather information on parts, intermediate products, items for subcontracted machining and services required locally by MNCs for the purpose of providing SMIs with the said information.

- Using the e-Niaga and e-SMI of the Penang Network, a virtual market between MNCs and SMIs will be created. breakdown the structure of their final products into parts and items for subcontracted machining to be procured (process of product structure breakdown) and input them into the virtual market to facilitate matchmaking with SMIs.

- Should SMIs have questions regarding the technological level required for the manufacture of the items and parts indicated and the feasibility of their in-house manufacture, they will consult the Travelling Guidance Unit (AP2) and/or the Technology Advancement Advisory Committee (AP3) for guidance.

[2] Some examples are (i) extension of the application scope of the ITAF and CRDF funds to the diversification of products in addition to innovative technologies and (ii) strengthening of the publicity of technical information and successful cases of product development.

Targets

Mainly precision parts for household electrical appliances, peripheral equipment for computers and parts related to production equipment

Reasons for Selection

Following the diversification of customer needs, the parts industry is now showing a tendency to move from the mass production of small varieties to large variety and small quantity production. As a result, it has become possible for SMIs to enter this market, which was previously difficult, because of the small production capacity provided that they have the appropriate technological strength.

Operation

The Council for Improvement of Local Content will be established as a sub-group of the SMI Council which is an advisory body for the PDC. The actual operation of the Council will be entrusted to the DCT and Penang Network. Membership of the Council will basically be the same as that of the Technology Advancement Advisory Committee (AP3) but will also include IT experts because of the necessity for information control.

Effects

At present, MNCs actively provide information to their subcontractors on parts and items for subcontracted machining which they want to procure locally. The availability of such information for other companies is expected to improve the technological level of all SMIs by means of fair competition.

Problems

The implementation of the above activities will be the key for the promotion of SMIs. Because of such importance, the Steering Committee has decided to give high priority to AP4 and to implement the relevant feasibility study (F/S) which will feature (i) the system design of a virtual market, (ii) estimation of the likely market size, (iii) cost-benefit analysis and (iv) competition with other similar systems. This F/S can, for example, be conducted by the Usains under the USM [see 2.7.2-(3)].

AP5: Establishment of Supply Chain Management System

Responsible Bodies

Planning and Coordination : PIKS

Implementation : Penang Network

Purpose

When SMIs try to procure materials, particularly raw materials, they often suffer unfavourable treatment in terms of the price and delivery terms because of the small procurement unit. The establishment of this system (for the joint procurement of raw and other materials) is recommended to eliminate such disadvantage.

Activities

- Establishment of an organisation which can be jointly used by SMIs for the procurement of raw materials
- Indication of a medium-term estimate for material procurement by each member company in accordance with its production programme
- Advance order placement for the procurement amount in accordance with the standard lead time for each type of material
- Promotion of mutual use of surplus materials stored by member companies
- Provision of information on materials to member companies

Targets

Special steels for dies will be an initial target for the establishment of this system. The scope of system application will gradually be expanded to include other materials to facilitate the wide use of the system.

Reasons for Selection

Special steels for dies are almost entirely imported at present and are characterised by their diversity and the small consumption volume of each type. When MNCs specify the materials to be used on their drawings, Japanese, German and American MNCs do so based on JIS, DIN and ASME respectively. As SMIs find it difficult to check the availability of equivalent products to those specified, they place individual orders to manufacturers in Japan, Germany and the US. Given the intended use of the steels, however, it is possible to substitute one set of national standards by another, enabling SMIs to place orders using one set of national standards. This also makes it possible to create a system of the mutual use of materials using IT.

Organisation

The organisation and facilities of Penang Network will be used. A conceptual drawing of the recommended system is given in Fig. 4-1.

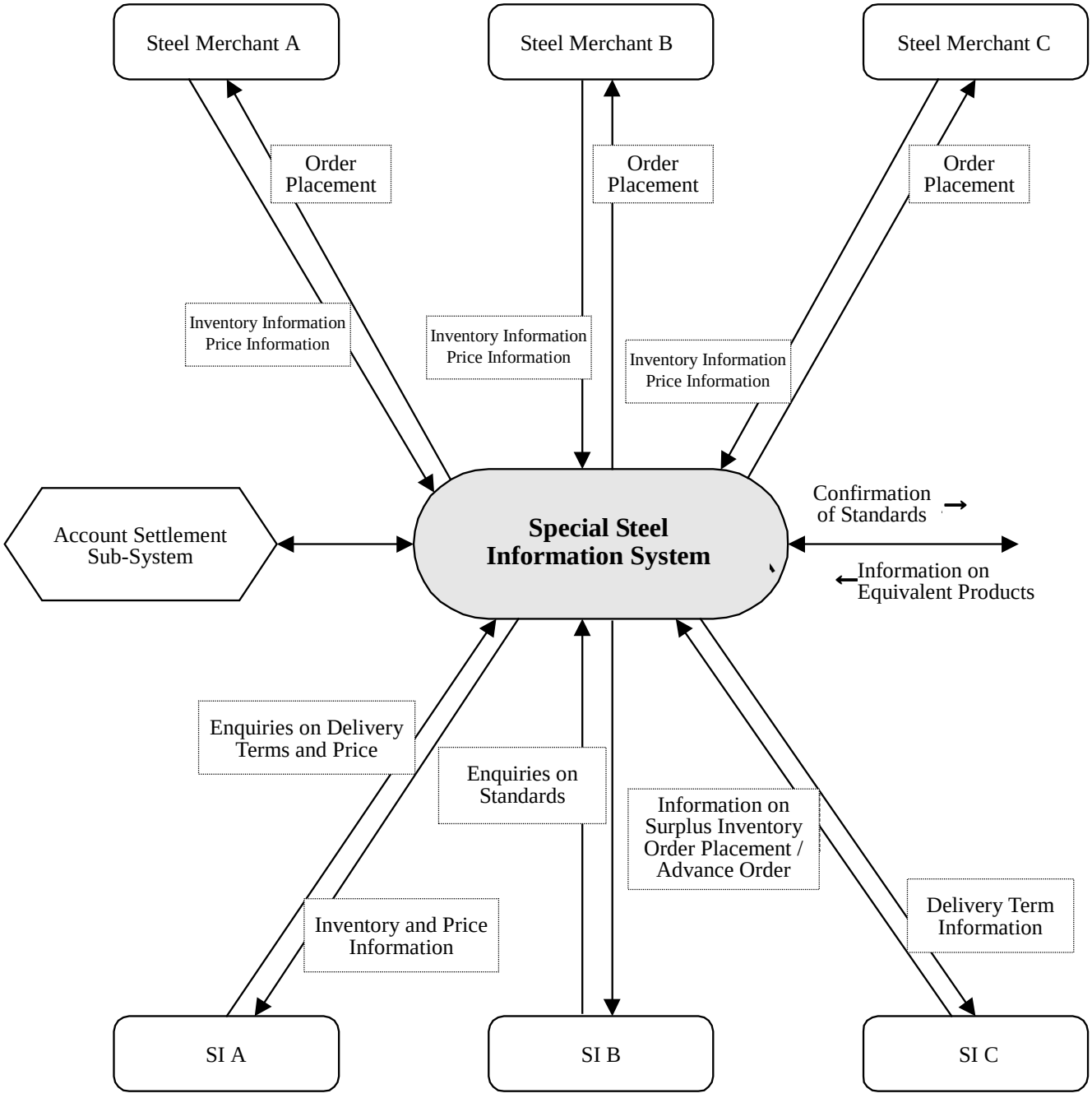


Fig. 4-1 Conceptual Diagramme of Supply Chain Management System

Effects

The materials procured by individual SMIs are diverse albeit in a small quantity each. This sometimes leads to a situation in which the delivery terms and price do not suit the requirements of SMIs. The establishment of a joint procurement mechanism will increase the procurement quantity to make it possible to procure from not only steel merchants but also directly from manufacturers (including foreign manufacturers) to omit the middlemen. From the viewpoint of merchants and manufacturers, the system will have the advantages of an increased sales volume and quicker access to user information.

Problems

While this system is expected to facilitate the horizontal linkage between companies, it will require the cooperation of SMIs which are unaccustomed to joint work. In order to overcome this problem, joint procurement by several model companies will be manually conducted with the cooperation of a steel merchant operating in Penang to establish the effects and problems. At the second stage, an appeal for participation will be made to SMIs in general while the preparations for system launch, including the partial alteration of the e-Niaga system, will be conducted.

AP6: Strengthening of Business Management Education

Responsible Bodies

Planning and Coordination : PIKS
Implementation : PSDC-COF (Centre of Excellence)

Purpose

This AP aims at the diffusion of scientific business management techniques so that SMI owners can understand the advantages and shortcomings of their companies and can effectively employ their managerial resources in accordance with a clear business strategy for the future.

Activities

■ Education to teach business management knowledge by means of lectures and case studies

- Financial accounting and management accounting to establish a business strategy
- Financial management to analyse the financial performance of the company
- Planning strength for new product development

- SMI support programmes and examples of their use
- Techniques to clarify and solve business management problems

Targets

Company owners and senior executives

Reasons for Selection

The company diagnosis results indicate that many SMI owners are engineers and, therefore, lack sufficient knowledge of the financial situation of their companies, the utilisation and training of human resources and market development. These SMI owners also lack a clear long-term business perspective and principles to guide the future of their businesses. This situation illustrates the strong need to foster SMI owners equipped with modern business management techniques.

Operation

As an extension of the PSDC-COF activities, activities resembling those of a “business owners’ club” will be conducted. A club room and a reference room will be introduced at the PSDC for use by the participants. A classroom(s) at the PSDC will be used for lectures and the reporting of study findings.

Effects

The improved leadership of SMI owners is expected to stimulate the growth of companies. In addition, the participants are expected to apply their newly acquired knowledge to rectify the financial structure of their companies and to arrange well-planned funding for company operation.

Problems

The absence of accurate judgement criteria on the advantages and shortcomings of a company may force SMI owners to make subjective judgements. This prospect indicates the necessity for the development of the management indicators recommended in AP7. One method of funding the planned activities is to charge a membership fee for the SMI owners’ club (like the membership fee for the Rotary Club).

AP7: Establishment of Management Consultant System

Responsible Bodies

Planning and Coordination : PIKS
Implementation : DCT

Purpose

This AP aims at improving the efficiency, accuracy and transparency of company diagnosis by means of standardisation.

Activities

■ Comprehensive diagnosis of business management to indicate the advantages and shortcomings of a diagnosed company. The following indicators will be used for this purpose.

- Profitability : Five indicators, including the ratio of operating income to sales and the turnover ratio of working capital
- Safety : Five indicators, including the liquidity ratio and debt ratio
- Productivity : Five indicators, including the added value productivity and labour equipment ratio

■ Creation of an indicator database (the above indices will be calculated based on financial statements to establish average values which will then be used as the standard values)

Targets

SMIs registered with the PIKS

Reasons for Selection

Financial statements prepared by SMIs are required to create a database. For this reason, SMIs registered with the PIKS will be used as the population for statistical purposes.

Operation

A secretariat will be established at the Business Service Information Bureau of the PDC. For business diagnosis, a guidance and diagnosis team will be established for each project through arrangements with the DCT.

Effects

As business consultants are expected to conduct an unbiased diagnosis, the transparency of business management can be maintained. The clearly established advantages and shortcomings of a company by the diagnosis can indicate the desirable direction for the effective use of managerial resources, thereby contributing to the formation of a management vision by SMI owners.

Problems

The SMIDEC has already selected some 20 consultancy firms for company diagnosis under its “Business Clinic” scheme. However, because of the absence of a SMIDEC office in Penang, the PDC will liase with the federal government as the promoter for the local introduction of the business consultant system with a view to establishing a local SMEDIC office in the future. It will also be necessary to consider possible liaisoning with the Association of Certified Accountants to obtain financial statements. Future tasks include (i) the nationwide application of the “Diagnosis Guidance” prepared by the Study Team as part of the Study and (ii) the formulation of a subsidy scheme by a public body to reduce the cost for SMIs to take advantage of the business consultant service.

4.2.3 Details of Implementation Schedule

It has already been decided by the Steering Committee that the action programmes will be implemented in accordance with their priority under the guidance of the Bureau of Industry and Trade, which is the section of the PDC responsible for industrial policies, taking the available human resources, equipment and funding for input into consideration. The detailed implementation schedules will be established one by one based on consultations with the designated implementation organisations.

A tentative implementation schedule prepared by the Study Team is shown in Fig. 4-2 as reference material for the preparation of the detailed implementation schedules.

Fig. 4-2 Detailed Action Programme Implementation Schedule

Action Programme		Activities	Implementation Schedule (by Year) 1st 2nd 3rd 4th 5th	Remarks
AP1	Production Engineering Development Unit	Development of Teaching Materials	Annual compilation of improvement examples	Handbook and manual, etc.
		Extension of Techniques	Phase 1 Themes Dies; Plastics / Phase 2 Themes (Undecided)	Seminar and workshop
		Technical Consultation		
AP2	Travelling Guidance Unit	Development of Teaching Materials	Annual compilation of improvement examples	Handbook and manual, etc.
		Planning and Procurement of Guidance Equipment		Preparation and equipment planning: 8 months
		Travelling Guidance		Selection of guidance theme every 4 months
AP3	Technology Advancement Advisory Committee	Theme Selection, Research and Analysis	Theme selection and preparation of technology map, etc.	Preparation for establishment of committee and selection of members: 6 months
		Reporting on Strategy and Follow-Up	Compilation of committee report in every 2 years	
AP4	Council for Improvement of Local Content	Development of Information Gathering System	Preparation	Use of e-Niaga assumed
		Establishment of Hypothetical Market and Operation	F/S	F/S on market size and cost-benefit analysis
AP5	Supply Chain Management System	System Development and Operation	Starting with special steels and extending to jigs and others	Use of e-Niaga assumed
		Creation of Sub-System Database	Preparation / Input of price list and data on standards	Search and account settlement sub-system
AP6	Strengthening of Business Management Education	Development of Activity Base and Teaching Materials	Preparation	Introduction of club room; consolidation of reference room
		Education and Exchange		Overseas study tour once a year
AP7	Management Consultation System	Standardisation of company diagnosis	Preparation / Swift preparation of index database	Trial diagnosis period by DCT to prepare for full-scale implementation
		Diagnosis Activity	Trial by DCT / Full-scale implementation	

4.3 Matters Considered for Formulation of Action Programmes

Traditionally, SMI (or SME) policies in many of the world's countries share the notion that SMI support policies and measures must be implemented to rectify a disadvantageous business environment in terms of finance, labour, technology and information, etc. originating from the small business scale of these companies.

In recent years, however, the introduction of economic liberalisation policies and the progress of globalisation in the form of market integration, etc. have led to the emergence of new types of SMI support policies based on the notion that these policies should aim at (i) the vitalisation of the market by assisting the establishment of new businesses and (ii) the development of a favourable business environment to assist the self-help efforts of SMIs as important providers of employment. The strategies and action programmes recommended in this chapter are based on this recent notion and the emphasis of support has shifted to such soft aspects as the R & D of technologies, human resources development and consulting to strengthen the managerial resources. The action programmes have been formulated to achieve the targets of the strategies.

As local SI in Malaysia are dominated by SMIs of which the managerial resources are rather weak, it is hoped that the action programmes will be swiftly implemented to strengthen the competitiveness of SMIs to enable them to survive in the global market.

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APPENDICES

APPENDIX I

LIST OF STUDY TEAM MEMBERS

APPENDIX I
LIST OF STUDY TEAM MEMBERS

Name	Assignment	Main Subject of Work
Michifumi Abe	Overall supervision of field surveys	Leader and representative of the Study Team
Aiichiro Endo	SMI support (1)	Assistant leader in charge of survey on SMI supporting measures Public support Survey on federal level problems
Ren Aragane	SMI support (2)	Inter-company linkage Local Consultant OJT Company diagnosis manuals
Sadao Takeda	Machining (1)	Assistant leader in charge of technology transfer to SI Improvement of production processes Report on diagnosis results for model companies
Satoru Ogi	Machining (2)	Improvement of production processes of electronics industry Production processes of electrical/electronics industry; reporting on technology transfer to model companies
Yuichi Fukushima	Machining (3)	Improvement of tooling system Production processes of plastic industry Collection of improvement cases
Norihiko Hatakeyama	Machining (4)	Improvement of tooling system (including metal materials)
Hiroshi Takizawa	Production control (1) (up to First Work in Japan)	Guidance on production control
Megumu Yanagisawa	Production control (1) (from 2nd F/S onwards)	Guidance on production control
Kazutetsu Yamaya	Production control (2)	Guidance on production control
Masahiro Kubo	Corporate management (1)	Diagnosis of and guidance on business management (including financial management) Local consultant OJT
Masataka Nagai	Corporate management (2)	Diagnosis of and guidance on business management (including financial management)
Takaaki Ogasawara	Physical distribution system	Survey on state of physical distribution (raw materials, secondary materials and parts, etc.); match-making home page Resource guidance

APPENDIX II

PROCEEDINGS OF COMPANY SURVEY AND DIAGNOSIS AND ANALYSIS OF PROBLEMS TO BE SOLVED

APPENDIX II
PROCEEDINGS OF COMPANY SURVEY AND DIAGNOSIS AND ANALYSIS OF PROBLEMS TO BE SOLVED

For the purpose of conducting the company survey and diagnosis at the 103 SI companies during the First Field Survey period, the Simple Diagnosis Survey Sheets I and II were used to check the health of the subject companies and simple one point guidance was also provided on site on some important items.

Of these 103 companies, 17 were selected as model companies and specific improvement tasks for these model companies were compiled on a detailed diagnosis and check sheet. The contents of this check sheet were explained to each model company so that improvement efforts could be made in accordance with the sheet as home work to be completed before the next field survey. The target period for improvement was generally set at two and a half months although some tasks were given up to approximately five months for improvement.

The results of the improvement efforts of each model company were verified during the Second Field Survey (detailed diagnosis) and Third Field Survey (follow-up survey) periods. Further guidance based on the business reality of each model company was also provided when deemed necessary. During this process of improvement and guidance, extensive discussions were held on the floor to facilitate the transfer of technology (techniques).

While the details of the technical guidance provided during the Second Field Survey and Third Field Survey and detailed diagnosis are compiled in a separate report entitled the Report on Technology Transfer, the example of Company A is included in this Appendix for reference purposes.

The problems currently faced by SI companies as identified by these surveys, diagnosis and guidance, the advice provided by the Study Team for the quick solution of some problems and the wide-ranging problems identified based on the demands of MNCs for SI as put forward by MNCs during the visits are sorted and analysed using the KJ method (affinity diagramme) and are summarised in the List of Identified Problems shown in Table 1 and described thereafter in this Appendix.

Table 1 List of Identified Problems by KJ Method

Category of Task by Key Work		Number of Tasks	Ratio (%)
Support by Related Organizations		22	18.5
Management	Quality of Owner	4	3.4
	Formulation of Medium-Term Business Plan	8	6.7
	Improvement of Corporate Management	8	6.7
Technology	Education and Training on Technologies and Skills	17	14.3
	Establishment of Management System and Improvement of Technical Level	9	7.6
	Improvement of Production Control	20	16.8
	Improvement of Quality Control	9	7.6
	Improvement of Factory management	6	5.0
Human Resources	Human Resources Development	6	6.0
	Travelling Guidance	7	5.9
Formulation of Company Linkage		3	2.5
Total		119	100.0

Notes

1. This table is compiled by the KJ method, featuring the problems identified during the field surveys and the advice provided to solve the problems.
2. See the List of Advance for more details of the problems categorised by key word.
3. The breakdown of the problems by key word is as follows.
   - Problems which can be solved by the self-help efforts of each company (A) … 60 (60.2%)
   - Problems which require support by existing policies/programmes and/or facilities (B) … 39 (32.8%)
   - Problems which require support by new policies/programmes and/or facilities (C) … 20 (7.0%)

Code	List of Advice for SI Companies	Category
1	Support by Related Organizations	
1.1	Policies and Institutional Set-Up	
	- Various policies and facilities required to select and foster industries for future growth	C
	- Proper understanding of the production capacity of the industry and promotion of the shift towards new business field(s) to effectively utilise the capacity	B
	- Establishment of a support system to consolidate the basis to utilise the Internet and to effectively use the Internet	B
	- Guidance and support by the state government required for the establishment of a system for the early effective use of computers	C
	- Implementation of effective support for cost reduction (in terms of energy, materials and physical distribution, etc.)	B
	- Bold investment in the die industry with the highest development potential and early development of human resources	B
	- Creation of the institutional set-up (legal framework) to establish orderly trade relationships and establishment of a monitoring organization	B
	- Organization of an industry to achieve positive effects which can be expected to result from the mutual enlightenment of companies	A
	- Promotion of smooth technology transfer from MNCs to SI where necessary	B
	- Formulation of an evaluation system and evaluation criteria for management and financial diagnosis which is appropriate vis-à-vis the business climate of local companies	B
	- Establishment of a system equivalent to the qualified engineer system and SME evaluator system in Japan	C
	- Introduction of skill competitions and establishment of a skill qualification system	C
1.2	Subsidy System	
	- Establishment of a subsidy system for the development of new technologies	B
	- Establishment of a subsidy system for replacement with high performance machinery	B
1.3	Cooperation Between Industrial and Academic Circles	
	- Promotion of the implementation of various measures designed to facilitate joint research by industrial, governmental and academic circles	C
	- Establishment of a CAD/CAM technology centre which is in great demand	B
1.4	Research Facilities	
	- Establishment of facilities and systems which are capable of solving technical problems concerning products and materials, etc. at great speed and at a high level at public organizations	B
	- Expansion of the research facilities for testing, inspection and accident investigations, etc. and easy access to the equipment owned by these facilities for efficient use	B
1.5	Consultation Meetings, etc.	
	- Regular consultation meetings and information exchange meetings for SI personnel and constant access to the consultation facilities provided by various guidance organizations	B
	- Regular consultations on production control and production technologies by means of forums	B
	- Regular guidance by business evaluators and the establishment of an organization specialising in auditing	B
1.6	Publication of Specialist Bulletins	
	- Regular publication of specialist bulletins featuring examples of development and production improvement	B

1.7	Establishment of Company Linkage	
	- Grouping of companies in terms of capital, technical cooperation, business sharing and work sharing, etc.	A
	- Business cooperation to reduce the capital requirement, to improve the technical level by means of technology sharing and to reduce the management cost	B
	- Establishment of horizontal company linkage in an organized manner	A
1.8	Human Resources Development	
	- Establishment of a human resources development committee as a long-term human resources development body to implement SI promotion measures, including (i) formulation of the priority ranking of company requirements and recommendations, etc. and (ii) formulation of guidelines for human resources development programmes combining existing training courses and others to suit specific purposes	B
	- Strengthening and expansion of the human resources development system	B
	- Thorough encouragement of and support by MNCs for the human resources development efforts of SI	B
	- Strengthening of the support for human resources development	B
	- Swift development of middle management and leaders by means of education and practical training	A
	- Development of personnel with flexible capabilities as well as technical expertise in both administrative and production areas	A
2	Education and Training on Technologies (Techniques) and Skills	
2.1	Management Techniques	
	- Consolidation of business owner education	B
	- Systematic and practical education on management skills and techniques and follow-up	B
	- Learning of production planning and control techniques	A
	- Intensification of the training for engineers on production control techniques	A
	- Practical training on quality control techniques and analysis techniques and follow-up	B
2.2	Training on Precision Machining Technologies and Skills	
	- Development of education and training courses, including courses on advanced technologies and techniques and management courses	B
	- Intensification of practical basic technologies and knowledge relating to materials, dies and moulding operation	B
	- Education and training to improve the technological level of die design and to train design engineers	B
	- Education programme to improve the level of dies to the required level	B
	- Learning of machining technologies/techniques, including those for advanced precision machining	B
	- Guidance on the quick training of shop floor leaders with a high skill level	A
	- Education on the basic knowledge and relevant training regarding the proper use of tools, standard cutting speed, mechanisms and characteristics of machinery and other matters	B
2.3	Training Courses	
	- Establishment of upgrading courses regarding technological knowledge and skills	B
	- Review of the existing education and training courses and the development of new courses to meet the actual needs	B
2.4	Training of Instructors	
	- Training of SI company evaluators	B
	- Training of and guidance for in-house auditors for the effective introduction and spread of ISO 9000	A
	- Training of the consultants required for the fostering of SI companies	B

2.5	Qualities of Owners - A business owner must not only seek business expansion but must also have a clear, strategic perspective and future vision - A business owner must exercise strong leadership while having a clear vision of the business' future - A business owner must have a proper understanding of the financial structure, profit and loss structure and the relevant indices as well as cost indices - A business owner must understand the importance of establishing management targets and financial targets and must improve his ability to properly understand these issues	 A A A A
3 3.1	Formulation of Medium-Term Plan and Business Plan Business Plan - Establishment and actual use of a mechanism to accurately estimate the required materials, equipment, manpower, funds, production method and subcontractor capacity, etc. based on information obtained from customers in view of the latter's demand forecast by product - Strengthening of the capability to plan new products, services and technological strength and to propose them to customers - Systematic measures to strengthen the product development capability, equipment and manufacturing technologies in response to technological innovations - Preparation of an action programme to obtain the technologies and patents, etc. which will be required in the coming years - Preparation of a factory layout rationalisation plan to improve the productivity based on a medium-term plan	 A A A A
3.2	Recruitment of Capable Personnel - Clarification of measures designed to secure the long service of employees and implementation of efforts to run the business with a small number of capable staff members	 A
3.3	Standardisation - Clarification and standardisation of the information channels, required actions, role to be played and responsibilities of each employee on the shop floor as in-house rules - Firm establishment of a clear management system in regard to the information flow to deal with problems	 A A
4 4.1	Establishment of Management System and Improvement of Technical Level of Manufacturing Establishment of Systems - Early establishment and regular use of a management system which reflects the present conditions of each company (feasible management points, analysis method and data gathering with the existing staff level) - Establishment of production planning activities and the improvement and regular use of individual production control systems - Establishment of a production system to achieve zero inventory and synchronous production - Active application of various production control techniques	 A A C A
4.2	Manufacturing Technologies - Establishment of a production switching over system by means of upgrading the level of manufacturing technologies - Improvement of inter-process distribution, including suppliers - Establishment of a system to evaluate technologies within an organization and then to accumulate and pass on the evaluation results - Preparation and consolidation of the necessary conditions for the establishment of an automated system - Establishment and wide use of objective as well as uniform productivity management indices	 C A A C B

4.3	Improvement of Production Control < Production and Schedule Plan > - Formulation of a production plan based on (i) such production units as delivery terms, lot size and production period and (ii) inventory standard and performance - Establishment of a system whereby the progress of instructed matters and the production results are constantly controlled by comparing them with the planned progress and results - Establishment of the production period based on the standard hours and activities to shorten the said period - Regular implementation of progress control through adjustment of the process load - Establishment of a system to switch products within 10 minutes - Establishment of a parts production system which is synchronised to the final production line	 A A A A C C
4.4	Equipment Productivity - Regular implementation of productivity improvement activities by analysing daily data on the operating hours - Insufficient awareness of the importance of machine productivity on the part of the management	 A A
4.5	Material Control - Establishment of improvement targets for the fostering of subcontractors and continuous strict guidance - Regular evaluation and selection of subcontractors by reviewing the subcontracted items and division of work (Q, C, D)	 A A
4.6	Inventory Control - Improvement of the inventory control level by improving the storage, delivery acceptance and shipment, accuracy of inventory and inventory standards, etc. of materials and products - Adoption of an appropriate inventory level by improving the inventory levels of materials, products, half-finished products and storage method - Review of the product inventory level to observe the delivery terms demanded by customers - Learning and application of various inventory control techniques	 A A A C
4.7	Equipment, Jigs and Tools - Improvement of equipment efficiency by appointing a person responsible for each equipment, establishing a preventive maintenance system and conducting regular inspections - Implementation of a regular maintenance system for equipment, jigs and tools - Promotion of the systematic improvement of jigs - Establishment and implementation of a die, jig and tools maintenance system (in relation to storage, regrinding and precision assurance, etc.) - Early improvement regarding die maintenance, number of shots, life and precision control - Improvement of the product precision and productivity through the development of auxiliary jigs and tools	 A A A A A

5	Improvement of Quality Control	
5.1	Building of Quality	
	- Establishment of a system which is capable of assuring the quality in the production line	A
	- Building of quality in the production processes through grey zone control and sampling, etc.	C
	- Promotion of quality improvement activities using statistical QC and reliability control tools, etc.	C
	- Establishment of a system whereby the standards indicated on the QC process chart and the work standards are maintained through their constant comparison with the actual results	A
	- Learning and practical application of control techniques to reduce the fraction defective	A
	- Upgrading move from quality assurance in the final inspection process to the building of quality in the production processes	A
	- Proper maintenance of jigs and tools for equipment and measuring instruments	A
5.2	Measures to Improve Quality Defects	
	- Implementation of measures designed to enhance the analytical and improvement capabilities to quickly respond to quality-related problems	A
	- Standardisation and swift implementation of a series of processes, such as confirmation of the present state (reproduction of problems), data analysis, planning of improvement measures and prevention of a re-occurrence (standardisation), to solve quality-related problems	C
6	Improvement of Factory Management	
6.1	Safety Control	
	- Creation of a pleasant working environment using the work space standards included in the seminar paper	A
	- Establishment and implementation of an instant improvement system in response to improvement proposals made by the shop floor	A
	- Improvement of safety, precision and productivity through the development of auxiliary jigs and tools	A
	- Early implementation of production line improvement and the elimination of unwanted items or items which are not immediately required	A
6.2	Promotion of 5Ss	
	- Thorough implementation of the 5Ss and improving of the working conditions (work posture and lighting, etc.)	A
	- Widespread application of the 5Ss in the workplace	A
7	Improvement of Corporate Management	
7.1	Corporate Management	
	- Quick response to problems by means of preparing a business plan and regularly checking the plan implementation results	A
	- Development and improvement of standard business indices for SI	B
	- Uniformatisation of evaluation by establishing standard values for each type of business	C
	- Wide use of financial analysis as well as break-even point analysis techniques in corporate management	A
	- Widening of the application scope and spread of the use of financial accounting	A
7.2	Manufacturing Cost	
	- Necessity for a general reduction of the manufacturing cost	A
	- Introduction of a suitable management mechanism for SI to ensure the steady use of a cost management system	C
	- Effective use of cost improvement techniques (VA and VE, etc.) and the spread of such improvement techniques through the confirmation of their positive results	A

7.3	Travelling Guidance and Follow-Up	
	- Implementation of regular travelling guidance based on a medium-term plan (2 – 3 years) featuring specific themes	C
	- Establishment of a system to transfer technical expertise through travelling guidance	B
	- Establishment of a travelling company guidance system involving technical advisers on production control, engineers and skills	C
	- Regular travelling guidance by business evaluators	C
	- Travelling company guidance by consultants at a low fee due to public subsidy	B
	- Establishment of a mechanism to facilitate technology transfer through travelling guidance by long-term Japanese experts	C
	- Request for cooperation to MNCs to foster SI by means of technology transfer and the provision of information on production control	B

Note: Total number of cases of advice : 119
Category A: problems which can be solved by the self-help efforts of each company : 60
Category B: problems which require support by existing policies/programmes and/or facilities : 39
Category C: problems which require support by new policies/programmes and/or facilities : 20

Simple Diagnosis of SI Companies: Survey Sheet I

Ref. 033

	Survey Date: 24 (Day) 02 (Month) 2000 (Year)
< Survey Sheet I: General Matters >	Diagnosed by:
Name of Company Surveyed:	Diagnosed by:
	Diagnosed by:
[Company Outline]	Sort Code: FMM99-321
Date of Incorporation:	[Interviewees]
Address:	Title: Managing Director
Telephone:	Name:
Facsimile:	Title:
URL:	Name:
Site Conditions: IKS Juru SMI Industrial Park	Title:
Chief Representative:	Name:
Type of Business: Machine Manufacture	< Overall Impression of Interview >
Management Style: Limited Company	
Paid Capital: RM 300 million	
Shareholder Composition:	
Number of Directors: 3	
Form of Production: On Order (100%)	
Related Companies:	

[Business Performance]	1995	1996	1997	1998	1999	Request for Model Company Diagnosis
No. of Employees	15	22	30	38	41	Yes (X) No ( )
Annual Turnover (kRM)	1,500	2,500	3,300	3,500	4,300	Request for Entry on Matchmaking
Profit (kRM)	300	300	600	700	900	Home Page Yes (X) No ( )

Main Products (Sales Value)	Annual Sales Amount	Main Clients 1st	Main Clients 2nd	Item	Use
1st	60%	B	F	Precision M/C Parts	Slinder Man. M.
2nd	20%	C	G	Jigs/Fixtures	Audio/Video Ass'y
3rd	10%	D	H	Automation	Packaging M/C
4th	10%	E	I	Others	Almi Parts M/C Parts
5th					

Main Materials (Purchase Cost)	Annual Purchase Amount	Main Suppliers 1st	Main Suppliers 2nd	Item	Use
1st	Total: RM 590 K	J		Aluminium	
2nd		K		Stainless Steel	
3rd		L		Polycarbonate	
4th				POW	
5th				Mild Steel	

Fund Raising	Total Borrowing	Main Lenders 1st	Main Lenders 2nd	Average Interest Rate	Fund Raising Problems
Working Funds	Own Re-Investment				Re interest
Investment Funds	RM 600 K	RHB Bank		M/C 6.2% Building	9.75% + BLR 5% = 8.55%

Main Production Equipment/Year of Purchase: see Attached List

Main Fixed Assets/Value: Machinery and Buildings: RM 2,500 K

Public Assistance	Use of Such Assistance	Contents	[Evaluation]
Managerial Assistance			
Loans			
Technical Training	HRDF	No	

Simple Diagnosis of SI Companies: Survey Sheet II

Ref. 033

Evaluator(s): Yu-ichi Fukushima; Hiroshi Takizawa; Taka-aki Ogasawara				
Date: 24/02/2000				
Company: A Sdn. Bhd.				
Item	Evaluation/Performance	Evaluation Points (1 – 10)	Evaluation Factor	Evaluation Result (Points x Factor)
< Human Resources > Level of Management (Stance of Owner)		8	5.0	4.00
Level of Middle Management		6	3.0	1.80
Level of Technology (Staff Capability)		7	1.5	1.05
Level of Quality Control		6	2.0	1.20
Level of Production Control		5	1.5	0.75
Level of Skills		6	1.0	0.60
Number of Employees			0.0	0.00
Indirect Number of Personnel			0.0	0.0
Number of Engineers (including Quality Engineers)		7	0.5	0.35
Number of Engineers with Special Skills (Qualified)		6	0.5	0.30
Sub-Total			15.0	10.05
< Financial Resources > Own Capital	Capital: RM 300 K	10	1.0	1.00
Total Assets	RM 1,100 K		0.0	0.00
Turnover of Total Assets	Sales: RM 2,500 K; 2.27	10	1.0	1.00
Pre-Tax Profit Ratio to Turnover	Borrowing: RM 600 K; 20.9%	10	1.5	1.50
Rate of Sales Growth	22%	10	1.5	1.50
Ratio of Labour Cost	35%		0.0	0.00
Ratio of Material Cost	20%		0.0	0.00
Sub-Total			5.0	5.00
< Technical Resources > Level of Specialist Technologies		6	2.0	1.20
Specialist Technologies		6	3.5	2.10
Level of Instrumentation Technology		6	2.0	1.20
Proportion of Defects in Processes		5	2.0	1.00
Proportion of Defects of Finished Products		5	1.5	0.75
Proportion of Defects at Client's Acceptance Inspection		6	3.0	1.80
Proportion of Defects at Suppliers' Acceptance Inspection		5	1.0	0.50
Sub-Total			15.0	8.55
< System > Level of Technology Control		6	1.5	0.90
Level of Quality Control		6	1.5	0.90
Production Control System		5	1.5	0.75
Inventory Control System		4	1.5	0.60
Equipment Control System		6	1.5	0.90
Sub-Total			7.5	4.05
< Production Resources > Production Capacity			0.0	0.00
Operation Rate		8	0.8	0.64
Rate of Added Value		8	0.8	0.64
Product Precision/Balance of Equipment Capacity		6	1.2	0.72
High Performance Machinery (NC Tools, etc.)		6	1.0	0.60
Instruments		5	1.2	0.60
Sub-Total			5.0	3.20
< Others > Material Inventory Factor		6	0.7	0.42
Intermediate Product Inventory Factor		7	1.0	0.70
Product Inventory Factor		8	0.8	0.64
Sub-Total			2.5	1.76
Total			50.0	32.61

Simple Diagnosis of SI Companies: Survey Sheet II: Evaluation Criteria

Item	1	2	3	4	5	6	7	8	9	10
<Human Resources>										
Level of Management	Conservative management posture: lack of excellent staff					Active management; specialist staff in certain areas				
Level of Technology	No interest in new technologies					Willing to introduce new technologies; capable of digesting technologies to be newly introduced				
Level of Quality Control	No-one in charge of quality control; no interest in quality control					Appointed person for quality control; system improvement can be made in-house				
Level of Production Control	Incapable of creating a monthly or six monthly plan; no inventory control					Monthly plan in place; production schedule can be prepared on a weekly basis				
Level of Skills	No or only a few employees with seven or more years experience					Technician(s) with seven or more years experience controls the production processes				
Number of Employees	-					-				
Indirect Number of Personnel	-					-				
Number of Employees (incl. Quality Engineers)	Lack of in-house capability to alter production equipment and design products					In-house design is possible				
Number of Engineers with Special Skills (Qualified)	Absence of in-house engineers required for production					More than one in-house engineer required for production				
<Financial Resources>										
Own Capital	Ratio of own capital in total capital is 10% or less					Ratio of own capital in total capital is 40% or more				
Fixed Assets										
Turnover of Fixed Assets	1 or lower					2 or higher				
Pre-tax Profit Ratio to Turnover	0%					8% or more				
Rate of Sales Growth	0%					10% or more				
Ratio of Labour Cost										
Ratio of Material Cost										
<Technical Resources>										
Level of Specialist Technologies										
Specialist Technologies	None in particular					At the top or nearly at the top of the industry concerned				
Level of Instrumentation Technology	No technology to meet the required level of precision					Presence of technology to maintain and apply the required level of precision				
Proportion of Defects in Processes	Defect proportion: 7% or more (in each process)					Defect proportion: 2% or less (in each process)				
Proportion of Defects of Finished Products	Defect proportion: 5% or more					Defect proportion: 1.5% or less				
Proportion of Defects at Client's Acceptance Inspection	Defect proportion of lot: 5% or more Total defect proportion: 3% or more					Defect proportion of lot: 2% or less Total defect proportion: 1.5% or less				
Proportion of Defects at Acceptance Inspection from Supplier	Defect proportion at acceptance inspection: 5% or more					Defect proportion at acceptance inspection: 3% or less				
<System>										
Quality Control System	Quality control system is not organized					Information on quality is accurately sent to the section requiring it				
	No quality data for daily operation or each lot					Defect causes are analysed and improvement measures are taken				
Production Control System	Daily/monthly production table is not shown to the shop floor					Daily/monthly production table is shown to the shop floor				
Inventory Control System	No inventory control programme					Inventory is controlled on the basis of inventory factors				
Equipment Control System	No equipment maintenance programme					Regular inspection and maintenance are conducted under equipment maintenance system				
<Production Resources>										
Production Capacity										
Operation Rate	50% or less					70% or more				
Rate of Added Value	15% or less					30% or more				
Product Precision/ Balance of Equipment Capacity	Production equipment is unsuitable for required level of precision					Sufficient production equipment to meet required level of precision				
High Performance Machinery (NC Tools, etc.)	10% or less of total number of production equipment/machinery					25% or more of total number of production equipment/machinery				
Instruments	No such equipment or low level of measuring accuracy					Presence of sufficient instruments with required accuracy				
<Others>										
Materials Inventory Factor	1.5 or higher					1.0 or lower				
Intermediate Inventory Factor	1.5 or higher					1.0 or lower				
Product Inventory Factor	1.2 or higher					0.8 or lower				

JICA Detailed Diagnosis and Check Plan

Company/Ref. No. A Sdn. Bhd. Ref: 033 Prepared on 25/03/2000

No.	Item	Problems and Points for Improvement Indicated by Simple Diagnosis	Check and Guidance Items of Detailed Diagnosis	Promotion/Preparation Items for Improvement by D.D. (in June)
1	Financial and Cost Control		- Understanding of the financial state of the company and the improvement of weak points - Understanding of the cost structure of leading products to prioritise the cost reduction targets	- Balance sheet and profit and loss statement for the last three years - General cost table, if possible - Break down of the cost of leading products, if possible
2	Productivity and Production Control	- Active implementation of the 5Ss as further improvement is feasible - Comparison between the plan and results to identify any gaps - Link with work load control	- Regular plan and result control system implementation (daily and hourly control; display of the control results on the shop floor) - Control of orders received and work load	- Production plan and results in May (daily data)
3	Machine Layout	- Layout in blocks representing the type of work and process (it is questionable whether the optimal layout is achieved from the viewpoint of the lead time and physical flow for parts production)	- Layout and flow to minimise the production lead time - Review of the layout by re-assessing the walking distance and waiting arrangements	
4	Control of Cutting Tools	- Frequent occurrence of flashes in milling, etc. - Improved chip control is required	- Review and improvement of the control techniques and chip grinding technology, etc.	- Data on chip use
5	Machine Maintenance	- Fairly strict enforcement of the maintenance rules	- Re-checking of the machine breakdown data - Pursuit of improved levels of systematic maintenance and preventive maintenance suitable for each machine	- Machine breakdown data - Maintenance records
6	Quality Control	- Is there any statistical control of medium lot product which represents the most frequent production size?	- Gathering of statistical data and introduction of a control system based on analysis and feedback Examples: frequency distribution, Cp value control and other methods	- Quality records for the most representative processes (milling and CNC milling, etc.)

Diagnosis Report on Technology/Production Control at Company A

1. Machinery and Jigs

(1) Protective Devices

o State at the Time of Diagnosis

- Work in progress with a newspaper held in one hand
- Arbitrary use of protective devices

o Improvement Measures Advised

- Introduction of a flying chip prevention device for milling operation
- Supply and installation of the necessary protective devices

o State of Implementation of Improvement Measures

- A protective shield (clear plastic) has been newly made and is in use.
- A mobile screen is placed between the machines to contain flying chips.
- Old devices (screens, etc.) unsuitable for the new layout are still in use following the introduction of the new layout.
- Protective devices are provided free of charge for the relevant workers and their use is compulsory.
- While protective devices are worn properly for work which requires them, some new recruits are not using the safety boots.

(2) Power Supply Method to Sub-Machinery

o State at the Time of Diagnosis

- Electrical wires and air pipes to machinery are placed on the floor without any protection.

o Improvement Measure Advised

- A ceiling ladder should be used for piping and wiring.

o State of Implementation of Improvement Measure

- Following the change of the layout, no work is conducted in the space between machinery.
- Equipment has been moved to the side of the walls and the floor wiring has been removed.

o Future Plan

- A further change of the layout is planned to located smaller machines in more appropriate locations and floor wiring will be eliminated.

(3) Jig Design Corresponding to Machining Level

o State at the Time of Diagnosis

- The products are individually machined without the use of jigs and any unevenness is manually corrected.

o Improvement Measure Advised

- Improved precision and productivity for medium volume production should be achieved with the use of jigs.

o State of Implementation of Improvement Measure

- Various jigs are now used, achieving improvement effects.
- The use of auxiliary blocks for machining has been slow (particularly for large products and sheet machining) and further guidance has been provided to ensure the stability and precision of the work with the use of auxiliary blocks.
- Jig shelves have been added and many more jigs are properly controlled compared to in the past.

(4) Machining Leader

o State at the Time of Diagnosis

- As those at work currently try to put improvement ideas into practice on an individual basis, systematic improvement has been slow.

o Improvement Measure Advised

- A skilled worker(s) should be appointed as a machining leader to provide guidance on machining techniques and to control the design and production of jigs.

o State of Implementation of Improvement Measure

- A leader (with six years machining experience) is being trained in-house.

o Future Plan

- At present, there is no means of upgrading the level of the leader. (The leader will be sent to an advanced machining course if such a course is provided by, for example, the PSDC.) The company is searching for suitable means of training.
- There are expectations in regard to the precision machining seminar to be held by the JICA (21st to 23rd September).
- The company hopes to see the introduction of regular advanced training courses.

(5) Use of Appropriate Machinery

o State at the Time of Diagnosis

- Advanced machines are used to conduct machining work which can be conducted using standard machines.

o Improvement Measure Advised

- The work should be distributed with the introduction of the idea of a machine charge to suit the machine capacity.

o State of Implementation of Improvement Measure

- NC machines are still used to conduct simple boring operation.
- In the case of a product of medium volume production, the arrangement of jigs for the CNC machines and the setting up of the machining conditions are conducted by experienced workers while the machines are operated by ordinary workers. This system has achieved positive effects.
- While calculation of the machine charge is conducted, such calculation is insufficient. A calculation system is now taking shape and basic data for each machine has been established and is used for actual cost calculation with positive results.

- Efforts are being made to switch from general purpose machines which demand a high level of skill to NC machines which can be operated by even subcontractors as a move to reduce the labour cost and to enjoy the advantages of high speed machining.

o Future Plan

- While three new machines (one wire cutting and two grinding machines) are in full operation, replacement of the CNC and milling machines by the end of this year is planned.

2. Plant (Factory) Layout

o State at the Time of Diagnosis

- The machines are simply placed in empty spaces without any planning. The building has been randomly extended following the expansion of machinery.

o Improvement Measures Advised

- At the time of the next extension, a pleasant workplace should be created by means of improving the work environment, including improvement of the flow inside the plant, improvement of the workability by changing the machine layout, introduction of safe aisles and improvement of the lighting, etc.
- A plan incorporating the relocation of the existing utilities (Plan I) and a plan based on the present locations of utilities (Plan II) were prepared with the cooperation of the owner and were compared with the present layout based on the characteristics of Plan I and Plan II as reference for the future extension plan.

o State of Implementation of Improvement Measures

- Some of the machines have been relocated in accordance with the plan and new machines have been properly placed.
- The plant extension plan has not yet been implemented because it has not been officially approved.

o Future Plan

- The new plant layout will be completed and the existing layout will be gradually changed in accordance with the new layout.

3. Cutting Techniques

o State at the Time of Diagnosis

- Because of the ease of machining aluminum materials, heavy cutting is conducted to finish the surface, resulting in a poor finish. Manual finishing is necessary.
- The tools for the milling machines are controlled by individual workers.

o Improvement Measures Advised

- Standard cutting conditions should be introduced and work should be conducted in accordance with such standards.
- Tool control should be centralised to improve the work precision.

o State of Implementation of Improvement Measures

- Standard cutting conditions have been introduced and the measuring of tools as well as products has become compulsory to maintain the work precision level.
- The centralised control of tools for the CNC machines is planned.

4. Material Control

o State at the Time of Diagnosis

- Diverse raw materials are used and old pieces are generated. There is a lack of proper control and a persistent impression of disorderly storage.

o Improvement Measures Advised

- A proper control system for the storage of materials by type, quality and shape should be introduced to ensure appropriate control.
- In the case of electronic parts, a system to record the date of acceptance with a view to disposing of parts after the valid date should be introduced to improve their reliability.

o State of Implementation of Improvement Measures

- While materials stored indoors are properly arranged on racks, aluminum materials in the open-air workshop were found to be simply stacked in the aisles, resulting in damage to the surface. An instruction to immediately improve the storage conditions was given and immediately complied with.

- Old materials and old pieces are still scattered without being properly classified.
- The electronic parts warehouse has become tidier as materials which have been unused for a long period of time have been disposed of together with the progress of classified material storage.

o Future Plan

- Materials which are not used for a long period of time (six months) will be either sold or scrapped.
- The procurement of materials will be coordinated with the production plan to reduce the volume of dead materials in the material warehouse in order to improve the storage and material control efficiency.
- A system similar to that described above will be introduced for electronic parts.

APPENDIX III

PROFILE OF SI COMPANIES SUBJECT TO SIMPLE DIAGNOSIS

APPENDIX III
PROFILE OF SI COMPANIES SUBJECT TO SIMPLE DIAGNOSIS

Data showing the profile of SI companies in Penang obtained by the simple diagnosis of SI companies conducted as part of the First Field Survey has now been compiled into tables and figures. It is possible to interprete the average conditions of these SI companies using the said data. The interpretation of the data by the Study Team is given in 3.3.1 of the Draft Final Report.

Here, the results of the following analyses are shown.

1. Industrial Contents (Type of Business)
2. Capital Size
3. Annual Turnover
4. Employee Size
5. Year of Establishment
6. History of Managing Director's Experience at a MNC

Fig 1　Industrial Contents

Industrial Contents	Single Operation	Multi Operation	Total
Mechanical Cutting	2	4	6
Mechanical Cutting(Precision)	6	4	10
Metal Stamping	9	4	13
Die Making(Stamping)		3	3
Die Making(Injection)	1	1	2
Die Parts Making	1	1	2
Jig & Tool Making		3	3
Injection Molding	4	3	7
Equipment Making(Electronics)	4	4	8
Equipment Making(Others)	4	1	5
Mechanical Parts Making	2	2	4
Electric&Electronics Parts Making	15		15
Electric&Electronics Equipment Making	3	1	4
Tool Making	2		2
Wire Harness Making	3		3
Label Making(Industrial)	3	1	4
Engineering	2	1	3
Others	9		9
Total	70	33	103

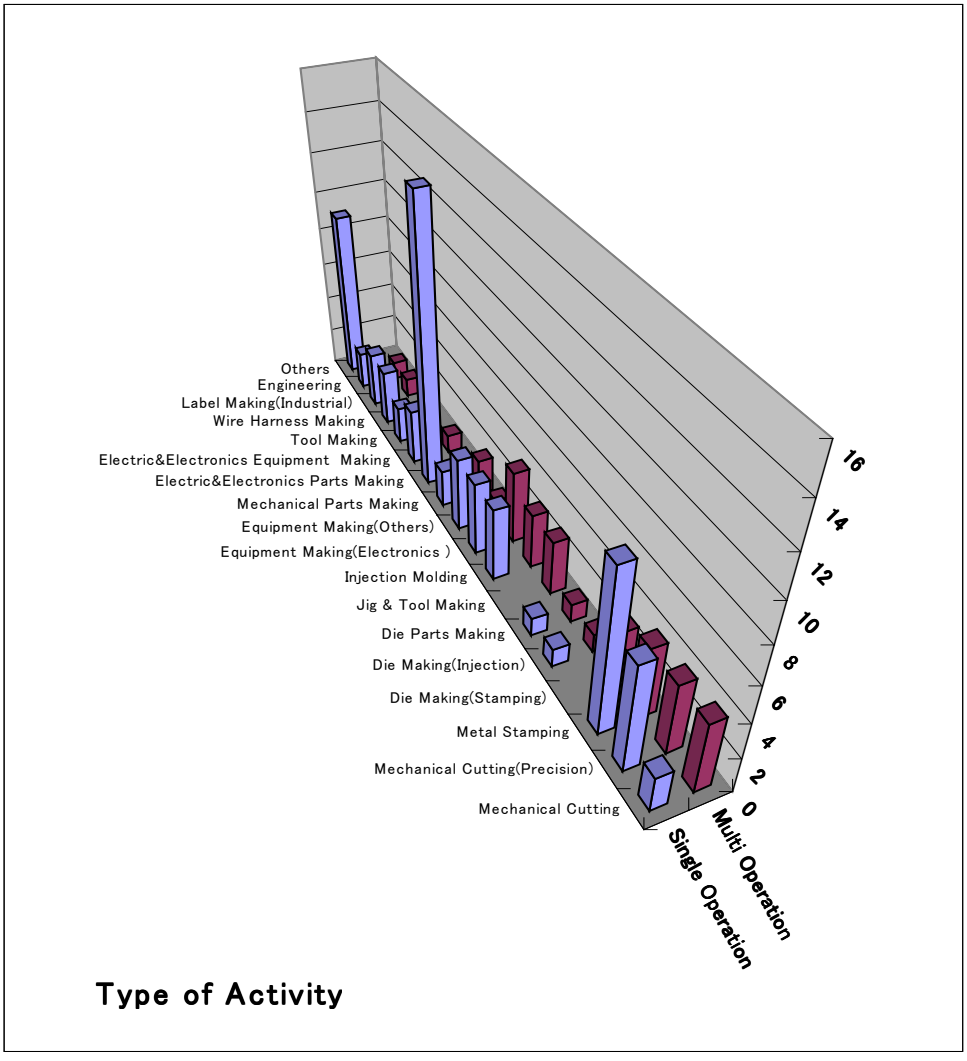


Fig 2　Capital Size

unit ; million RM

Industrial Contents	～0.5	0.5～1.0	1.0～2.0	2.0～5.0	5.0～10.0	10.0～	Total
Mechanical Cutting	4						4
Mechanical Cutting(Precision)	3	1	2	1			7
Metal Stamping	3	3	4	2			12
Die Making(Stamping)	1	2	1				4
Die Making(Injection)				1		1	2
Die Parts Making	1	1					2
Jig & Tool Making	2						2
Injection Molding	1		3	2			6
Equipment Making(Electronics)	2	1	2		1		6
Equipment Making(Others)		2	1	1			4
Mechanical Parts Making	1	1		1			3
Electric&Electronics Parts Making	3	1	4	5	1		14
Electric&Electronics Equipment Making	1		2	1		1	5
Tool Making		1	1				2
Wire Harness Making	1		2				3
Label Making(Industrial)	1	1	1		1		4
Engineering	2		1				3
Others	4	5					9
Total	30	19	24	14	3	2	92

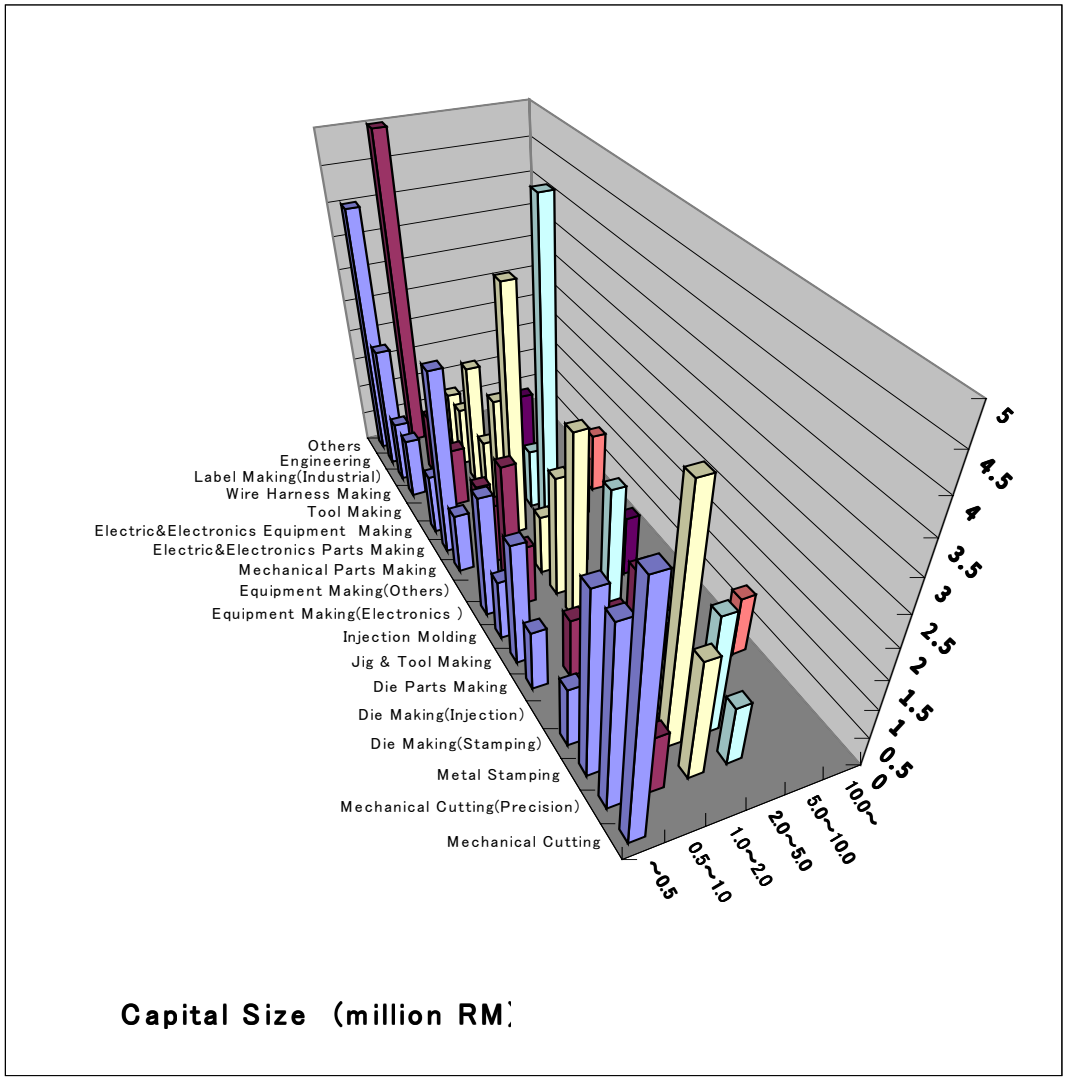


Fig 3　Annual Turnover

unit ; million RM

Industrial Contents	～1.0	1.0～2.0	2.0～4.0	4.0～25.0	25.0～	Total
Mechanical Cutting	1	2	1	2		**6**
Mechanical Cutting(Precision)	1	4		2	0	**7**
Metal Stamping	3	1	3	6	0	**13**
Die Making(Stamping)	2		1			**3**
Die Making(Injection)			1	1	0	**2**
Die Parts Making	1		1			**2**
Jig & Tool Making	1		2			**3**
Injection Molding		1	1	2	1	**5**
Equipment Making(Electronics)	1		1	4	1	**7**
Equipment Making(Others)		1	1	1	0	**3**
Mechanical Parts Making	2			2	0	**4**
Electric&Electronics Parts Making	2	1	4	3	4	**14**
Electric&Electronics Equipment Making				2	1	**3**
Tool Making				1		**1**
Wire Harness Making			2	1		**3**
Label Making(Industrial)			1	3	0	**4**
Engineering	2			1		**3**
Others	2	1	3	3		**9**
Total	**18**	**11**	**22**	**34**	**7**	**92**

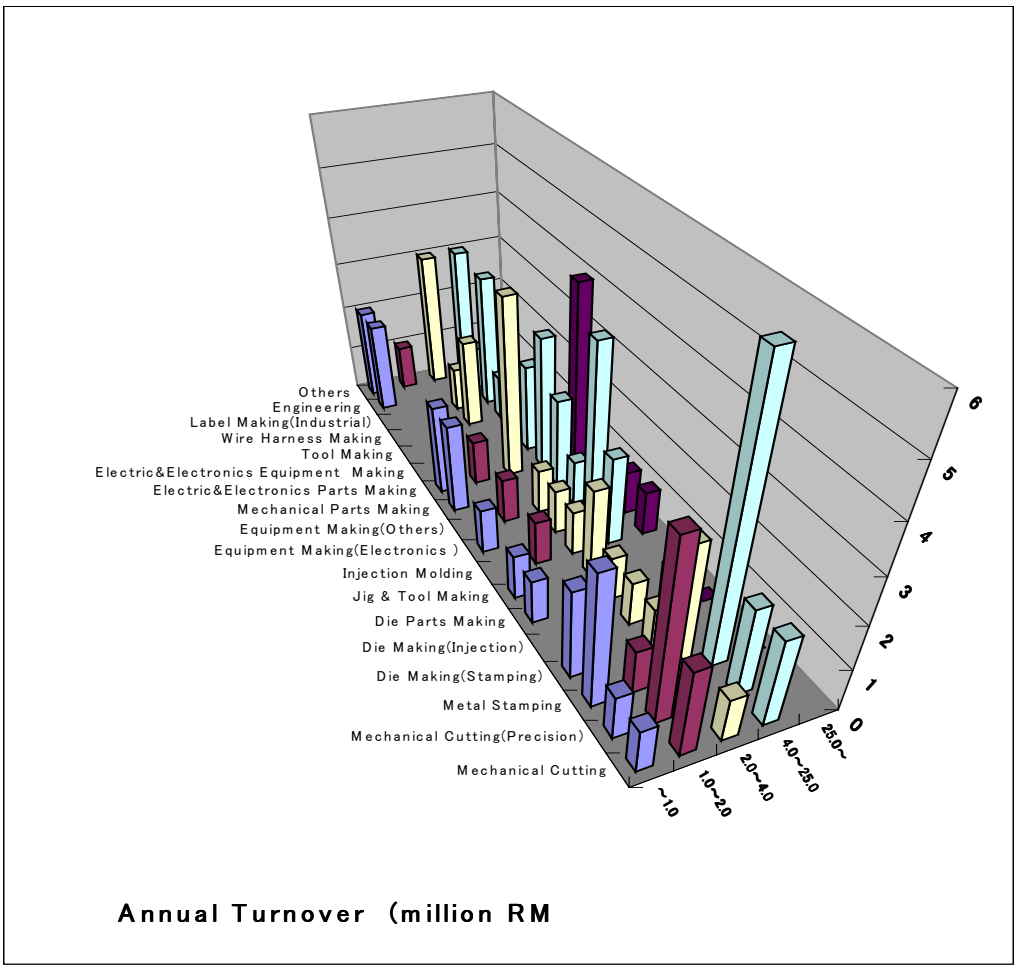


Fig 4　Employee Size

Industrial Contents	～15	15～50	50～150	150～250	250～	Total
Mechanical Cutting	3	1	2			**6**
Mechanical Cutting(Precision)	2	1	3	1		**7**
Metal Stamping	1	6	5	1		**13**
Die Making(Stamping)	1	2				**3**
Die Making(Injection)			2			**2**
Die Parts Making	1	1				**2**
Jig & Tool Making	2	1				**3**
Injection Molding		1	4	0	2	**7**
Equipment Making(Electronics)	2	1	4	1		**8**
Equipment Making(Others)		1	3			**4**
Mechanical Parts Making	1	1	2			**4**
Electric&Electronics Parts Making	1	3	5	1	4	**14**
Electric&Electronics Equipment Making	1	1	1		1	**4**
Tool Making		2				**2**
Wire Harness Making		2		0	1	**3**
Label Making(Industrial)		1	3			**4**
Engineering	1	1	1			**3**
Others	2	2	5			**9**
Total	**18**	**28**	**40**	**4**	**8**	**98**

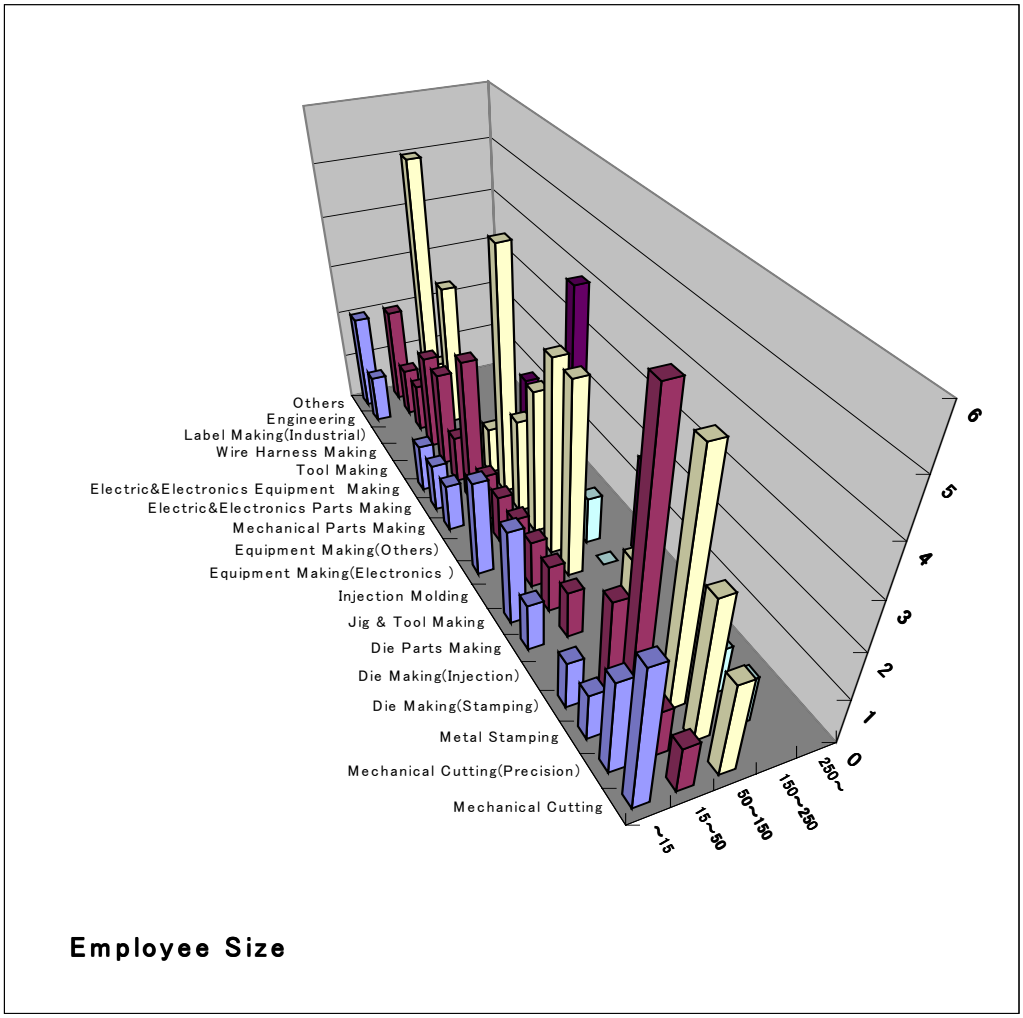


Fig 5　Established Year

Industrial Contents	～1990	1990～1995	1995～1998	1998～	Total
Mechanical Cutting	2	2	1	1	**6**
Mechanical Cutting(Precision)	2	3	3		**8**
Metal Stamping	3	6	3		**12**
Die Making(Stamping)	1	1	1		**3**
Die Making(Injection)	1			1	**2**
Die Parts Making	1	1			**2**
Jig & Tool Making		2	1		**3**
Injection Molding	1	5	1		**7**
Equipment Making(Electronics)	1	5	2		**8**
Equipment Making(Others)	2	1			**3**
Mechanical Parts Making		1	1	1	**3**
Electric&Electronics Parts Making	3	7	4		**14**
Electric&Electronics Equipment Making		2		1	**3**
Tool Making		1		1	**2**
Wire Harness Making		3			**3**
Label Making(Industrial)	1	2			**3**
Engineering		1	2		**3**
Others	2	2	3	2	**9**
Total	**20**	**45**	**22**	**7**	**94**

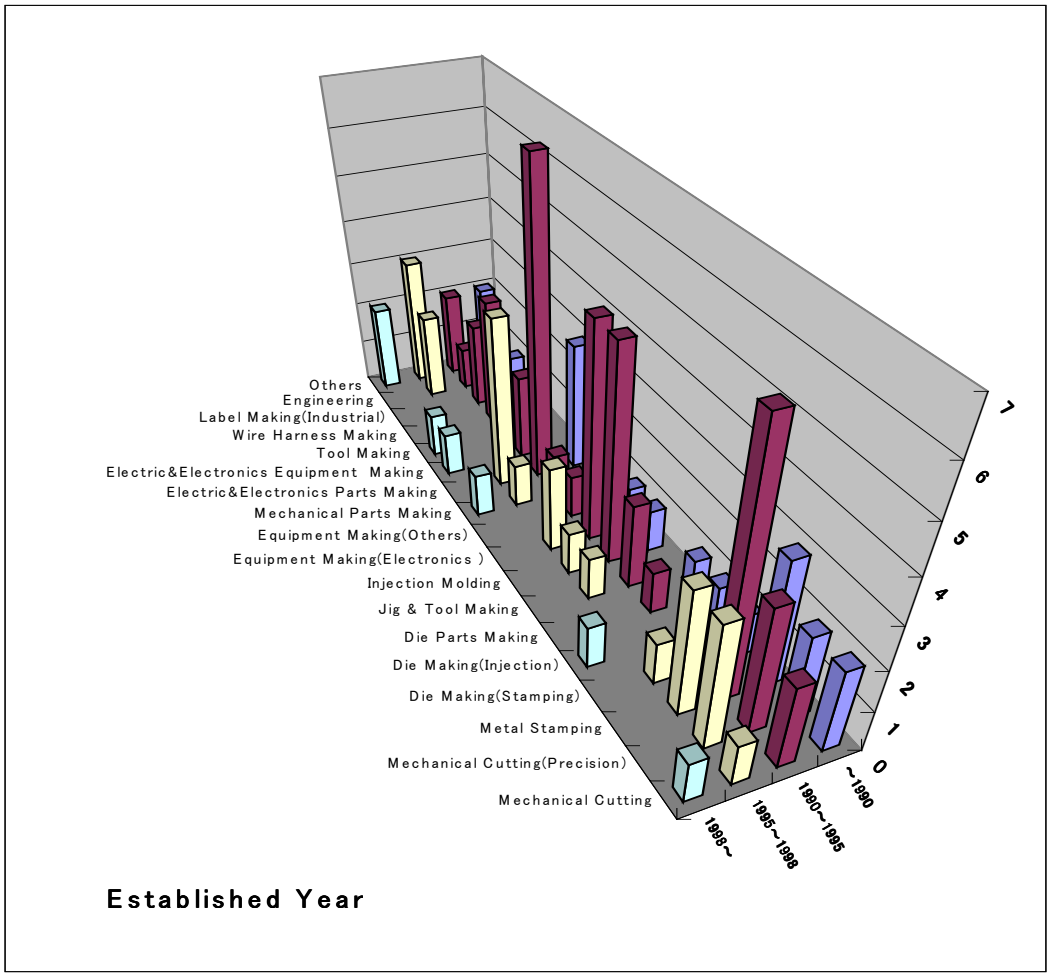
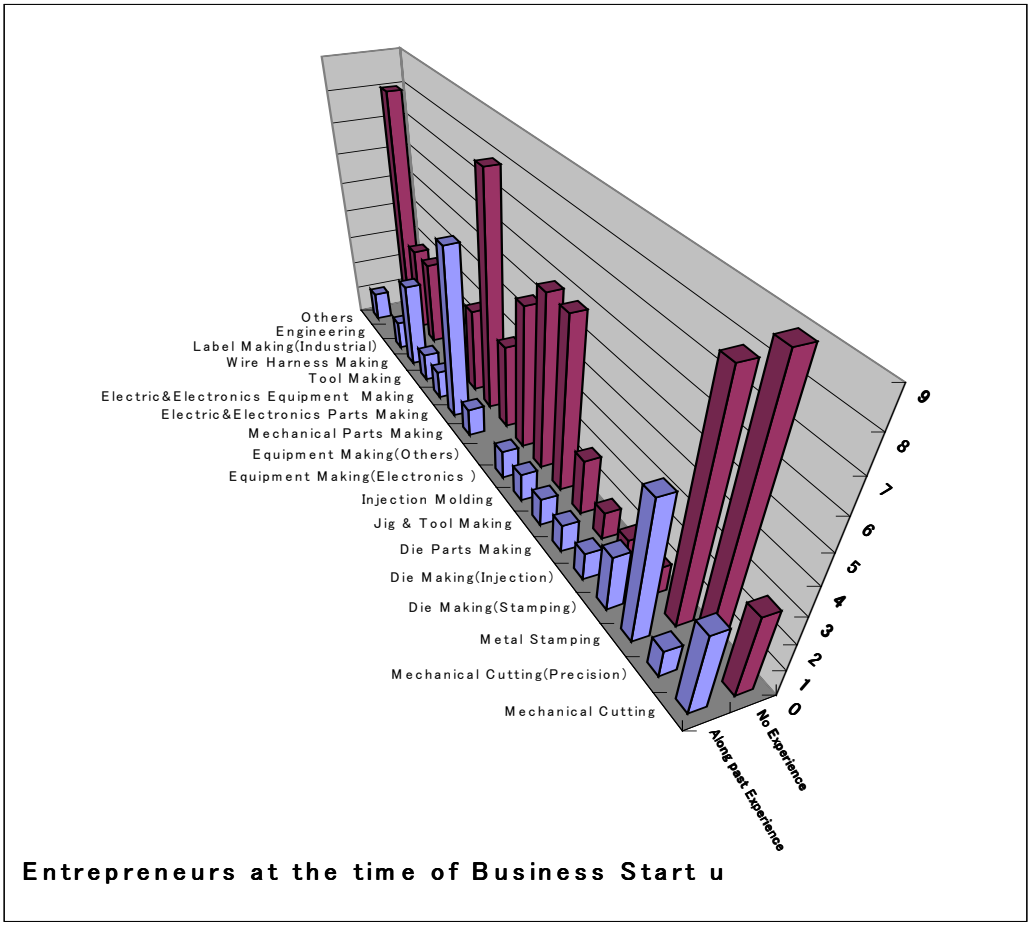


Fig 6　History of Managing Director's Experience at MNCs

Industrial Contents	Along past Experienc Experience	No Experience	Total
Mechanical Cutting	3	3	**6**
Mechanical Cutting(Precision)	1	9	**10**
Metal Stamping	5	8	**13**
Die Making(Stamping)	2	1	**3**
Die Making(Injection)	1	1	**2**
Die Parts Making	1	1	**2**
Jig & Tool Making	1	2	**3**
Injection Molding	1	6	**7**
Equipment Making(Electronics)	1	6	**7**
Equipment Making(Others)		5	**5**
Mechanical Parts Making	1	3	**4**
Electric&Electronics Parts Making	6	8	**14**
Electric&Electronics Equipment Making	1	3	**4**
Tool Making	1	1	**2**
Wire Harness Making	3		**3**
Label Making(Industrial)	1	3	**4**
Engineering		3	**3**
Others	1	8	**9**
Total	**30**	**71**	**101**



APPENDIX IV

DIAGNOSIS OF CORPORATE MANAGEMENT (FINANCIAL MANAGEMENT) AND TECHNOLOGY TRANSFER

APPENDIX IV
DIAGNOSIS OF CORPORATE MANAGEMENT (FINANCIAL MANAGEMENT) AND TECHNOLOGY TRANSFER

The detailed diagnosis and guidance on and transfer of technology were conducted at 19 companies, taking their size, business characteristics and staffing level, etc. into consideration. These 19 companies consist of two group companies and 17 model companies selected from the 103 local SI companies based on data and information obtained by the simple diagnosis.

The guidance and transfer items on the subjects of corporate management and financial management for each model company are shown in Table 1.

Table 1 Outline of Diagnosis of Corporate Management and Financial Management

Model Company	Diagnosis Item						
	Appropriateness of Financial Statements	Financial Analysis	Break-Even Point Analysis	Machine Charge	Cost Calculation per Products	Profit Plan	Establishment of Business Target(s)
		①	②	③	④	⑤	⑥
A	*	○	○	○	○	*	○
B	*	○	○				
C	*	○	○	○	○	*	○
D	*	○	○	○		*	○
E	*○	○	○				
F	*	○	○				
G	*	○	○				
H	*	○	○				
I	*	○	○			○	
J	*	○	○				
K	*	○	○				
L	*	○	○	○	○	○	○
M	*	○	○				
N	*	○	○				
O	*	○	○				
P	*	○	○				
Q	*	○	○				

Notes: 1) ○ denotes that diagnosis, technology transfer or guidance was conducted.
2) * denotes that the item in question was checked or examined. (In the case of the profit plan, the relevant reference materials were provided).

1. Outline and Characteristics of Corporate Management (Financial Management) of Local SI Companies

(1) Turnover

The business performance of 19 companies (17 model companies and two group companies) in 1999 is shown in Table 2.

- The 1999 turnover figure varies from a highest of RM 74.8 million to a lowest of RM 0.69 million. While the average figure is RM 11.5 million, the figure considerably varies depending on the type of business or trade.

- The average figure is, in fact, largely affected by the turnover of three companies with an employment size of 500 workers or more. Excluding these three companies, the average turnover figure for 16 companies drops to RM 5.3 million with a highest and lowest turnover of RM 11.6 million and RM 0.69 million respectively.

Table 2 Company Distribution by Annual Turnover by Business Type

Annual Turnover (RM million) / Business Type	~ 1.0	1.0 ~ 2.0	2.0 ~ 4.0	4.0 ~ 10.0	10.0 ~	Total
Precision Machining		1				1
Press (Stamping)	2		1	2	1	6
Mould Making (Injection Moulding)					1	1
Jig				1		1
Injection Moulding (including Secondary Processing)		1	1		2	4
Machinery and Mechanism Elements					1	1
Electrical and Electronic Parts		1		1	2	4
Aluminium Die Casting			1			1
Total	2	3	3	4	7	19

(2) Current Profit or Loss

- Most companies have been experiencing an improvement of both the turnover and profit/loss since 1997. Of the 19 companies, only five companies are in the red: two press (stamping) companies and three electrical and electronic parts manufacturers.

- The model companies can be classified into three groups. The first group consists of those of which the business performance has been steadily improving. The second group consists of those which finally produced a profit in 1999 after a prolonged period of loss-making operation while the third group consists of those which are still making a loss.

- Two large companies with an employment size of 500 or more workers have experienced a worsening of the business performance and have gone into the red.

- There are three companies which went into the black in 1999 although they still have an accumulated loss due to loss-making operation for several previous years.

Table 3 Company Distribution by Profit/Loss Size and Business Type

Profit/Loss (RM million) / Business Type	Loss	~0.4	0.4 ~ 1.0	1.0 ~ 2.0	2.0 ~	Total
Precision Machining		1				1
Press (Stamping)	2	2	1	1		6
Mould Making (Injection Moulding)				1		1
Jig		1				1
Injection Moulding (including Secondary Processing)		2		1	1	4
Machinery and Mechanism Elements			1			1
Electrical and Electronic Parts	3	1				4
Aluminium Die Casting		1				1
Total	5	8	2	3	1	19

(3) Outline of Corporate Management (Financial Management)

- As external auditing is a compulsory requirement, the financial statements are fairly well prepared. Accordingly, such aspects of company finance as the profit and loss situation are relatively well understood.

- As far as cost control is concerned, general cost accounting featuring the entire cost of factory operation is the common practice. Even if the production cost is calculated for each product, it is simply based on man-day data.

- There are few companies where the owner, because of his strong interest in understanding the production cost, cost reduction analysis and cost control, etc.,

actively uses management accounting techniques to decide the business guidelines and targets based on a sound understanding of the financial reality, business characteristics, advantages and shortcomings of the company, in turn determined by financial accounting and cost control.

2. Methods and Contents of Transfer of Corporate Management Techniques

The methods and contents of the transfer of management techniques were decided by the following processes.

- In regard to corporate management (financial diagnosis), following a simple check of the appropriateness and justness of the financial statements (check points: uniformity and continuity of accounting standards, (ii) accounting categories of manufacturing cost, marketing cost and general administration cost, (iii) rules for calculation periods for accounts receivable and accounts payable, accounts not yet paid and advance payments, etc., (iv) depreciation method(s) for assets subject to depreciation and (v) life of equipment, etc.), the financial statements were analysed to identify the characteristics, advantages and shortcomings, etc. of the business operation of each company.

- Based on the findings of the above analysis, corporate management techniques which could be implemented without causing any unnecessary burden on the company's operation were transferred with emphasis on management accounting while taking the actual size of the company, the capability of the accounting staff and the desire to receive detailed diagnosis and will to improve into consideration.

(1) Checking of Appropriateness and Justness of Financial Statements and Understanding of and Response to Company's Financial Structure

The subjects of this check were all model companies.

- The financial statements of the model companies were analysed and the characteristics, advantages and shortcomings of each company and its comparative status with SMIs in Penang were shown to make each company understand the company's current situation from the viewpoint of corporate finance. This was followed by guidance on the basic corporate management line and the possible direction for improvement.

- As part of the above guidance, the cash flow management technique with the function of independently regulating the three basic indices, i.e. profitability, growth prospects and safety, was introduced and recommended.

(2) Understanding of and Response to Current Profit Structure of Company Based on Break-Even Point Analysis

The subjects of this analysis were all model companies.

- The cost items of the profit and loss statement of each company were analysed to classify them into variable costs and fixed costs and a break-even point chart and table were prepared.

- Using this chart and table, the current profit structure was explained to each company together with (i) the characteristics, advantages and shortcomings of the company, (ii) capacity to deal with future fluctuations of the operating rate and cost reduction demanded by customers and (iii) targets and direction of cost reduction, etc.

- The variable cost, fixed cost and marginal profit were then calculated and the mechanism of complex thinking regarding business management and desirable business management methods was taught, featuring the formulation of sales, cost and profit plans and desirable approaches to achieve the targets.

(3) Calculation of Machine Charge and Promotion of Cost Control Based on Machine Charge

The subjects were four companies for which such basic data as the operation rate of the main equipment and others was available.

- Guidance was given on the methods of identifying and calculating the machine charge, which is the basis for cost control and cost calculation, and each company was asked to conduct a trial calculation even if only a rough figure for the machine charge was initially expected to result.

(4) Cost Calculation by Product and Examination of Product Mix

The subjects were three companies for which such data as the productivity, yield and pass rate, etc. was available for each product among the four companies cited in (3) above.

- Guidance was given on calculating the cost by product using the machine charge as the main factor and on its comparison with the sales price in order to clarify the profitability. This profitability data is important basic data to examine the product mix in order to enhance the profit margin by measuring the cost from the combined viewpoints of the full cost and direct cost.

(5) Promotion of Integrated Management of Various Functions of Company Based on Profit Plan

The subjects were two companies which want this type of management and for which a profit plan will be particularly effective to solve various problems because of their relatively large business size.

- For example, in the case of a company with low profitability or which is operating in the red, it was advised that an effective measure to stop the decline of the profit and to increase the profit is the integration and implementation of various company plans. This integrated management should have such components as (i) establishment of the target profit for the next business year onwards at the highest decision-making level of the company, (ii) systematic adjustment of such business elements as marketing, equipment, production and cost to achieve the target, (iii) identification of problems and examination of integrated solutions and (iv) introduction of action plans and targets to achieve the solutions for each section.

- Following the above advice, a suitable system for each company was examined and explained in detail to each company to ensure a proper understanding of the suggested system by the company concerned.

(6) Establishment of Business Management Targets for Company

Based on the analysis results for the companies cited in (5) above and others, it was recommended that they establish effective business management targets and the relevant guidance was provided for four companies.

3. Firm Establishment of Techniques Taught

- One SI company which underwent the simple diagnosis and for which the Study Team provided advice now prepares a financial report on the monthly business performance, manufacturing cost, marketing cost and personnel cost, etc. with the guidance of a local accounting expert and distributes the report to the top management as well as related departments of the company. The eagerness of this company to improve its business performance and to proceed with rationalisation is illustrated by the fact that its president requested an accounting consultant to attend the financial diagnosis and technical guidance by the Study Team for the exchange of opinions.

- Even at this company, however, the accounting practice still remains at the level of simply recording the actual performance and has not yet reached the level of corporate management

or management accounting based on variable factors analysis and the analysis of differences with the original budget or plan.

- One important factor regarding the absence of management accounting by SI companies in Penang, including the company described above, appears to be the lack of a clear demand and/or instructions by the top management in addition to such other factors as (i) insufficient number of staff capable of conducting such accounting in the case of small companies, (ii) lack of financial strength to pay the necessary cost and/or (iii) large gap between the present accounting system and management accounting system.

- In the case of small companies, the provision of guidance on suitable check points and financial analysis techniques is essential so that these companies can calculate vital data for a small number of calculation items which are appropriate vis-à-vis the reality of their business operation.

APPENDIX V

REPORT ON GUIDANCE ON PRECISION MACHINING

APPENDIX V
REPORT ON GUIDANCE ON PRECISION MACHINING

– General Findings –

The general findings on companies (in the die/jig and press industries) for which detailed diagnosis and guidance were conducted during the second field survey are described in this report from the viewpoint of improving precision machining.

1. Analysis of Present Situation

1.1 Technology

Because of the differences between the inherent technologies of the die/jig industry and the press industry, the current situation and problems in terms of technology are described for each industry.

1.1.1 Die/Jig Industry

(1) There is insufficient understanding of the basics of cutting and grinding and some work is omitted even when such understanding exists.

① Chucking of workpiece

As chucking suitable for the shape and the required precision of the workpiece is not conducted, processing work can be problematic in terms of precision. In general, the workpiece is clamped too much. It must be remembered that while tight clamping may be permitted for roughing, it can deform as well as damage the level of precision of the workpiece in the case of finishing.

② Re-grinding of cutting edge and dressing of grinding stone

The timing of the re-grinding of the edge of cutting tools (particularly high speed steel tools) is not standardised. As a result, the occurrence of defective quality due to burrs and a decline of the productivity are observed. The same can be said in the case of dressing of the grinding stone. In regard to cemented carbide throwaway chips, their replacement tends to be delayed due to too much emphasis on cost, resulting in burrs and a decline of the smoothness of the work surface.

③ Cutting and grinding fluid

Automatic machine tools and CNC machining centres are problematic because of the use of cutting fluid. However, grinding is often dry grinding without the use of such fluid, resulting in burning on the grinding surface of some workpieces.

④ Cutting and grinding conditions

There are cases were the cutting conditions are determined solely based on the material used for the workpiece, ignoring their suitability for the material used for the cutting tool. Consequently, the actual life of the cutting edge of cemented carbide cutting tools is shorter than expected. In regard to cutting by an end mill, there are cases where not only suitable up-cut operation but also down-cut operation involving reciprocal processing are conducted, ignoring the basic principle of relieving the cutting edge from the workpiece in the return motion.

(2) The use of machine tools with poor precision and poor performance has created a bottleneck in terms of both quality and productivity.

① General-purpose machine tools

As most of the machine tools used for the manufacture of dies and jigs are made in Taiwan, they are inferior to those made in Japan, Europe or the US in terms of precision, performance and life. These inferior machines have created a bottleneck for improvement of the quality of products and productivity. In particular, many general-purpose milling machines and surface grinding machines lack an automatic feeding device. It is difficult to conduct machining to produce highly precise surface roughness.

② Machining centres

Although machining centres made in Japan are used for mass production at some plants, the machining centres used for the manufacture of dies and jigs are mostly made in Taiwan. There is a strong trend among die manufacturers in Japan to use high speed, high precision machining centres with revolutions of the main spindle of nearly several tens of thousands per minute. In Malaysia, however, old type, medium speed, medium precision machining centres with revolutions of the main spindle of only thousands are still used.

③ Electric discharge machines (EDMs) and wire-cut EDMs

Most wire-cut EDMs are made in either Japan or Switzerland because of the need for precise numerical control (NC). However, die sinking EDMs are predominantly made in Taiwan. Most of the EDMs made in Taiwan do not have an oscillating function to improve the precision and productivity let alone a NC function. As they are general-purpose EDMs equipped with a simple electric discharge function, the machining precision in terms of depth and surface roughness is poor. Therefore, they cannot be used for the finishing of dies and are limited in terms of the precision of machinable dies.

(3) There is a general shortage of highly accurate measuring instruments. Even when such instruments are available, they are not effectively used.

① Surface plates

Stone surface plates (made of synthetic granite) which provide the reference for height measurement because of their high accuracy are not often used. While die manufacturers use cast surface plates for assembly operation, stone surface plates tend to be used for the QC checking of mouldings and pressed products.

② Highly accurate digital height gauge

In Japan, accurate height comparison with a block gauge and pick tester used to be conducted by placing a height master on a highly accurate stone surface plate except for those manufacturers which possessed 3D measuring equipment. In recent years, however, measurement using a highly accurate digital height gauge has become popular because of the ease of its use. Although the use of such a digital height gauge was observed at some die/jig manufacturers in Malaysia during the simple diagnosis, most model enterprises still use only a conventional, low accuracy height gauge.

1.1.2 Press Industry

(1) There is insufficient understanding of the basics of press working as well as die technologies and some work is omitted even when such understanding exists.

① Pressing strength as blank holder strength

Many enterprises determine the type of press to be used based on empirical values rather than properly calculating the required pressing strength of the target products.

Accordingly, presses without a margin for their performance are often used, resulting in wide-ranging pressed product quality and a shortening of the die life. The same can be said in the case of the blank holder strength as well as the stripper strength. Insufficient strength is a major factor for inadequate quality, such as deformed products and ___ to copes, and also for low productivity.

(2) The use of presses with poor precision and a poor performance has created a bottleneck in terms of quality, productivity and work safety.

① Single motion press

Many presses are either mechanical presses or power presses made in Taiwan or China with limited achievable quality and productivity. As the clutch mechanism of all presses is mechanical, no emergency stoppage after start-up is possible, resulting in complete operation of one stroke each time. For the safe use of this type of press, it is essential to use both a button switch for double-hand pushing and a cut-out switch (either a pull type or a push down type). The reality is that no press working enterprises use such safety devices (cut-out switch). Even worse is the fact that the use of a button switch for double-hand pushing is not strictly enforced. As a result, dangerous press work using a foot switch or a lever switch is permanently conducted without a safety guard.

The use of these presses can be attributed to a managerial decision to keep investment in equipment low. The danger of this practice is manifested in the fact that many shopfloor workers (often foreign workers from Bangladesh and Cambodia, etc.) have lost their fingers. The excessive cost reduction demand by Japanese MNCs and those in other industrialised countries is partially responsible. The introduction of such global standards as the ISO 9000 series is necessary to ensure work safety.

② Progressive press work

Presses made in Japan are popularly used although a small number of Taiwanese subsidiary press enterprises use automatic presses made in Taiwan. There are no safety problems in regard to those manufacturers conducting progressive press work using Japanese presses as they also have an optical cut-out switch. In contrast, however, manufacturers using Taiwanese automatic presses do not have such an optical cut-out switch and do not use a leveller for material supply. As the press products of these manufacturers are small, there is no question of flatness. Nevertheless, the equipment configuration which omits a leveller to straighten

coiled material constitutes a problematic production system which has an inherent risk of producing qualitative defects.

(3) The low technical strength in regard to the design of dies constitutes a major factor for inferior quality and productivity decline.

① Process design

The most important point in the initial examination of press work is the optimisation of process design, i.e. determination of the processes to be used to achieve the required shape of the final product. In the case of single stroke press work, it is easy to change the processes through trial and error. Precise process design is, however, required for progressive processing because of the difficulty of changing the processes once they have been decided. Process design for progressive die manufacture means strip layout design (layout of workpieces without dies). At present, the technical level in Malaysia in this regard is that only a small number of die manufacturers are capable of designing a strip layout for relatively simple processes.

② Design of bending and drawing dies

In the case of bending dies, these are designed without a proper understanding of the relationship between product quality (as determined by the presence of springbacks and cracks, etc.) and such parameters as product shape (bend radius and bend height, etc.), plate thickness, material, rolling direction and burr direction, causing such problems as an inferior bent angle and the miscalculation of expansion. The same can be said in the case of drawing dies. As the die design does not accurately reflect the stress fluctuations which occur inside the material plate, there are cases where the product quality in terms of flatness and other aspects suffers.

(4) The equipment layout does not take productivity into consideration.

① Consideration of equipment expansion

The factories of those enterprises engaged in the mass production of press products or plastic moulding products often comprise a series of extensions in response to production volume increases without properly considering such extensions at the time of factory construction. The wiring and pipes at these factories are located along physical flow lines, constituting an obstacle to productivity improvement.

Some of these factories are aware of their inferior equipment layout and plan to move to new factories.

② Rented factory buildings

In the case of rented factory buildings which were originally constructed by the government of private developers, the inferior layout is sometimes caused by the existing equipment and/or the building structure. Some of the enterprises using these factory buildings are unaware of their inferior layout while others are aware of it but have adapted to a second-best layout because of the huge cost of changing the existing equipment and/or building structure.

1.2 Control

In the case of control, as both the die/jig industry and the press industry often share the same problems, they are described together.

(1) The control of equipment, etc. is problematic in regard to the maintenance of machine tools as well as presses and the control of jigs, etc.

① Tool and cutting edge control

In both cutting and grinding, the cutting edge or abrasive grain conducts its assigned work through contact with the workpiece. Accordingly, the product quality and productivity are determined by the sharpness of the cutting edge or the smoothness of the grinding stone without clogging. This makes tool control the most important control item of precision machining. A serious problem of Malaysian manufacturers is their sole practice of BM (breakdown maintenance where the regrinding or dressing of tools is conducted after the occurrence of large burrs, a measurement defect or poor surface roughness). This is also the case in the press industry. Regrinding of the cutting edge only after the occurrence of inferior quality due to large burrs results in a very high quality control and maintenance cost.

② Preventive maintenance of machine tools and presses

Some enterprises have introduce routine PM (preventive maintenance) involving daily checks and regular inspections, etc. with the display of a check sheet to the side panel of each machine tool or press. However, many enterprises lack any system of self-reliant maintenance and do not specify the person responsible for each piece of equipment or each machine. The situation still falls short of CM

(corrective maintenance) which involves corrective action and which is practiced on many shopfloors in Japan. TPM (total productive maintenance) which is linked to company-wide productivity improvement activities is non-existent.

③ Calibration of measuring instruments

Although some enterprises have adopted the practice of requesting the regular calibration of their measuring instruments to an outside organization specialising in calibration work, many lack a management system which consistently guarantees the correct measurement values because of the lack of calibration.

(2) There is a lack of modern production management.

① Planned production and production result management and progress control

While the production results are recorded relatively well, the production programme is not clearly indicated. Although the planned production volume is shown by the daily production record which is completed by a supervisor, no shopfloor is provided with “a visible table of planned production” which informs everyone of the intentions of the production department.

② Productivity control indices

As described above, the daily production results are recorded relatively well. However, the unclear distinction between the operating time and time loss and the inadequate analysis of the recorded data mean that the recorded data is not effectively utilised to improve the production performance.

③ Arrangement time

The required time for material arrangement or die replacement usually takes from 30 minutes up to one hour in Malaysia and constitutes one factor for the low productivity. One reason for this is the use of a movable gantry crane or forklift instead of an overhead travelling crane which requires large investment. The poor placement of dies and raw materials is also a major factor for the lengthy arrangement time.

④ Inventory control

The inventory levels of raw materials, half-finished products and finished products are all high, causing unnecessary expense in terms of the control cost as well as interest. The main reason for the high levels of half-finished and finished products is

the attempt to meet the just-in-time delivery demanded by MNCs, the clients, by increasing the inventory levels of these products due to insufficient production control. Meanwhile, the high level of raw materials can be attributed to not only the fact that the main materials for press work, such as electro-zinc plated steel sheets and stainless sheets, are imported from Japan but also to the attitude of local owners of SMEs who cannot dispose of materials which are unnecessary or urgently required.

(3) Statistical quality control tools are not used.

① Data analysis

Although some enterprises have established a proper quality control system and possess quality control data on in-process inspection, shipment inspection, acceptance inspection of subcontracted products and user claims, etc., many enterprises do not sufficiently use this quality control data for quality improvement despite the relatively good gathering of such data.

② In-process improvement of quality

There are examples of important dimensions being controlled by the CPK (___) with the issue of an improvement notice by the quality control department when the CPK value is less than 1. However, it is often the case that such a notice is not met with proper improvement because of weak production technology. Accordingly, the existing quality control remains at a level at which efforts are made not to ship defective products as much as possible rather than quality control “to create high quality in the process” or “to do it right the first time”.

(4) The existing awareness level of the need for safety control/workplace environment control is low.

① Safety control

The awareness level of the need for safety is extremely low throughout all ranks, from top management to the shopfloor. At almost all of the visited workplaces, neither safety caps nor safety shoes are worn. Common-sense safety measures are also lacking, including the use of safety or protective gear for press work and the use of protective goggles for cutting or grinding.

② Control of workplace environment

The luminous intensity is inadequate at most of the visited workplaces. Insufficient consideration of the workplace environment is also witnessed by the common use of fixed work chairs which cannot be adjusted.

1.3 Human Resources

As both the die/jig industry and the press industry also face similar problems in terms of human resources, they are described together.

(1) Many enterprises face difficulties in recruiting and training technicians and engineers.
The shortage of workers in Malaysia's manufacturing industry in general is very serious, partly because of the difficulty of the industry, which can be characterised by hard physical work in a dirty environment compared to office work, to attract people as the Malaysian economy has progressed to the stage of assuming an economic structure similar to that of industrialised countries. Workers engaged in simple work in particular change their jobs very often, making it difficult for enterprises to recruit and train people with excellent potential. This situation has led many enterprises to recruit foreign workers from Bangladesh and Cambodia, etc. or to apply for their recruitment to the competent authorities.

(2) Technical expertise remains personal property based on experience and has not yet become corporate property.
Although the technical expertise can be partly established by the type of equipment in use, it is mainly embodied by people. A collection of people comprises an organization (enterprise) and the technical strength of such an organization constitutes the inherent technical strength of each enterprise. The high level of job-hopping by engineers and technicians in Malaysia and the fact that technical expertise largely remains personal property based on experience cause a problem of the high mobility of technical expertise following the movement of engineers and technicians. This has led to a situation in which the inherent technical strength of enterprises has not been accumulated, suggesting a constant risk of the inherent technical strength of enterprises being instantly weakened by the job-hopping of capable engineers.

2. Guidance

2.1 Technology

2.1.1 Die/Jig Industry

(1) Practical guidance will be provided on such basic cutting and grinding skills as the chucking of a workpiece, re-grinding of the cutting edge, dressing of the grinding stone, use of cutting or grinding fluid, setting of proper cutting/grinding conditions as well as the zero point and work safety requirements.

(2) Guidance will be provided on methods/techniques to improve the product quality and productivity, including the need for assembly only after confirmation of the precision of parts and the use of jigs for small-scale production.

(3) The gradual replacement of existing machine tools by high performance (higher accuracy and higher efficiency) machine tools is recommended with the highest priority being given to grinding machines and EDMs which determine the final precision of products.

(4) The introduction of precision surface plates and the minimum but necessary range of measuring instruments to form a reliable basis for precise measuring is recommended.

2.1.2 Press Industry

(1) Guidance will be provided on methods to calculate the appropriate pressing strength and material chucking strength using concrete examples.

(2) The gradual replacement of mechanical clutch presses, the work precision and safety of which are low, by high performance and highly safe air clutch presses is recommended.

(3) Guidance will be provided on the basic ideas of process design, points to note in the design of drawing dies and design calculation, etc. using video equipment.

(4) The optimal factory layout will be proposed from the viewpoint of general operation efficiency using activity analysis results, etc.

2.2 Control

(1) Guidance will be provided to ensure strict control of the timing of the re-grinding of the cutting face/edge of press dies and cutting tools and the dressing of grinding stones.

(2) Guidance will be provided to clarify the responsible person for each piece of equipment, to display the name of the person responsible on each piece of equipment and to make preventive maintenance consisting of daily checks, regular inspections and the calibration of measuring instruments, etc. the norm at the workplace.

(3) Guidance will be provided to make the intentions of the manufacturing department known through “visual control”, including the display of the planned production table where the planned production volumes and actual results are shown in the form of a graph.

(4) Guidance will be provided to indicate the operating rate of machinery and the operation schedule in a visual manner while clearly establishing the job control, load control and progress control for each of the machining processes.

(5) Guidance will be provided to clarify the meaning of labour productivity and equipment productivity, productivity calculation method and person responsible for achieving the productivity target and target figures to be achieved by the time of the commencement of the third field survey.

(6) Clear guidance will be provided on the distinction between inside arrangements and outside arrangements and also on arrangement improvement methods, including a change of the outside arrangements to inside arrangements.

(7) Guidance will be provided to clarify the inventories of raw materials, half-finished products and finished products using colour coding, etc. as the first step to reduce the inventory levels.

(8) Guidance will be provided on scientific quality control using such statistical quality control techniques as grey zone control, histogrammes and CPK, etc.

(9) Guidance will be provided on safety control and control of the work environment, including the use of cut-out switches and safety gear for press work, consideration of the flight direction of chips from cutting, use of protective gear for cutting, use of a grinding

stone cover for grinding machines, body position in die/jig assembly work and the level of luminous intensity, etc.

2.3 Human Resources

(1) Proposals will be made in regard to motivation management to raise the morale of workers, including the work suggestion system, award system, small group activities and management by objectives (MBO).

(2) Proposals will be made in regard to measures to extend the technical expertise of individuals to organizations (enterprises), including an appraisal system for subordinates and the preparation of various technical manuals, etc.

APPENDIX VI

FINDINGS OF QUESTIONNAIRE SURVEY ON SMI SUPPORT PROGRAMMES

APPENDIX VI
FINDINGS OF QUESTIONNAIRE SURVEY ON SMI SUPPORT PROGRAMMES

Questionnaire For Government Agencies

Kindly return by fax to: 03-7726-3986/8986 (Attn: Mr.Tan Chee Kuan, Deloitte Kassim Chan)

Name of Agency/Organization: .....

Your Name: .....

Designation: .....

Date: .....

Questionnaire For Government Agencies

Q1. How do you view SMIs companies in the economy?

( ) As subcontractors for multinational companies (MNCs)
( ) As venture companies with unique skills
( ) As excellent small-scale independent entities
( ) Other ( )

Q2. What do you think should be the main body behind SMIs support programs?

(i) The central government should play main role.

( ) I agree
( ) I disagree
(Why?)

(ii) Authority and control over the programs should be transferred to local governments

( ) I agree
( ) I disagree
(Why?)

(iii) Should the government play more active role to develop SMIs in line with the "Manufacturing Plus Plus" concept?

( ) I agree
( ) I disagree
(Why?)

(iv) Support programs are not necessary. Things should be left to the free economy.

( ) I agree
( ) I disagree
(Why?)

Bumiputra owned companies should be given preferential treatment.

( ) I agree
( ) I disagree
(Why?)

(v) Companies owned by non-Bumiputra should be given equal treatment as Bumiputra.

( ) I agree
( ) I disagree
(Why?)

Q3. What do you think are the problems with overall existing SMIs support programs?

( ) The measures and programs do not sufficiently reflect the needs of SMIs companies.
( ) There is a lack of cooperation among various government agencies involved in SMIs development.
( ) There are not enough officers with sufficient knowledge on the industrial needs.
( ) No monitoring and feed back system after implementation of the programs
( ) Others ( )

Q4. Concerning the SMIs support programs under the jurisdiction of your agency:

(i) What has been the best practice/program implemented to date?

Please write the name of the practice/program:

( )

(ii) Why has this practice/program been so effective? Please describe:

(Reason:)

(iii) What is one program that was withdrawn (or may be withdrawn) due to lack of success?

Please write the name of the practice/program:

( )

(iv) Why has this practice/program failed?

(Reason:)

Q5. What is your opinion on the development of entrepreneurial ability/spirit in SMIs with its present support programs?

( ) The present support programs are running fine. The problem lies on the user's side.

( ) The present support programs are a failure. A new paradigm of support programs are necessary.

( ) It is impossible to expect that any support programs will be able to promote entrepreneurship among SMIs.

( ) It is possible to promote entrepreneurship among SMIs by adjusting the present support programs.

What do you suggest to upgrade the present support programs?

(Suggestion:)

Q6. Concerning support programs for non-Bumiputra SMIs companies:

(i) What are the main issues in promoting non - Bumiputra SMIs companies in the support programs?

( )

(ii) To further upgrade existing non-Bumiputra SMIs companies, what program (if any) is necessary / available?

( ) No need for support programs for non-Bumiputra SMIs companies

( ) If any, what are the programs?

Thank you very much for your co-operation.

Please be assured that every information provided will be strictly treated with confidentiality

FINDINGS OF QUESTIONNAIRE SURVEY

I Which of the following programs are you aware of?

	Number of companies say aware	Number of response companies	%
Fund for Small & Medium Scale Industries (MIDF)	68	85	80.0%
Industrial Technical Assistance Fund (SMIDEC)	57	85	67.1%
Human Resources Development Fund (MOHR)	57	85	67.1%
Technology Acquisition Fund (MTDC)	49	85	57.6%
Vender Development Program (MOE)	45	85	52.9%
Soft Loan Scheme for Modernization & Automation (MIDF)	35	85	41.2%
Industrial Linkage Program (SMIDEC)	30	85	35.3%
Sub Contract Exchange Scheme	13	85	15.3%
The Electric & Electronic Component Scheme (MOE)	12	85	14.1%

II. Which of the following programs are you aware of? Please circle all of the following organizations of which you are aware.

Organizations	Number of companies say aware	Number of response companies	%
SIRIM	84	86	97.7%
FTZ	83	86	96.5%
PSDC	80	86	93.0%
LMW	76	86	88.4%
SMIDEC	74	86	86.0%
MARA	72	86	83.7%
MIDF	71	86	82.6%
PIKS	70	86	81.4%
MTDC	66	86	76.7%
NPC	56	86	65.1%
BIMB	43	86	50.0%
BTVC	31	86	36.0%
IPM	20	86	23.3%
PTTC	13	86	15.1%
PIA	9	86	10.5%
BPIM	1	27	3.7%

III. Have you ever used any of the above programs or have you ever received support from any of the above organizations?

	Number of answering companies	Number of response companies	%
Yes	15	26	57.7%
No	16	26	61.5%
We would like to use a program but have been unable	15	27	55.6%

(note) including repeat answer.

III-1. Answering "Yes" for Question III ･･･ Which Organization's program have you used?

Name of Organization	Number of answering companies
SMIDEC	9
PIKS	4
SIRIM	3
FTZ	2
MIDF	2
LMW	1
MTDC	1
MARA	0
BIMB	0
NPC	0
BTVC	0
PSDC	0
IPM	0
PTTC	0
PIA	0
BPIM	0
Total	22

III-1-a. What were your reasons for using this program？

Items	Number of answering companies
Consulting services	10
Other (seminar etc.)	9
Low interest rates	7
Simple application process	2
Total	28

(note) including repeat answer.

III-1-b. Did the program meet your expectations?

	(A) Number of say Yes or No companies	(B) Number of program supported companies	(C) Number of response companies	Ratio (A)/(B)	Ratio (A)/(C)
Yes	11	15	26	73.3%	42.3%
No	6	15	26	40.0%	23.1%

III-1-b-(i). Case No …
What problems did you encounter?

idear is good but application procedure is too complicated and time consuming
take too long times to approved
slow action
slow processing, weak knowledge of our technology

III-2. Answering "No" for Question III …
Why not

	Number of answering companies	Number of response companies	%
It is a waste as even if we apply we will probably not be accepted	9	26	34.6%
There is a lack of flexibility in the way that the funds can be used	9	26	34.6%
The application procedures are too complicated and troublesome	7	26	26.9%
We can not depend on the government to provide appropriate assistance for our problems	3	26	11.5%
We have not needed outside assistance	2	26	7.7%
We do not want to open our books to the government	1	26	3.8%
Others (do not know the detail of the facilities provided)	1	26	3.8%

III-3. Answering "We would like to use a program but have been unable" for Question III

	Number of answering companies	Number of response companies	%
We are not sure what type of programs are available	12	27	44.4%
We do not have time to research the programs	4	27	14.8%
Other (lack promotions as to what is available)	1	27	3.7%

IV. What do you expect from Federal and State SMI support programs?

	Number of answering companies	Number of response companies	%
Introducing business contacts	20	27	74.1%
Working capital financing	17	27	63.0%
Technical guidance	14	27	51.9%
More active publicity as to what programs exist	10	27	37.0%
Business guidance	8	27	29.6%
Other	1	27	3.7%

IV-1 What kind of support would be helpful?

Introducing business contacts

more export market and opportunity
business matching
overseas foundation
how to link to overseas customers
technical trnsfer , joint venture

Working capital financing

ensure cheap loan easily available
for improve company production and productivity
for new investment of purchasing machinery
to get investment opportunity
low interest fund
expansion purpose
material purchase

Technical guidance

technology transfer, increase value to existing products
trade of higher technology to Malaysia
ISO9002
technology transfer
send for training mission to overseas companies

More active publicity as to what programs exist

to improve quality
let us know what programs are available
more information
sent programs through post/e-mail

Business guidance

how to further improve marketing skills
accounting knowledges if possible
overseas guidance for business
management training
export oppotunity
expose SMIs to overseas companies

Other

the plan is good, but level of practice is very low for example International exchange conference

Attachment	Ref. No.

APPENDIX VI-b
QUESTIONNAIRE ON EFFECTIVENESS OF DEVELOPMENT SUPPORT MEASURES FOR SMIS

Questionnaire on the Effectiveness of Development Support Measures for SMIs

(March 2000)

JICA Study Team

I. Which of the following programs are you aware of?	**Aware**	**Not Aware**
1. Industrial Linkage Program (SMIDEC)		
2. Vender Development Program (MOE)		
2-1 The Electric & Electronic Component Scheme		
3. Sub Contract Exchange Scheme		
4. Technology Acquisition Fund (MTDC)		
5. ITAF (SMIDEC)		
6. Fund for Small & Medium Industries (MIDF)		
7. Modernization & Automation Scheme for SMIs (MIDF)		
8. HRDF (MOHR)		

II. Which of the following programs are you aware of? Please circle all of the following organizations of which you are aware.

PIKS	FTZ	MARA	BIMB
SMIDEC	LMW	NPC	BTVC
SIRIM	PSDC	MIDF	IPM
MTDC	PTTC	PIA	BPIM

III. Have you ever used any of the above programs or have you ever received support from any of the above organizations? Please choose one of the following to explain you answer and reasons.

① Yes … Which program have you used?

( )

What were your reasons for using this program?

- Low interest rates
- Simple application process
- Consulting services
- Other ( )

Did the program meet your expectations?

- Yes
- No … What problems did you encounter?

( )

② No ⋯ Why not?

- We have not needed outside assistance
- We can not depend on the government to provide appropriate assistance for our problems
- It is a waste as even if we apply we will probably not be accepted
- The application procedures are too complicated and troublesome
- There is a lack of flexibility in the way that the funds can be used
- We do not want to open our books to the government
- Other ( )

③ We would like to use a program but have been unable to because:

- We are not sure what type of programs are available
- We do not have time to research the programs
- Other ( )

IV. What do you expect from Federal and State SMI support programs? What kind of support would be helpful?

- More active publicity as to what programs exist
  (Example:)
- Working capital financing
  (Example:)
- Introducing business contacts
  (Example:)
- Business guidance
  (Example:)
- Technical guidance
  (Example:)
- Other
  (Example:)

Thank you very much for you cooperation

APPENDIX VII

RECORDS OF VISIT SURVEYS OF SMI SUPPORT AGENCIES

APPENDIX VII
RECORDS OF VISIT SURVEYS OF SMI SUPPORT AGENCIES

1. Penang District

(1) National Productivity Corporation (NPC) Northern Region

Address	:	Beg Berkunci 206, Jalan Bertam, 132000 Kepala Batas, Pulau Pinang Tel. 04-5754709, Fax: 04-5754410
Visit date and time	:	February 23 (Wednesday), 8.50-11.00 National Productivity
Persons interviewed	:	Mr. Ahmad Fadzil Mahmud (Consultant) Mr. Kamarudin Mamat (Consultant) Mr. Zahid Ismail (Consultant) Mr. Adnan Abdullah (Consultant)

Outline

The National Productivity Corporation (NPC) was established by the National Productivity Council Act 1966 under the supervision of MITI. The forerunner of this was the National Productivity Centre which was established in 1962 based on a special United Nations fund and ILO. After this, following numerous revisions to the law, the scope of National Productivity Corporation (NPC) activities has been expanded to include not just productivity but also quality.

The role of the NPC is to contribute to development of the national economy through raising productivity and quality via survey, training, and system development and diffusion.

NPC headquarters are located in Petaling Jaya (south of KL) in Selangor Province, and it possesses five branch offices in East Coast Region (Kuantan), Southern Region (Johor Bahru), Northern Region (Pinang), Sabah (Kota Kinabalu) and Sarawak (Kuching).

Activities

The NPC has 200 trainers (these personnel call themselves trainers but their cards say consultant) overall, and there are seven trainers in the Northern Region branch (approximately 30 employees in all).

Main clients of the NPC are private sector companies, but it also deals with government agencies. Client companies include MNCs, SMIs and all companies in between these two types.

NPC activities consist of training, consultancy and policy research concerning productivity and quality (P & Q).

Staff from the Northern Region branch visited and met with personnel officers of 50 companies and industrial cooperative associations in 1999, and the branch held numerous half-day and one-day seminars at the branch facilities targeting laborers and housewives, etc. In cases of MNCs and other large companies, one course can be filled by a single company, however, concerning SMIs, for example, taking the case of the Foundry & Engineering Association, the branch staged a seminar for trainees who were dispatched from 23 different companies. No fees were charged for seminars up until 1995 when support was still available from the World Bank, however, seminar fees are now charged since the NPC is an independent operation. It charges between 1,000-3,000 RPM for a single seminar targeting up to 25 people. Total revenue from seminar fees in 1999 was 737,000 RM.

(2) Bumiputera and Technologu Venture Capital SDN. BHD. (BTVC)

Address	:	Tingkat 14, Menera PSCI, Jalan SultanAhmad Shah, 10050 Pulau Pinang Tel: 604-227-4297, Fax: 604-227-4300
Visit date	:	February 25 (Friday), 2000, 10.00-11.20
Person interviewed	:	Mr. Mohd As'ad Sidon (Chief Executive Officer)

Outline

- This provincial government-related venture capital (VC) corporation mainly targets Bumiputera companies. Concerning the corporation's stockholders, 15% of stocks are held by PDC, 15% by the Bumiputera company MRCB (Malaysian Resources Corporation Sdn. Bhd), and between 5-12% each by Mayban Ventures, MTDC, Farlin, Leader, UMU, Business Forcus, Peringkat Prestagi, and so on.

- The upper limit of capital which can be loaned by BTVC is 39 million RM. It has a share issue of 390,000 shares each with a face value of 110 RM. BTVC has so far invested a

combined amount of 10 million RM in 11 different companies, and it holds at least 50% of the shares in each of these companies.

- Approximately 20 companies have joined the Malaysia Venture Association. The top VC fund is around 150 million RM in total and scale of the company is comparatively small.

- Concerning the background to formation of BTVC, non-Bumiputera companies are stronger and Bumiputera companies are retreating in Penang Province. MNCs such as Motorola and Sony have been operating in the province for more than 20 years, however, powerful subcontractors such as Solectron, Trenscabtor, Ellen and All Engineer are mostly non-Bumiputera companies. On the other hand, powerful Bumiputera companies apart from AKN are extremely rare. Viewing this situation with concern, the provincial government took the initiative in establishing BTVC in 1996.

- BTVC in reality has no staff, but actual funding work is carried out by BTV Management (BTVM), which is an affiliate of BTVC. BTVM has a staff of six consisting of Mr. Mohd the Chief Executive Officer, one General Manager, one analyst and three assistants.

- 11 companies have so far been the subject of VC investment and these can be divided into the following two groups:

  ① pre-disclosure companies where work contents are stabilizing and listing on the stock exchange is anticipated (Mezzanine companies): 3 companies (total investment 7 million RM); and

  ② SMIs which are anticipated will achieve full-scale growth based on the Entrepreneur Development Program (EDP): 8 companies (total investment 3 million RM)

  Out of the three companies in the first group, one is already scheduled for listing on the stock exchange before the end of the year, but another has ceased operations and BTVC must consider ways to process the investment fund loss. Therefore, the fortunes of target companies are mixed.

- When selecting investment destinations, consideration is given to the following points:

  ① Upon considering the sector in question and the contents of the target company's operations, it is first necessary to determine whether the industry is a declining one or a promising one.

  ② Next, turning the focus to management, it is judged whether or not the manager or owner has sufficient vitality and perseverance to make a good entrepreneur.

In any case, BTVC deals with high-risk high-return businesses and the targeted companies each possess some elements that do not pay in terms of rational economics.

(3) Bank Industri & Technologi, Malaysia. Berhad (No. 49572-H) (BITM)

Address	:	No. 53 3rd Floor, Jalan Selat, Off Jalan Bagan Luar 12000 Butterworth Seberang Prai, Plau Pinang, Malaysia Tel: 604-331-7711, Fax: 604-323-7489
Visit date	:	February 28 (Monday) 2000, 10.00-12.00
Persons interviewed	:	Mr. Mohd Razali Bahaudin (Head of Representative Office) Ms. Soo Wai Ming (Executive) Mr. Abdul Rahman Yaakob (Chief Representative of Malaysia Export Credit Insurance Berhad) Mr. Nobil Nordin (Branch Manager of BI Credit & Leasing)

Outline

- This is a government-based development bank of which the Ministry of Finance has a 100% share holding. In addition to financing SMIs and other companies in the manufacturing sector, this bank provides loans to a wide range of companies such as those in the shipping and shipbuilding sectors. It has also recently started putting effort into providing loans for promising technologies.

- The bank is reputed for mainly financing Bumiputera companies, however, providing that Malaysian capital accounts for 51% or more of the capital base, any company whether it be Chinese or Bumiputera can be targeted.

- Commercial banks apply an interest rate of 12% (per annum) on five-year loans. The four government-based banks including this one (BITMB, BPIM, MIDF, BPM) offer 5-8% interest. Low interest of 3.5% is also available, however, this only applies to special fund cases.

- The name of the bank was changed to BITMB on February 10, 2000 with addition of the word Technology to BIMB.

- There are numerous companies in the group that is headed by this bank, for example, MECIB, EXIM, BICL, GMV, WTM, MICROMAGNA, CSIB, BITEC and BITCON, etc.

- The government definition of a small and medium enterprise is as follows: paid-up capital 2.5 million RM or less, own capital 10 million RM or less, employees 150 or less, and annual turnover 25 million RM or less.

- Interest on loans is obtained by adding a margin to the fund cost (all provided by the government). Interest on the fund cost ranges between 3.5-7.75%. Private sector deposits do not provide the base capital for loans. For example, in the case of the JBIC (Japanese Bank of International Cooperation), the lending rate is 7%.

- Margin is determined by the degree of risk. Private banks base decisions concerning provision of finance according to assets which can be used as collateral, however, government-related finance agencies determine loans according to the contents of projects. Project contents are dictated by the following five points, i.e. management, contents of operations, industrial sector, technology, and market. Collateral is only an additional factor. Loans are sometimes decided according to political considerations, and there are also cases of syndicates being formed.

(4) MTDC Penang Sdn. Bhd (Co. No. 235796-U)

(Malaysian Technology Development Corporation) (Co. No: 1283042-V)

Address	:	Suite 11. 04 Menara SPCI, Jaan Sultan Ahmad Shah, 10050 Penang Tel: 04-2276076/2276073, Fax: 04-2276079 Web site: www.mtdc.com.my
Visit date	:	February 28 (Monday) 2000, 15.00-17.00
Person interviewed	:	Mr. Adnan Ismail P. J. M. (Manager)

Outline

- MTDC Penang is 100% owned by Malaysian Technology Development Corporation (MTDC, Co. No. 235796-U) and is run by two staff members. MTDC has 100 staff at headquarters and, in addition MTDC Penang, it has a similar subsidiary again employing two staff at Johar.

- MTDC is a government-led joint venture company financed by MITI (30% capital outlay) and 16 other companies. It was established in 1992, and MTDC Penang was founded in 1994.

- Paid-up capital is 8 million RM, and authorized capital is 200 million RM.

- The main functions of MTDC are as follows:

  ① Commercialization of the research findings of universities and research agencies in Malaysia

  ② Introduction of advanced strategic technology to Malaysia

  ③ Domestic production of materials and intermediate materials necessary for bolstering the industrial base in Malaysia

- The following two subsidization schemes have been established to achieve these goals:

  ① Technology Acquisition Fund (TAF)

  This provides funds that are necessary for companies to acquire strategically important technologies (new products or new manufacturing processes) for acquiring international competitiveness. The criteria adopted for determining subsidization is “first machine in the country”, and decisions regarding this are left to MIDA. The funding limit is 100 million RM, and total loans to 55 companies since 1998 have amounted to 60 million RM. Individual loans are generally around 0.2-3.0 million RM.

  ② Commercialization of R & D Fund (CRDF)

  This fund is intended for the commercialization (product manufacture and rights establishment) of unique Malaysian technology and research findings of domestic universities and research agencies. The funding limit is 60 million RM, and total loans to 35 companies since 1997 have amounted to approximately 29 million RM. Individual loans are generally around 0.5-2.0 million RM.

- Decisions concerning the provision of subsidies are made by the MITI committee. MTDC Penang receives and investigates the contents of applications from companies. Companies are required to be founded on at least 51% Malaysian capital regardless of whether they are Bumiputera, Chinese or Indian companies.

- The Minister of International Trade and Industry is a woman, and recently the Special Assistance Scheme for Women Entrepreneurs was established.

- According to the MTDC brochure, other activities include technical consultancy service, technical support service and venture capital.

(5) Bank Development and Infrastructure Malaysia. Berhad (No. 16562-K) (BDIM)

Address	:	No. 62, Jalan Tengah, Bandar Bayan Baru 11950 Bayan Lepas, Pulau Pinang, Malaysia Tel: 604-643-7733, Fax: 604-644-6943
Visit date	:	February 29 (Tuesday) 2000, 11.00-12.15
Person interviewed	:	Mr. Ali Bin Bahari (Head of Representative Office)

Outline

- This bank provides funds for land and plant purchase to SMIs. Against the background of the currency crisis and the ensuing economic deterioration, infrastructure-related finance work was transferred from the EPU (Economic Planning Unit) to this bank in 1999. Infrastructure was added to the bank name, and it came to be involved in large-scale infrastructure-related financing in such areas as highways, airports, commuter transportation and the multi super corridor, etc. The EPU is currently only concerned with the supervision of large-scale infrastructure-related loans.

- Infrastructure-related loans are controlled by the KL headquarters, while the Penang branch specializes in SMI loans. In tandem with loans, the bank also visits target companies around once every quarter and conducts business consulting services. Financing is provided to SMIs regardless of whether they are Bumiputera or non-Bumiputera.

- Eligible conditions for SMI financing consist of the following three points: 1) paid-up capital is 2.5 million RM or less, 2) company is in the manufacturing sector (service industry, shipbuilding, construction, consulting, and farm produce are excluded), 3) Malaysian capital accounts for 51% or more of capital.

- When decisions are made concerning loan finance, in addition to the above eligible conditions, priority is placed on 1) management experience, 2) scale and future potential of the market, 3) willingness to introduce new technology, 4) safety of finances, and 5) quality of workers.

- Concerning 4) above, emphasis is placed on own capital, and financing is possible up to 2.5 times the amount of paid-up capital. Concerning 5), the ratio of skilled workers within the work force is checked. No finance is provided if balance cannot be achieved between these five factors.

- Four options are available concerning the rate of interest applied to SMI loans, that is 4% (Malaysian government original capital), 5% (same), 6.5% (OECF original capital), and 7% (same). Interest on loans differs according to the original capital, however, compared to interest on loans from commercial banks, these rates are low. Interest on loans to general companies is set at 1.5% over the BLR (bank lending rate). The current lending rate is 8.25%, which is higher than interest applied to SMIs.

- The mission of government-related finance agencies is to support the development of SMIs. The main type of finance provided by commercial banks is short-term loans, however, the average lending period of this bank is long at 7 years. The default rate cannot be disclosed in detail, however, it is in double digits and higher than the 8% experienced by commercial banks.

- Penang branch has 12 staff members. The branch conducts loan evolution and disbursement work. Financial decisions concerning disbursement are made in conferences at KL headquarters. Uncovering of target SMIs for loans is based on local information from the Penang branch. This information is obtained from various agencies in Penang.

(6) Malaysian Industrial Development Finance Berhad (No. 3755-M)

Address	:	Tingat 4, Wisma Leader, No. 8, Jalan Larut, 10050 Penang, Malaysia Tel: 604-29-8434, Fax: 604-229-8437
Visit date	:	March 1 (Wednesday) 2001, 9.30-10.30
Persons interviewed	:	Mr. Mohd Hanafi Zakaria (Manager, Northern Region) Mr. Shahrin Abdullah (Executive, Northern Region)

Outline

- This is a MITI-related finance agency. It is actively concerned with promotion of manufacturing and targets both SMIs and MNCs. It does not provide loans to the construction, agriculture and service sectors.

- 80% of SMIs targeted for loans are Chinese capital companies and 20% are Bumiputera companies. The approach regarding Bumiputera companies is still considered to be weak.

- The company was listed in the first rank of the KL stock exchange in 1992. It has seven branch offices throughout Malaysia, and the KL headquarters has 184 staff. The Penang branch has eight staff.

- The Penang branch is responsible for three provinces including Kedah and Penang, and its work mainly consists of discovering candidate companies for loans and recommending these to headquarters. After companies receive approval from headquarters, the Penang branch carries out disbursement.

- Loan work is largely focused on fixed asset finance for the introduction of industrial site land and plant. Fixed asset finance, which targets SMIs immediately following establishment, was previously very active, however, it slumped in the wake of the currency crisis and has been slowly recovering in recent times.

- In consideration of the fact that SMIs which have been in existence for five years or more have a higher need for working capital finance, the company has started offering packages that combine fixed asset finance with working capital finance, but the scale of these operations is still small.

- A feature of Malaysian SMIs is that plant investment is provided from the personal funds of owners, while operating funds are covered by loans. Since interest rates offered by commercial banks are high, there is a potentially high demand for operation fund low-interest borrowing from government finance agencies. Since loans from government finance agencies are limited to plant investment, a mismatch exists here between the lending side and the borrowing side.

- Eligible conditions are rigorously applied. This bank places particular emphasis on own capital.

- Interest rates vary between 4-7% depending on the source of funds.

- Customer information is obtained from networks belonging to PDC, MIDA Penang, and so on. For this reason, there is frequent overlapping of customers with BPIM (Malaysia Development Infrastructure Bank) which possesses similar information sources.

(7) PIKS (Pusat Industri Kecil Sederhana, Small and Medium Industry Centre)

Address	:	1 Persiaran Mahsuri, Bandar Bayan Baru, 11909 Bayan Lepas, Pulau Pinang Tel: 04-6432111, 6432911, Fax: 04-6432405, 6422448
Visit date	:	March 1, 2000, 15.00-16.30
Person interviewed	:	Mr. Rizal Fauzi B. Ahmad Ismail (Executive Secretary)

Outline

- Industrialization in Malaysia can be viewed in the following three stages:

  ① When prices of rubber and tin slumped at the start of the 1970s, five companies including Clarion, Motorola and Bosch set up in Malaysia, and vendors in such sectors as casting appeared in response to this;

  ② From the mid-1970s to the start of the 1980s, spinout vendors who had acquired technical training while working in MNCs started to appear; and

  ③ From the mid-1980s to the start of the 1990s, companies which could receive technical training and carry out OEM production started to appear.

- In order to promote small and medium enterprises that grew in this way, SMIDEC was established on the federal government level in 1996, while on the provincial level PIKS was established under the Penang Industrial Council in 1992. This became a permanent organization with approval from the Penang provincial government in 1994 and it came to fulfill the secretariat functions of the Penang State Industrial Transformation and SMI Development Committee in 1995.

- As for the organization of PIKS, there are four committees (Information, Business Networking, Business Consultancy, and Production) under the Chairman, Deputy Chairman and Board members. The Chairman sits on the Penang State Industrial Transformation and SMI Development Committee and also serves as acting prime minister for the province. The board members are composed of seven representatives from government and industry and 11 agency representatives.

- There are 1,117 SMIs in Penang Province (494 companies on the island and 623 on the peninsula side): 38% of these are in the metals processing sector, 16% are in the electric and electronics sector, and 15% are in the plastic products manufacturing sector.

- PIKS membership is limited to SMIs and is obtained by undergoing registration. At the end of 1999 there were 182 member companies (56 metals sector, 31 electric and electronics sector, 29 plastics sector, and so on).

- The role of PIKS is to resolve problems that arise between the government, MNCs and SMIs:

  ① Promotion of planning, coordination and execution of provincial government programs and projects for advancement of SMIs;

  ② Information provision and consulting for SMIs policies of the national government, provincial government and various agencies

  ③ Assistance of market development by SMIs via linkage with related agencies

- Future strategies for SMIs that are of particular importance are human resources development, technical development, and internationalization, etc.

- PIKS activities include the following: staging of seminars, provision of advice and information, publication of directories, organization of trade and investment missions, attendance at provincial and commercial trading committees on behalf of SMIs.

(8) Federation of Malaysia Manufacturers (FMM) (7907-X) Northern Branch

Address	:	2767 Mukim 1, Lebuh Tenggiri 2, Bandar Seberang Jaya, 13700 Seberang Perai Tengah, Penang Tel: 04-3992057, Fax: 04-3994863 URL: http://www.fmm.org.my
Visit date	:	March 2 (Thursday), 2000
Persons interviewed	:	Mr. Tan Sean Aun (Branch Manager) Ms. Hema Thiruchelvam (Executive)

Outline

- FMM, established in 1968, is the largest agency in the private sector. Member companies currently number 2,000 companies in the manufacturing sector, and in terms of capital base these companies cover 75% of the manufacturing sector.

- FMM activities include the following:

  - Provision of advice to the government and agencies on behalf of the industry

- Provision of various information
- Dispatch and reception of mission
- Publication of directories, etc.
- Guidance and advice to SMIs
- Other

• FMM Northern Branch is responsible for the three provinces of Penang, Kedah and Perlis. Four executives work under the Branch Manager.

• There are 360 member companies in this region, and 250 of these are SMIs. Compared to the figure of approximately 2,000 SMIs in Penang, this organization ratio is small.

• Operation is carried out by committee and sub-committees.

FMM activities include seminars, dispatch of trade missions (recently to China, Germany, Cambodia, etc.) and staging of exhibitions, and these activities are implemented in tandem with PDC and PIKS.

• There is a matching system that utilizes FMM-Net and more than 100 companies take part in this.

• Local companies that manufacture electric products are Pensonic and Malaysian Electronic Corporation (MEC, east coast).

FMM-IM (FMM Institute of Manufacturing) is registered with the Human Resources Development Council as a training provider. A total of 63 training programs were scheduled at FMM-IM Northern Branch from January to June 2000. Almost all of these were two-day courses covering a wide range of topics such as administration, personnel affairs, safety, quality, improvement, computers and languages (English, Japanese, etc.).

(9) Kulim Technology Park Corporation (No. 44351-D)

Address	:	Suite 3-01-3.02, 3rd Floor, KHTP Business Centre, Kulim Hi-Tech Park, PO Box 60, 09000 Kulim, Kedah Darul Aman, Malaysia Tel: 604-403-2420, Fax: 604-403-1973
Visit date	:	March 3 (Friday), 2000, 10.30-12.00
Persons interviewed	:	Mr. Azaham Abidin BCK (General Manager (Operations)

Mr. Annuar Mohd Saffar (General Manager (Technology Development & Research)
Mr. Amirudin Abdul Aziz (MIDA, State Director)

Outline

- KTPC, a government organization, was established with the aim of operating KHTP (Kulim Hi-Tech park), and it is 100% financed by KSDC (Kedah State Development Corporation).

- KHTP was the first hi-tech industrial estate to be established in Malaysia in 1996. The idea for KHTP, which was created with investment of 1.2 billion RM, was proposed by Prime Minister Mahathir.

- KHTP is located in South Kedah Province next to Penang, and it is close to both Penang Port Butterworth Terminal (25 km) and Bayan Llepas International Airport (36 km). Moreover, since it is directly linked to the east-west highway, access is good.

- JICA provided assistance for the grand design and planning of KHTP, and its 1,450 ha site includes production plants, research agencies, schools, hospitals, shopping centers and entertainment facilities.

- Industrial sectors planned for attraction to KHTP are advanced electronics, production inspection, product processes, medical science and mechanics, process control and automation equipment, optical applied technology, bio-industry, and new materials, etc.

- The following qualifications are required of companies to operate in KHTP and receive hi-tech incentives: 1) R & D spending of at least 1% or more of local sales turnover (not including cases where the company has been operating for less than three years), 2) at least 7% of the work force must have science degrees (excluding qualified engineers and holders of diplomas), and 3) products and processes must be authorized by MIDA (Malaysian Industrial Development Authority).

- Incentives provided to companies that locate in KHTP include the following:
  ① offer of land in the Phase 2 industrial zone at 7 RM/square foot
  ② offer of land for training and education purposes at 7 RM/square foot
  ③ in addition to the ordinary 60 year lease on plant land, the option of a 39 year renewal
  ④ Limitation of asset assessment tax in the first three years to 8%

⑤ limitation of water tariff to 1 RM/m3 irrespective of the amount of consumption in the first three years, and so on.

In addition to the above, various other incentives are provided with respect to hi-tech projects at the federal level.

(10) Penang Skills Development Centre (PSDC)

Institute of Precision Molds (IPM)

Address : 1, Jalan Sultan Azlan Shah, Bandar Bayan Baru, 11909 Bayan Lepas, Penang

Visit date : March 3 (Friday), 2000, 14.20-16.30

Persons interviewed : Mr. Billy Tan Wei Lian (Administrative Executive, Applied Engineering)
Mr. Masashi Yoritaka (engineer, JETRO expert)

Outline

- PSDC was started by American MNCs in 1989 as a human resources development center, and it has grown under the support of the provincial government, PDC and industry centering around MNCs. Japanese companies such as Sony and Hitachi also take part and current membership stands at 82 companies possessing a combined total of some 70,000 employees.

- PSDC is operated by the Management Council which consists of 15 members including representatives from the provincial government, PDC, USM (University Sains Malaysia), SIRIM, PERDA (Penang Development Authority), KPUn (Ministry of Entrepreneur Development), and SMIDEC. Specially appointed Executive Directors work under the chairman of this council.

- Representatives from each member company make up the Training Committee and two sub-committees (Skill Advancement and Career Advancement). These committees carry out preparation, monitoring and assessment of annual training plans and offer support to the Executive Directors.

- The focus of PSDC activities is currently directed at SMIs, which are regarded as suppliers for MNCs. PSDC aims to develop SMIs so that they are able to become globally competitive.

- Training areas include technical skills, manufacturing skills, management skills and continuing education.

- Short-term training includes courses in management, personal relations and report preparation, while long-term training courses cover such areas as machine technology, machine processing, precision processing and multi-media.

- IPM was established within PSDC by Japanese companies in 1995 and, following dispatches of experts from JICA, AOTS and the Plastics Association, etc., it started a diploma course (3 years) in 'Designing of Molds and Dies'.

- Following the currency crisis, IPM and PSDC started joint venture mold and die training with view to consolidating operations. This was combined with plastic injection molding (PTTC) and machine processing (PMTW) to form the Applied Engineering Department.

- Trainees are able to sit long-term training courses if they have graduated secondary school and have sat their O-levels. The Machine Department consists of two classes each possessing 15-20 students, and there are between 30-40 graduates per year.

- Fees for the daytime diploma course over three years range between 20,000-25,000 RM. This is high compared to the tuition fees charged by polytechnics and institutes of technology.

- Short-term courses target currently employed workers and are held on Saturdays and Sundays.

(11) SIRIM Berhad, Northern Region (367474-V)

Address	:	Lot PT 483, Mukim 6, Jalan Permatang Pauh, 13500 Permatang Pauh, Plau Pinang Tel: 604-5377435/4486, Fax: 604-5377436 Web site: http://www.sirim.my
Visit date	:	March 6 (Monday), 2000, 9.30-12.10
Persons interviewed	:	Mr. Zulkifle bin Pesol (Regional Manager) Mr. Adzhari Aziz (Associate Manager, CAD/CAM Laboratory)

Outline

- SIRIM Berhad was previously called the Standards and Industrial Research Institute of Malaysia and was placed under the supervision of the Ministry of Science, Technology and Environment, however, in September 1996 it was placed under the supervision of the Ministry of Finance Treasury Department as a 100% ownership of the federal government.

- (This meant that employees would no longer receive pensions but they would receive pensions from the Employee Providence Fund. 11% of the EPF is provided from employee pensions and 13% from the government).

- After becoming a corporation, SIRIM found it necessary to develop its own projects and operations in order to survive, and it started ISO certification and training programs, etc.

- As the state agency in charge of standardization and quality and as a pioneer of industrial research and development, SIRIM Berhad plays an important role in putting quality improvement technology to good use for the state.

- Missions on SIRIM are as follows: 1) to raise the competitiveness of clients through quality of technology, and 2) to meet national needs.

- For this reason, SIRIM has three sides to its character: 1) it cooperates with industry, 2) it protects the rights of consumers, and 3) it is part of the national government setup.

- Headquarters are located in Shah Alam and there are 1,100 employees. There are also six regional offices and two branches.

- The functions of SIRIM are as follows:
  - ① Technical development: SIRIM owns 13 technical centers for carrying out technical development.
  - ② Standards and quality: SIRIM carries out standardization, QA authorization services and testing.
  - ③ SMI promotion: technical cooperation with SMIs, provision of ITAF, implementation of training programs, etc.
  - ④ Technical information services: collection of standards, patents, technical magazines, technical theses, literature, etc. Data base can be accessed via the information service SIRIMLINK.

- SIRIM Northern Region, including its two subsidiaries, has a total of 36 employees, that is 17 in the SIRIM offices (including five personnel in the electrical products testing laboratory), 17 in SIRIM-Sime, and two in SIRIM QAS.

- Training Services Sdn. Bhd. carries out numerous training courses in Penang district each year. It uses facilities of PDC and PSDC for this purpose.

(12) Penang Development Corporation

Address	:	No. 1 Pesiaran Mahsuri, Bandar Bayan Baru, 11909, Bayan Lepas, Pulau Pinang, Malaysia Tel: 604-643-2111, Fax: 604-642-2448
Visit date	:	March 6 (Monday), 2000, 15.00-16.30
Person interviewed	:	Mr. K. Gopalan (Manager, Industrial & Trade Division)

Outline

- Penang Development Corporation was established as a state government agency in 1969 with the goals of promoting industry and urbanization. Its activities were expanded to include education, medical care, consultancy and tourism, etc. in 1990. The President of PDC is also the provincial prime minister.

- In addition to its conventional interest in MNCs, PDC started showing an interest in promotion of SMIs from the 1980s. Most SMIs at that time were operating illegally. As well as implementing promotion measures such as construction of a 2,300,000 ft2 industry park and supplying building factories, etc., PDC started to supply industrial infrastructure on the same scale as Bayan Lepas in 1995.

- In 1994, in order to encourage unity among SMIs, PIKS was established in order to adopt a more involved approach to the implementation of promotion measures.

- Whereas until now has been the age of VDP, a change started to occur from 1998 and the future will be the age of ILP with the emphasis placed on promotion of SMIs. For companies in newly emerging industries, however, VDP still has significance.

- The ideals of PDC are still the same, but its mechanism has been changed in line with the changing times. In terms historical breakdown, the period from the 1970s to the 1980s was

the era of promotion, the 1980s was a time of consolidation (exploration of work methods), and the 1990s was the quality era (exploration of methods for advancement).

- The manufacturing sector ratio in Penang is high at 52% and this greatly exceeds the national average of 32%. It can be said that the PDC is steadily becoming involved with industrial promotion policy. Staging of vendor exhibitions to attract MNCs was started in 1996, and the federal government goes along with this approach.

- ILP carried out by the PSDC is known as GSP (Global Suppliers Program) here and is producing results.

- It cannot be denied that SMIs issues are the subject of political disputes. The six ministries and agencies concerned with SMIs promotion measures each state their own self-centered viewpoints. In order for this situation to be improved, it is first necessary for parties to become aware of the general picture of SMIs promotion measures being conducted by each ministry and agency. Next, it is necessary to clarify just who the 'clients' are in SMIs promotion conducted by each ministry and agency. Promotion measures should be considered after these steps have been taken.

(13) Mr. Maki's Office

Address	:	JICA Malaysia Office (temporary office during visit to Malaysia)
Visit date	:	March 8 (Wednesday), 2000, 13.20-14.40
Person interviewed	:	Mr. Hidenori Maki (SMI diagnostician, former JICA expert, on dispatch to Malaysia MITI)

Outline

- As JICA expert, Mr. Maki was dispatched to Malaysia MITI for two years from April 1994. During this time, he provided guidance on industrial technical information development and business management of SMIs in general, and he also proposed an SMIs diagnosis and guidance system suited to actual conditions in Malaysia.

- During this period, through carrying out visit surveys of SMIs and major corporations in Malaysia and conducting statistical studies of Malaysia and Japan, etc., Mr. Maki pointed to the following problems in small and medium manufacturing policy and the industry itself in Malaysia:

① Apart from feasibility studies based on the ITAF 1 scheme, there is no system for the provision of consultant guidance on business management affairs overall. There is only individual guidance provided by NPC and SIRIM for quality control and improvement of productivity.

② Staff of the SMIs Department (MITI department at that time) do not possess guidance capacity.

③ Development of core companies is neglected.

④ The labor preparation rate of SMIs is low.

⑤ Labor productivity and added value productivity are low.

- Following his surveys of the actual state of SMIs management and survey of business indicators and business guidance systems, Mr. Maki provided guidance in business diagnosis technology to counterparts and proposed a diagnostician approval system based on the system in Japan but also with actual conditions in Malaysia taken into account.

- Mr. Maki proposed establishment of the diagnostician authorization system by March 1999, and the counterparts agreed to this. Mr. Maki returned home after confirming this.

- However, following that, the MITI SMIs Bureau was split into the Ministry of Entrepreneur and SMIDEC, and Mr. Maki's proposal vanished as a result.

Impressions

- After spending two years on preparation and obtaining the agreement of counterparts, one can sense the disappointment of Mr. Maki after seeing his proposal vanish because of organizational reform. Although not on the grand scale envisaged by Mr. Maki, it is hoped that current efforts for the promotion of diagnosis technology will be successful.

- Business indicators of SMIs are being estimated while processing existing statistics. It is hoped to research methodology for this purpose.

(14) Small and Medium Industries Development Corporation (SMIDEC)

Address : 701D, Level 7, tower D, Uptown 5, No. 5, Jalan SS21/39, Damansara Uptown, 47400, Petaling Jaya, Selangor Darul Ehsan, Malaysia
Tel: 603-925-8585, Fax: 603-925-9119

Visit date : March 9 (Thursday),2000, 10.00-12.30

Persons interviewed : Mr. Fozian b. Ismail (Senior Manager, Industry Bureau)
Mr. Ismail Hashim (Assistant Manager, Promotion)

Outline

- Established on May 2, 1998 and under the supervision of MITI, SMIDEC has a staff of 60 and is in charge of SMIs promotion in the manufacturing sector. The objective of SMIDEC is to impart competitiveness within the trend of globalization to SMIs which account for 91% of all companies in Malaysia (based on number of companies).

- SMIDEC is composed of the following three departments under the Minister of International Trade and Industry:

  ① Research & Strategic Planning Bureau: 15 staff

  ② Corporate Affairs Bureau: 30 staff. This is in charge of finance, administration and human resources

  ③ Industry Bureau: 15 staff. This is in charge of transportation, electronics, machinery engineering and resources. The number of staff is small, but responsibility is large.

- Funds for support measures are obtained from 1) grant money from budget funds, and 2) loans. Loans are obtained from government finance agencies or commercial banks.

- There are plans to establish five regional branches, however, it appears that these will be realized from next year onwards.

- SMIDEC does not adopt an approach of favoring Bumiputera companies. However, it is in a complimentary (respectful) relationship and is careful not to compete with the VDP (Vendor Development Program) of the Ministry of Entrepreneur Development (MOED). For example, if Sharp introduces the VDP, ILP will not oppose it.

- SMIDEC is not directly involved with job training. SMIDEC only provides grants, but training is the responsibility of the Ministry of Labor.

- The contents of SMIs promotion vary according to province. For example, SMIs promotion measures are different in the neighboring provinces of Kedah and Penang. In particular, PSDC maintains close contacts by dispatching managers and carrying out consultations, etc. Therefore, it is possible to build cooperative relations even when there are no branch offices, and results are being achieved this way in Selangor. It is hoped that relations

improve with the provincial government in future. Mr. Ismail accompanied the Minister to Kedah Province in order to advertise SMIDEC. It is also hoped to establish links with chambers of industry and commerce.

(15) Penang Skills Development Centre (PSDC)

Address	:	1, Jalan Sultan Azlan Shah, Bandar Bayan Baru, 11909 Bayan Lepas Tel: (604)6437909 ext. 518, Fax: (604)6437929
Visit date	:	March 14 (Tuesday), 2000
Person interviewed	:	Ms. Peggy Lim (Operation Manager) E-mail: peggy@psdc.org.my

Outline

- PSDC was the first skill training center to be established in Malaysia in May 1989.

- MNCs advanced into Malaysia from the end of the 1970s into the 1980s, however, since there was a shortage of skilled technicians at the time, the PSDC was established to nurture these human resources. In establishing the center, small-scale facilities were constructed under the initiative of the provincial government and with contributions from 33 companies.

- The top agency of the PSDC is the Management Council which is composed of elected or appointed executives from 15 corporations (Intel, HP, etc.) and representatives from seven agencies (USM, SIRIM, MOEP, SMIDEC, PERDA, PDC, Penang State Secretary). The Chairman is Mr. Tan, Managing Director of Komag USA (M). Under Mr. Tan, the Executive Director guides the actual operation of PSDC and is in charge of the Applied Engineering Department, IT Department, General Training Department and Administration Department.

- PSDC training equipment costs are covered by contributions, but operating costs are met via training fees. Annual income from training fees is 10-20 million RM, and idle cash is around 2.5 million RM. Most revenue is raised via long-term training courses through which diplomas can be acquired. These courses cost 16,000 RM over three years and they accept 200 trainees every year. Around 450 short-term training courses are held every year ands these are attended by approximately 10,000 trainees.

- 50% of tuition fees for employees of SMIs are borne by the Ministry of Entrepreneur and the remaining half is borne by the companies. In some cases, it is possible to utilize the HRDF (Human Resources Development Fund) of the Ministry of Human Resources Development. Meanwhile, since MNCs bear a levy equivalent to 1% of HRDF wages, a subsidy ranging from 50% to 80% can be received. However, trainees from SMIs account for around 20% of the total.

- Just over one year ago, the Global Supplier Programme (GSP) was started as an undertaking of the PSDC COE (Centre of Excellence). This aims to provide training and to establish partnerships with MNCs so that SMIs are able to become international suppliers.

- PSDC also implements various consultant services (TQM, TPM, ISO, HR, finance, organization, etc.) for SMIs. It contracts approximately 30 consultants in each area and dispatches these to companies. Whereas the consultant fee is 3,000 RM in the private sector, the COE fee is cheaper at 1,000-1,200 RM. Furthermore, for example, if consultation regarding ISO9000 is received, it is possible to receive a 50% subsidy under the ITAF 4 scheme.

(16) Ministry of International Trade and Industry (MII), Penang Branch

Address	:	8th Floor, Bangunan Tungku Syed Putra, 10990 Penang Malaysia Tel: 604-262-5133, Fax: 604-262-5131
Visit date	:	March 15 (Wednesday), 2000, 11.30-12.30
Person interviewed	:	Mr. Abdul Jamil Abdul Halim (Director)

Outline

- MITI Penang Branch supports trade activities.

- Two regional branches of SMIDEC have been recognized in Sabah and Sarawak. It is also hoped to establish offices in Vedan and Kedah, but authorization has not yet been received from the central government.

- Penang Provincial Government leads the way in implementing SMIs promotion measures and providing incentives. This is because of the close relationship that exists between the central and provincial governments. ILP (Industrial Linkage Program) in Penang is controlled by the PSDC and is called GSP (Global Skill Programme).

- A Penang branch of SMIDEC is considered to be necessary. When SMIs want to find out about support schemes of SMIDEC, they need to secure direct contact with Kuala Lumpur. This is a very inefficient method.

- MITI is not aware of SMIs support measures carried out by SMIDEC in Penang. Pamphlets explaining each scheme are available, however, nobody has enough know-how to respond to inquiries from SMIs. The best that staff can do is to refer inquiries to the SMIDEC addresses given in the pamphlets. Staff at SMIDEC in KL make personal visits to SMIs which make inquiries.

- ITAF (Industrial Technical Assistance Fund) is considered to be an excellent SMIs support measures, however, judging from contacts with SMIs here, it does not seem to be very well known. It maybe necessary for the government to advertise this scheme more.

- The pamphlets here are certainly too indifferent to SMIs needs. Since more detailed application forms can be found at SMIDEC KL, these shall be immediately acquired and given to the study team.

(17) Penang Regional Development Authority (PERDA)

Address	:	No. 1 Lorong Kampung Gajah 2, Jalang Kampung Gajah, 12200 Butterworth, Penang Tel: 04-3103100/04-3103111 (D/L), Fax: 04-3321676
Visit date	:	March 20 (Monday), 2000, 9.40-11.20
Person interviewed	:	Mr. Abdul Razak Bin Salleh (Asst. Manager, Entrepreneur Unit)

Outline

- PERDA, which belongs under the Ministry of Rural Development, is responsible for promoting Bumiputera in rural parts of Penang. It is not in competition with the PDC, which belongs under the Penang Provincial Government and is responsible for SMIs promotion in urban areas. However, the boundaries of each agency are not clearly set and confusion sometimes arises concerning which agency should be responsible, however, both agencies hold regular consultations and make sure that overlapping does not arise. There are times when the two agencies work on issues jointly.

- PERDA has 150 employees at its headquarters and training facilities.

- Plant investment subsidization of up to 20,000 RM is provided, and 70% of this is returned. PERDA carried out subsidization in 12 cases in 1999, and it plans to subsidize a further 14-18 cases in 2000. It mainly targets plant equipment for small businesses in food and construction, but its involvement in electronics companies, etc. is limited. Confirmation work leading up to the actual provision of subsidies is strenuous. Cases where more than 20,000 RM is required are referred to banks. Subsidies based on a similar government funded scheme (70% refund) are provided by two banks, one of which is the Islamic Bank.

- PERDA offers seminars in 20 courses: business basics, book-keeping, accounts, marketing, cost and sale price, SMIs loan systems, production control, labor management, imports and exports, communication, commercial trading, image building, joint venture, presentation, packaging, inventory control, restaurant trade, construction planning, construction accounts, and construction management. Two or three courses are staged every month. Lecturers (bankers, etc.) are invited from Kuala Lumpur.

- Exhibitions are staged every year. The 1999 exhibition was held over 5-6 days in October. At this there were 100-120 booths and 2,000 people took part. There were various exhibits including foods, plastics, computers, IT, machines and traders. Participants were charged 200-300 RM for using a booth, and PERDA bore the remainder of the costs.

- PERDA has operated a work training center near Pulai for almost 10 years, and this is manned by 10-15 staff. PERDA bears the equipment running expenses (200,000-300,000 RM per year), while MARA bears the personnel costs for trainers. Students are secondary school graduates. Some courses last for one year but most are six months daytime courses (starting in January and July). There are 10 courses in all (machinery, electricity, OA, iron work, air conditioning, Batic craft, plastics, Diploma B-Tech, multimedia, computer mechanics). Each course is attended by 30-40 students and approximately 500 students receive training every year. Students are provided with 100 RM every month.

- Another PERDA scheme for promoting SMIs is construction of a new industrial estate in Penang.

2. Federal Government Organization Visitation Record

FEDERAL GOVERNMENT ORGANIZATIONS VISITED (1)

Date	14, June, 2000
Organization	**Malaysian Industrial Development Authority (MIDA)** Co. No.: ———— Address: 4th Floor, Wisma Damansara, Damansara Heights, Jalan Semantan, 50490 Kuala Lumpur, Malaysia Phone: 03-255-3633 Fax: 03-253-8468 URL: http:/www.btvc.com.my
Person Contacted (Title), e-mail	Ms. Datin Kaziah Abdul Kadir (Director, Planning & Research Division) Kaziah@mida.gov.my Ms. Lim Bee Vian (Assistant Director) Ms. Choo Wai Meng (Assistant Director)

Facts Investigated

- Authority in regards to policies concerning SMIs has been transferred to SMIDEC. MIDA has no say in the matter. MIDA's function differs from the promotion of SMIs industries. MIDA and SMIDEC both bear responsibility of reporting to MITI which is a higher body. Promotional policies of SMIs are determined by the MITI-SMIDEC line. Accordingly, MITI must be inquired for SMIs promotion. Assignment of executive staff are done by equal level personnel of MIDA and SMIDEC.
- Whether or not to control small and medium sized business promotion centrally or transfer authority to regional areas is a difficult problem and the decision is not easily derived. SMIDEC has at last recently been cooperating with local governments and but not enough to bring forth a decision.

FEDERAL GOVERNMENT ORGANIZATIONS VISITED (2)

Date	16, June,2000
Organization	**Small and Medium Industries Development Corporation (SMIDEC)** Co. No.: 49572-H Address: 701D, Level7, tower D, Uptown5, No.5, JalanSS21/39, Damansara Uptown, 47400 Petaling Jaya, Selangor Darul Ehsan, Malaysia Phone: 03-925-8585 Fax: 03-925-9119 URL: ――――
Person Contacted (Title), e-mail	Mr. Mr. Fozian b. Ismail (Senior Manager, Industry Bureau) fozlan@amidec.gov.my

Facts Investigated

（Global Supplier Program (GSP) description）

- The first mission of GSP is in the difficult area of acquiring technical knowledge and skills. The second, strengthen the linkage between MNCs. Guidance for training courses for acquisition of technical knowledge and skills will be guided by instructors with 5 to 20 years of experience and are Certified Master Trainers who will be provided by MNCs.
- The ideology of GSP is to transform the local SMIs up to be on par with the level of the world's suppliers. Through partnership with MNCs and educational training, the mission of GSP is to take the reliability of SMIs up to another level.
- The content of training is described below.

1) Training for acquisition of technical knowledge and skills

The training course goes through the following 3 steps.

CoreCom 1: Introductory course. 9.5 days of training are set during 4 months and 8 modules are digested.

IS 2: Secondary level training module. 7.5 days of training are digested in 4 months.

AS 3: Third level training module. Emphasis is placed on design and simulation. The program is currently being developed.

2) Strengthening the linkage between MNCs

Take the SMIs in mind and lead them by hand to initiate leading edge technology. When the linkage has firmly taken, SMIs will be able to transform into a global supplier.

CoreCom 1 course fee is 1900RM. If the SMIs is defined by SMIDEC, a special 50% discount is available. If a levy has been paid to HRDF, an additional 50% discount is added and the result is that the course fee becomes free of charge.

FEDERAL GOVERNMENT ORGANIZATIONS VISITED (3)

Date	19, June, 2000
Organization	National Productivity Corporation (NPC) Block B, NPC Bldg, Jalan Sultan, PJ, Kuala Lumpur, Malaysia. Co. No.: ———— Address: Block B, NPC Bldg, Jalan Sultan, PJ, Kuala Lumpur, Malaysia Phone: 03-755-7266 Fax: 03-755-7266 URL: ————
Person Contacted (Title), e-mail	Mr. Oshman Ismail (Director of SMIs), Mr. Che Razali Bin Che Ismail(Consultant, Quality System) Mr. Ismail Moho Nor

Facts Investigated

- The ratio of the 200 staff members are 50% research, 20% trainers and consultants, 10% promotion, and 20% administration, personnel, and general affairs. The local demand is consumed by the 7 local offices. There are 7 consultants in the Penang office and almost every week, consultants are dispatched from the central office. Research is also assigned to the consultants.
- There is no concept of "adjustment of field of activity" between the SIRIM. Training of SIRIM staff for QCC also occurs. Execution of the Regional Quality Program, etc. is done jointly with SIRIM. Taking ISO as an example, consulting for acquisition is handled by the NPC and examination and certification is handled by SIRIM. In other words, the soft side was handled by NPC and the hard by SIRIM
- NPC does not especially narrow down its activities to promoting SMIs; the program is open to large businesses as well as small and medium ones. However, the participation fee for the program is discounted 30% for SMIs. The program oriented towards SMIs is called "TQC Demo company". It started 3 years ago and has seen the participation of 2 companies in the 1st year, 5 in the 2nd, and 5 companies this year.
- Application for NPC consultation is simple. The last part of the distributed booklet Program Peningkatan P&Q is the application form and an applicable program is selected and the form filled in. For consultation that is not in this booklet, a separate estimate is required. For example, for a 2 day class with 20 students participating, the total amount required would be 4,000RM. Additionally, for a 20-day consultation over a period of 6 months, 20,000RM would be charged. However, a 30% discount would be applicable for SMIs. A number of rival opponents for consultants exist among civilian independents (especially ISO9000 relations). The NPC fee is low and so if ISO should be able to acquire any, the client should be content. Complaints are few in client response. The demand for repeat orders is quite large. Recently, a new task called BOND (Benchmarking On-line Networking Database) has been started. This is a home page introducing examples of business success and it is desirable for SMIs to look at the actual examples.

FEDERAL GOVERNMENT ORGANIZATIONS VISITED (4)

Date	20, June, 2000
Organization	SIRIM Berhad Co. No.: ———— Address: 1, Persiaran Dato' Menteri, P.O. Box7035, Section 2, 40911, Shah Alam, Malaysia Phone: 03-559-2601 Fax: 03-550-8095 URL: http://www.sirim.my
Person Contacted (Title), e-mail	Mr. Nik Ahmad Kamil Nik abu Bakar(General Manager, SMIs Development Department, Operations Division)

Facts Investigated

- The number of employees is 1200. There are 5 divisions, the Research and Development Division, Advanced Manufacturing Technology Division, Standards and Quality Division, Operation Division, and Group Corporate Division. The number of people in the Group Corporate Division is comparatively less than other groups however, the remaining divisions have almost equal personnel.
- NPC is in charge of increase productivity. On the other hand, SIRIM is in charge of technology and quality management. SIRIM is currently under the umbrella of MOF however, it was previously under the control of the Ministry of Science. Currently, it still reports to both ministries. There is no concept of "field adjustment" between the NPC. For example, the Regional Quality Program, etc. are carried out jointly. This program will start in 2 to 3 years and clinics and lectures concerning quality will be done in cooperation with universities (USM), Malay chamber of commerce, and NPC.
- SIRIM specializes in technology and it has a wide range of activities. Recently, it has been aggressively promoting SMIs with Singapore as a base and has "Technonet Asia" participating as a member. Japanese universities are also frequently visited for training and with a special interest in die and molding.
- Instead of bringing out differences from university research organizations, it places importance on cooperation with universities. It aims for a cooperative system based on common themes with the universities. For example, on the 4th and 5th of last May, the Regional Symposium on Quality Automation was held in Penang and this was organized by the School of Industrial Technology University Sains Malaysia as a symposium close to the region of an academic lecture however, SIRIM also cooperated. Additionally, under the name of "Smart Partnership", it is planning joint research on an IT program with the cooperation of 5 universities (UNIMAS, UMS, UUM, UITM, and UTM) from next month and has already signed a contract with one of the universities.
- Some support can be given in areas that can be covered by branch offices but the fact is that since we are quite busy (centrally), nothing can be done for remote areas. In this case, invitations to seminars at very low fees or introductions to associations are carried out. For regional SMIs, the Ministry of Rural Development is contacted and depending on the content, advice through MRD from central SIRIM is possible.
- Within central Advanced Manufacturing Technology Division, there is a division called Foundry and Tooling Technology Center. For technical problems, it is desirable to have them come in directly into the division available centrally instead of the regional branch offices. The fees would be expensive but it cannot be helped. The branch offices are still under development and would not have the means to respond.

FEDERAL GOVERNMENT ORGANIZATIONS VISITED (5)

Date	26, June, 2000
Organization	Ministry of Entrepreneur Development (MED) Co. No.: ———— Address: Tkt. 22-26, Medan MARA, Jalan Raja Laut, 50652 Kuala Lumpur, Malaysia Phone: 03-5592601 Fax: 03-2917623 URL: ————
Person Contacted (Title), e-mail	Mr. Nik Mohamed B. Nik Daud (Principal Assistant Secretary, Entrepreneurship Training Division) nmohamed@kpun.gov.my

Facts Investigated

- The Ministry of Entrepreneur Development (MED) is a Federal Governmental body that supports Bumiputera entrepreneur training. Additionally, the VDP which was previously under the jurisdiction of the Ministry of Trade is now under the MED. Public corporation established in the various states are under the jurisdiction of MED.
- MARA and MHR (Ministry of Human Resource) have improvement of skilled labor and unskilled labor as the objective of training on their agenda. In response to this, MED has management education and training for those desiring to become entrepreneurs in Bamiputera as their objective. The concept of management covers a wide area including personnel, finance, market development, production management, improvement of services, etc. Other personnel training organizations are divided up by NPC for productivity and quality fields, SIRIM for technical fields, MADC (Malaysia Agriculture Development Center) for agricultural technology.
- The training programs are composed of Basic Entrepreneur Business Module, Business Startup Program Module, and Graduate Module. The Basic Entrepreneur Business Module started in 1993. It is a training course for entrepreneur hopefuls. Every month lectures are given on the same program for attendees. The transition in number of participants is, 1997: 300, 1998: 1,500, 1999: 600, and 2000: 300 people. (Total from Jan. to June).
- Business Startup Program Module is oriented towards people that have become independent entrepreneurs and the training period is 4 months (Note: Bilingual Malay/English teaching materials have been received.) In the same manner, it was started in 1993 and the number participating in 1999 was 160 people.
- Graduate Module is a program prepared for graduates of universities who still do not have occupations and was started in 1998. In 1998: 366, 1999: 370 people attended.
- A 50 thousand to 250 RM thousand loan limit has been readied for those completing this module. The loan is provided by the BPIM (Malaysia Development Infra Bank) at an annual interest rate of 5%.
- The success rate for entrepreneurs according to a 1996 MED investigation was that 64% of attendees of the Business Startup Program Module continued their businesses.
- The secret to entrepreneurial success was passion and acquisition of technology. Currently, "Brain" oriented thinking power and mentality has become vital. For this reason, the range of management training now covers a wide area including staff control, finance, cash flow management, market strategy, production and service management.

FEDERAL GOVERNMENT ORGANIZATIONS VISITED (6)

Date	16, June, 2000
Organization	Malaysian Industrial Development Finance Berhad (MIDF) Co. No.: 3755-M Address: 195A, Jalan Tun Razak, 50400, Kuala Lumpur Malaysia Phone: 03-261-0066 Fax: 03-262-9531 URL: ————
Person Contacted (Title), e-mail	Mr. Khoo Chin Guan (General Manager - Services) Mr. Ahmad Radzi Abd. Majid (Assistant General Manager, Business Development) radzi@midf.com.my

Facts Investigated

(Fund disburse status)

- The total of the Rehabilitation Fund for Small and Medium Industries provided by the MIDF has been reduced from the initial 750 million RM to 500 million RM. The view taken on NPL (Non Performing Loan) has become severe and is caused by banks not lending unless there is an exceptional reason to. As of March 31st, 2000, 250 million RM has been authorized for almost all 291 companies that have applied and within this 200 million RM has already been provided. Accordingly, the disburse rate is 80%. It is a 40% standard in regards to the overall limit. The target of the loans are mostly manufacture industries however, service and agriculture are also included.

(Bumiputera priority)

- Even for Bumiputera relations, only a handful of industries can be financed by this bank. Even within this bank's scheme, schemes that concentrate only on Bumiputera have all failed. Schemes covering a wide range including non-Bumiputera entities have for the most part succeeded. Even when looking at the financing structure of this bank which is regarded as protective, non-Bumiputera industries are already 80% of the standard. Chinese industries regard the financial application as complicated but the main cause is probably the requirement of filling in the application in the Malaysian language. The reason is that there are people on that bank side that will not accept applications unless they are in Malaysian. Commercial banks that work on market principals are the first to provide loans to non-Bumiputera industries and this is rather the actual state of working capital supply and demand. The Chinese especially feel that political stability is important and regardless of the actual situation, and know well if the doctrine of Bumiputera priority is abandoned by force, there would be a backlash towards them.

(Delegation of Authority to Local Branches)

- Although it is difficult to describe, Malays appear to have a latent desire for instructions to be given by the centre due to their characteristic orientation towards the central authority. The centre is not necessarily inefficient and prides itself on the extremely efficient handling of projects proposed by local branches through close collaboration.

APPENDIX VIII

SUMMARY OF OPINIONS EXPRESSED BY THE FMM

APPENDIX VIII
SUMMARY OF OPINIONS EXPRESSED BY THE FMM

The Federation of Malaysian Manufacturers (FMM) put forward "A Position Paper on SMIs and a Recipe for Faster Development" dated 30th June, 1998 in the midst of the economic crisis to the National Economic Action Council (NEAC). The FMM later published a paper entitled "SMI Priority Action Plan (1999 – 2000), Vision: To have globally competitive SMIs in quality, design, price, delivery and service". These papers not only identified the problems and requested the government's introduction of improvement measures but also described the role to be played by the private sector. The main purpose of the papers, however, was to request the government's improvement of SMI support programmes. As these papers have many good suggestions for the future promotion of SMIs, they are outlined here.

(1) Financial Assistance

It is often pointed out that financial assistance is always the main source of problems for SMIs. Given the reluctance of private sector financial institutions to make loans and the difficulty of recovering the loans made under the economic crisis, SMIs are suffering from cash flow problems and are in need of urgent support. The government is urged to improve the existing institutional finance to make it more easily accessible by SMIs and to inject additional funds to certain schemes of which the available total funds are insufficient.

(2) Land

The arguments relating to land are particularly interesting. In short, the papers argue that the current state of illegal use should be realistically assessed with a view to changing it to legal use. The key points of the arguments are summarised below.

As SMIs find it difficult to secure land for their business operation, they find it necessary to illegally build their factories in the garden of a house, on government-owned land or on farmland. Therefore, they cannot use land as collateral for a loan. The reality of land use by SMIs should be individually studied with a view to encouraging them to relocate to industrial parks developed by the government or the private sector and/or to smoothly convert farmland to industrial land at a low cost. If the present situation is left unattended, SMIs will not invest in new equipment to improve their technological level because of the fear of being expelled from their current locations or the suspension of their operation. Meanwhile, both the federal government and state governments cannot establish a clear picture of the operation of SMIs. This means that they cannot provide

advance guidance even if a factory has a fire hazard. Illegal factories are also sources of traffic congestion and environmental deterioration, creating social problems. Furthermore, real estate-related tax cannot be collected from these SMIs. There is also a tendency for these SMIs to take an anti-government stance.

(3) Training of Skilled Workers

Most SMIs train their employees by means of apprenticeship and do not have the time to send their employees to public training institutions or seminars. Their financial situation also does not permit them the luxury of sending employees for external training. As the upgrading of employees is practically impossible under the present conditions, the papers urge existing training institutions in the public sector to improve their curricula to make them more easily accessible by SMI workers. For example, the curricula should reflect the actual needs of SMIs and the times and venues for training should be changed for easy attendance by SMI workers.

(4) IT

In general, SMIs are not well aware of the importance of IT. The introduction of IT is one way of improving the productivity and quality in an increasingly globalised economy and without it, local SMIs will not be able to survive. SMIs must be made aware of this cold fact and should be encourage to incorporate IT in their business operation. For this purpose, seminars and training programmes should be introduced to educate and train SMIs and SMIs should be strongly guided to adopt IT with appropriate incentives. The establishment of an annual IT week is proposed together with “the formulation of a national policy to equip SMIs with IT”.

(5) Management

SMIs traditionally have such advantages as “being frugal” and “hard working” but are also associated with such shortcomings as “egoism” and “a lack of planning”. Many SMIs do not even understand such concepts as “just in time”, “zero defects” and “total quality”. As each SMI requires different things, guidance should be provided to suit the reality of each SMI in terms of the business size, years of operation and business type. It is, therefore, necessary, for industrial associations in the private sector to establish their own HRD committees to implement active guidance and training programmes. During this process, such traditional values as “a spirit of frugality” and “hard work” must be continually emphasised. On its part, the government must support such activities of the private sector. It should also approve the invitation of trainers from overseas as the occasion requires.

(6) Marketing

The development of export markets is one of the main weaknesses of SMIs. Because of this weakness, almost all SMIs have no alternative but to remain domestic businesses. Meanwhile, industrial associations in the private sector are, in fact, intensifying their export marketing activities for SMIs, participating in overseas trade fairs and sending trade missions abroad. In addition, they are publishing trade directories as part of their intense support activities for SMIs. The government is required to implement measures to support these private sector activities and to obtain overseas market information.

(7) R & D

R & D is another weakness of SMIs. In the case of most SMIs, only the owner develops products and conducts product design and quality control. There are hardly any SMIs which conduct modern R & D activities. Most SMIs are unaware of the R & D incentives offered by the government. While the private sector is required to educate SMIs on the importance of R & D, the government system to support R & D should be improved to make it more accessible by SMIs.

(8) Conclusions

SMIs comprise the backbone of the industrial development and competitiveness of a country. If SMIs are expected to continue to contribute to the development of the national economy, the government must provide continued support to enable SMIs to overcome the problems they face.

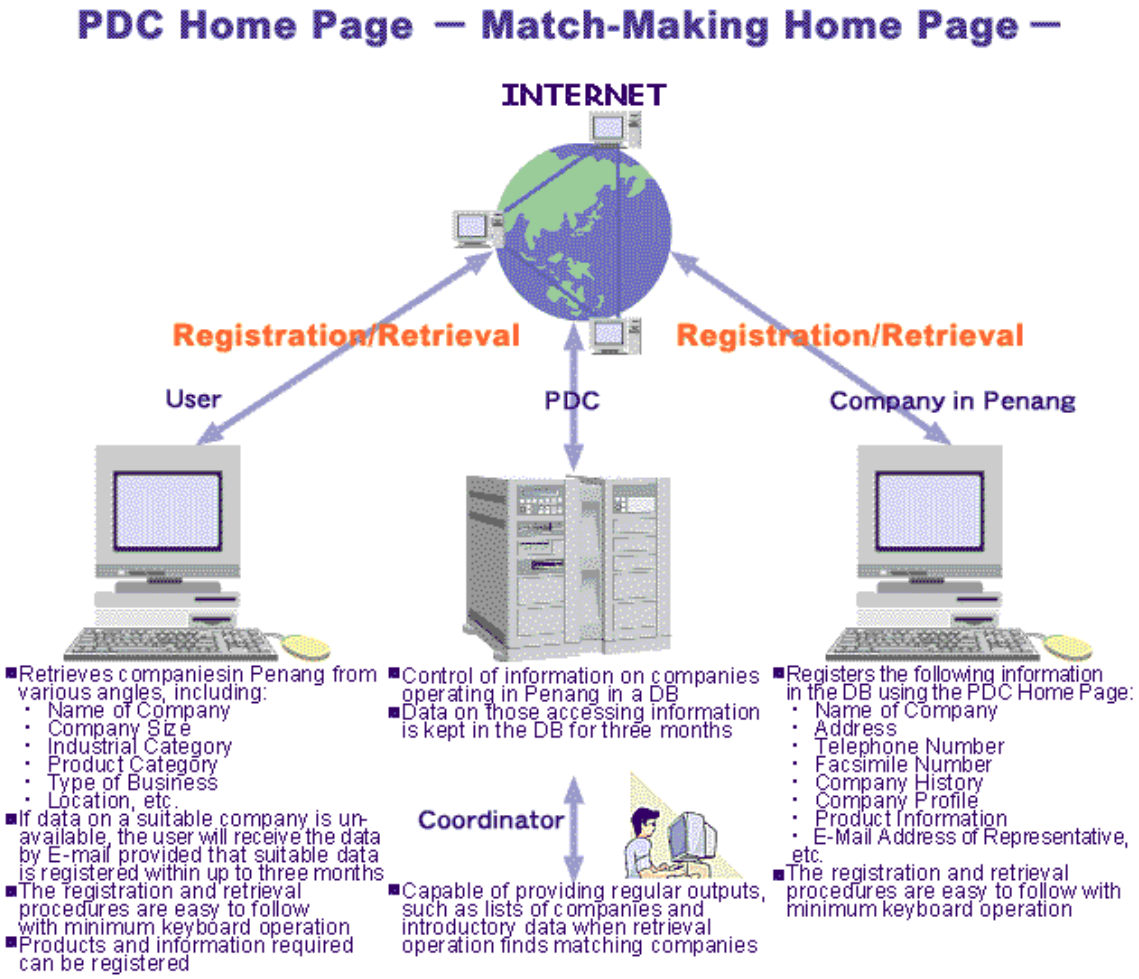
APPENDIX IX

MATCH-MAKING HOME PAGE

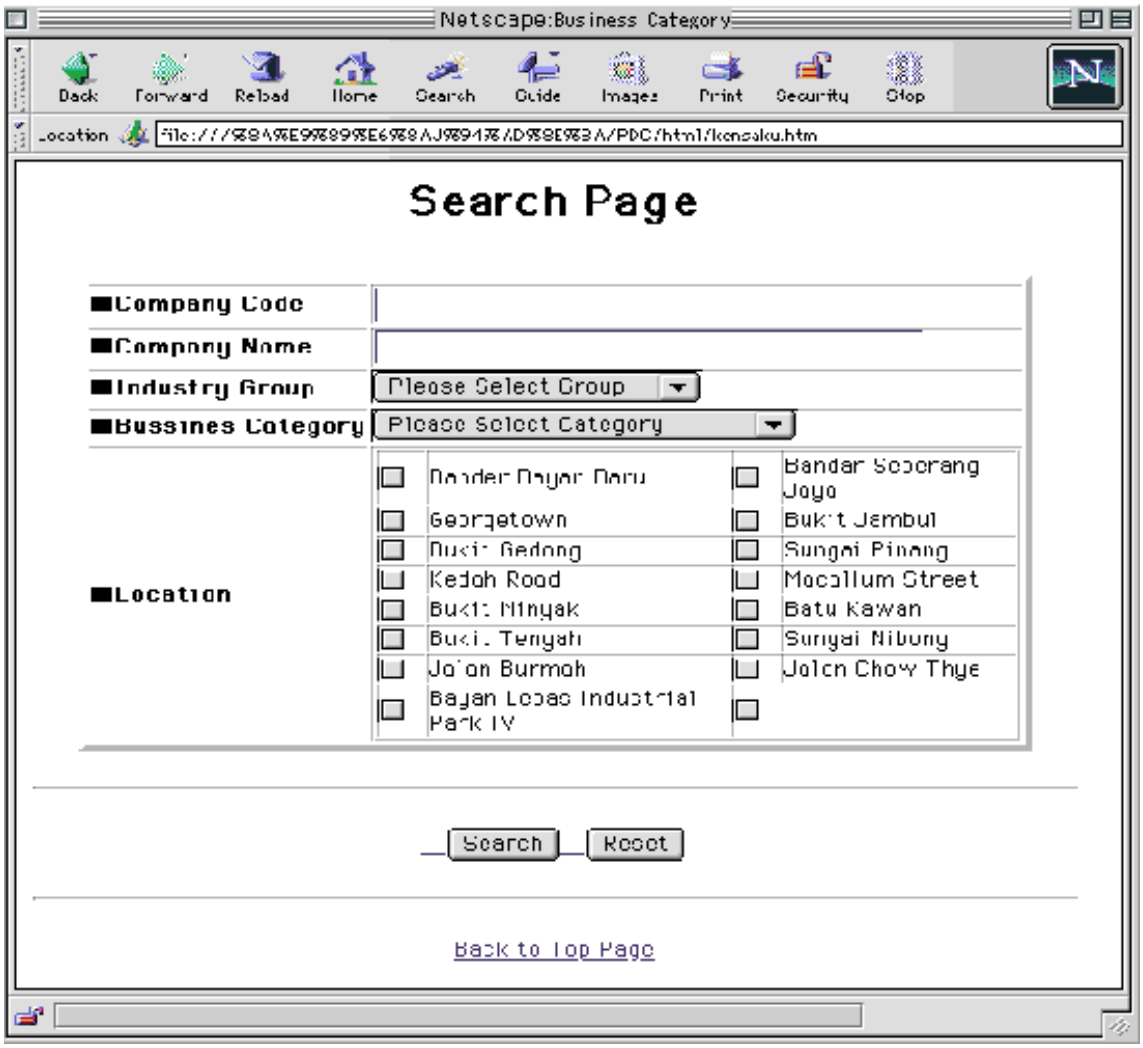
APPENDIX IX
MATCH-MAKING HOME PAGE

1. Home Page Proposed by Investigative Commission

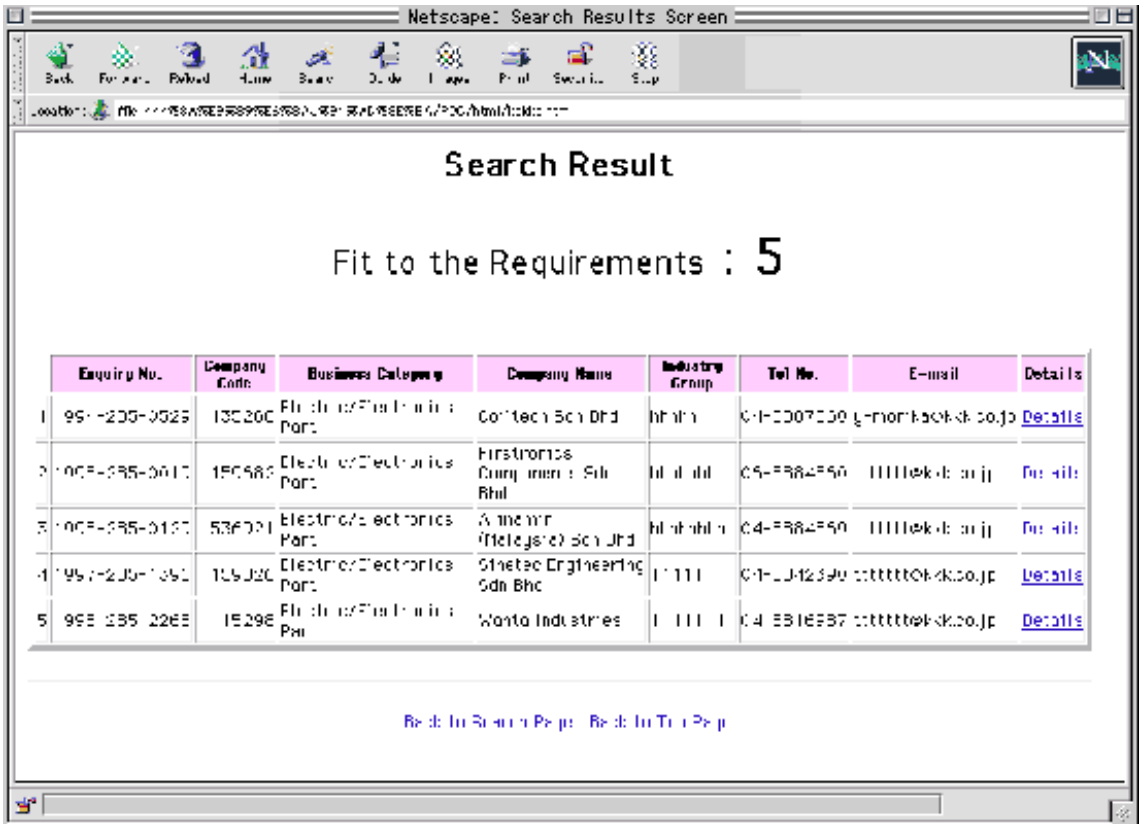
●General Concept of the System



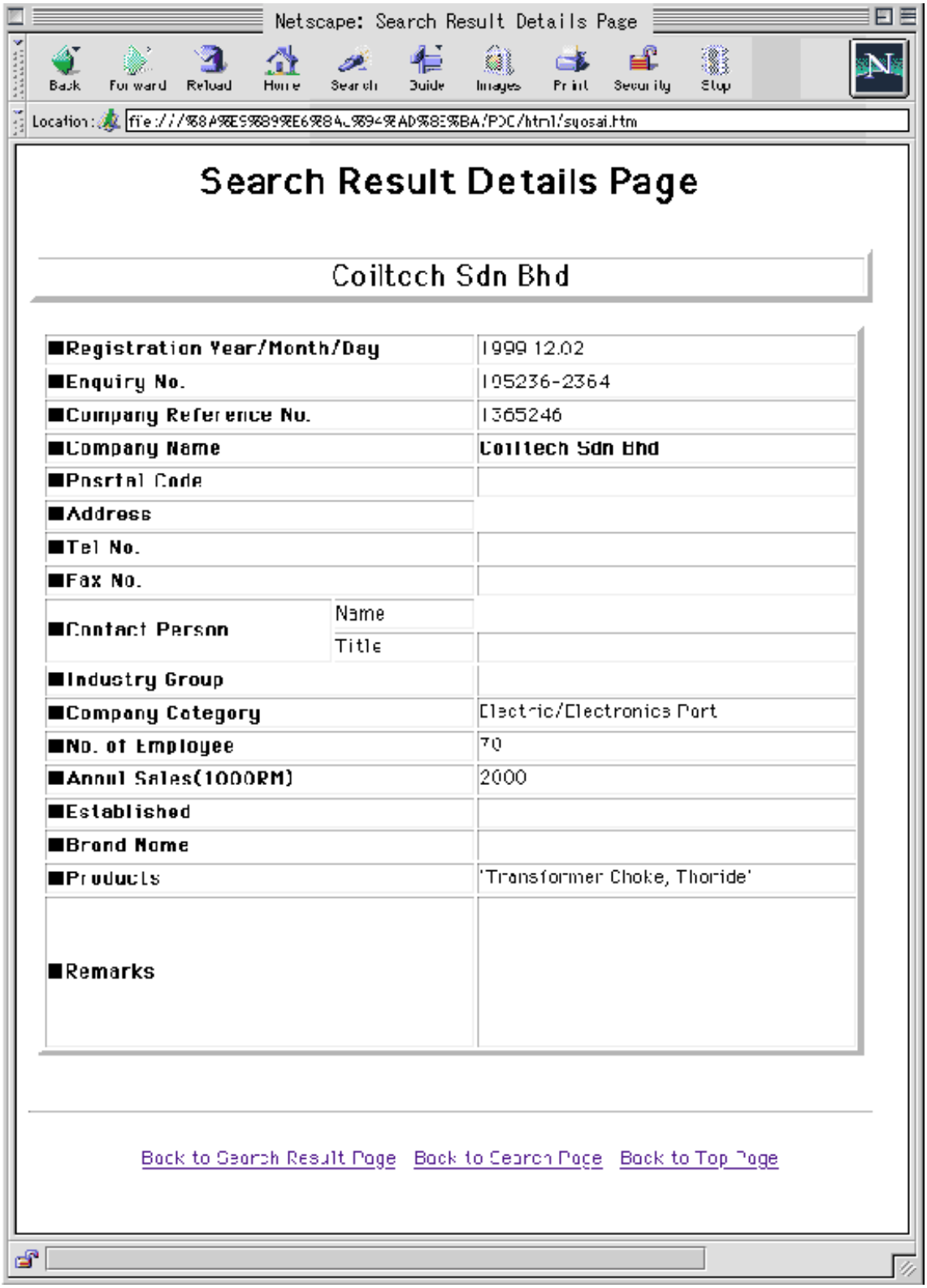
●Search Page


Netscape:Business Category
Back
Forward
Reload
Home
Search
Guide
Images
Print
Security
Stop
Location
Search Page
Company Code
Company Name
Industry Group
Please Select Group
Bussines Category
Please Select Category
Location
Bandar Sabrang Jaya
Georgetown
Bukit Jambul
Sungai Pinang
Macallum Street
Batu Kawan
Sungai Nibong
Jalan Chow Thye
Search
Reset
Back to Top Page

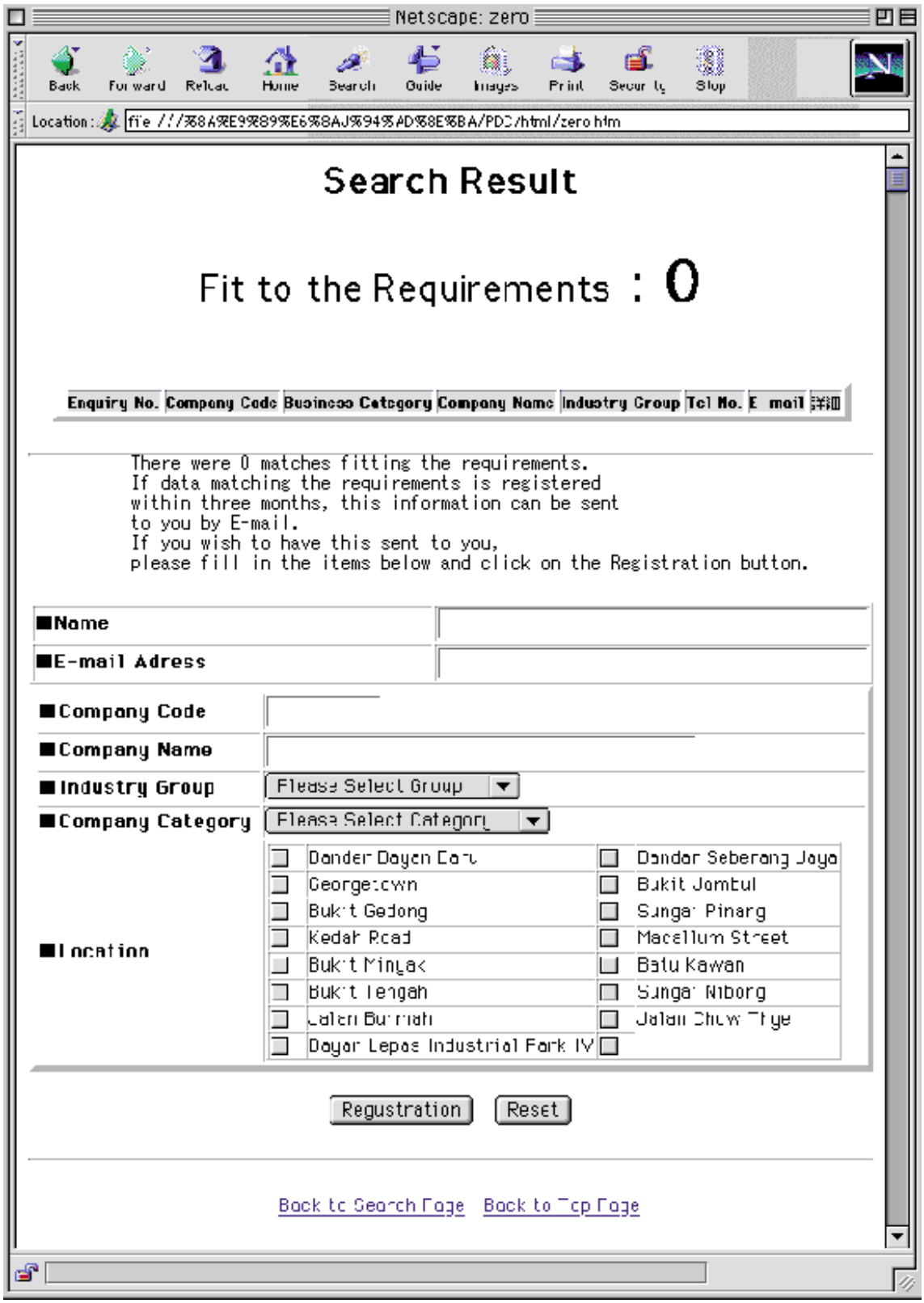
●Search Results Page (if a match is found)



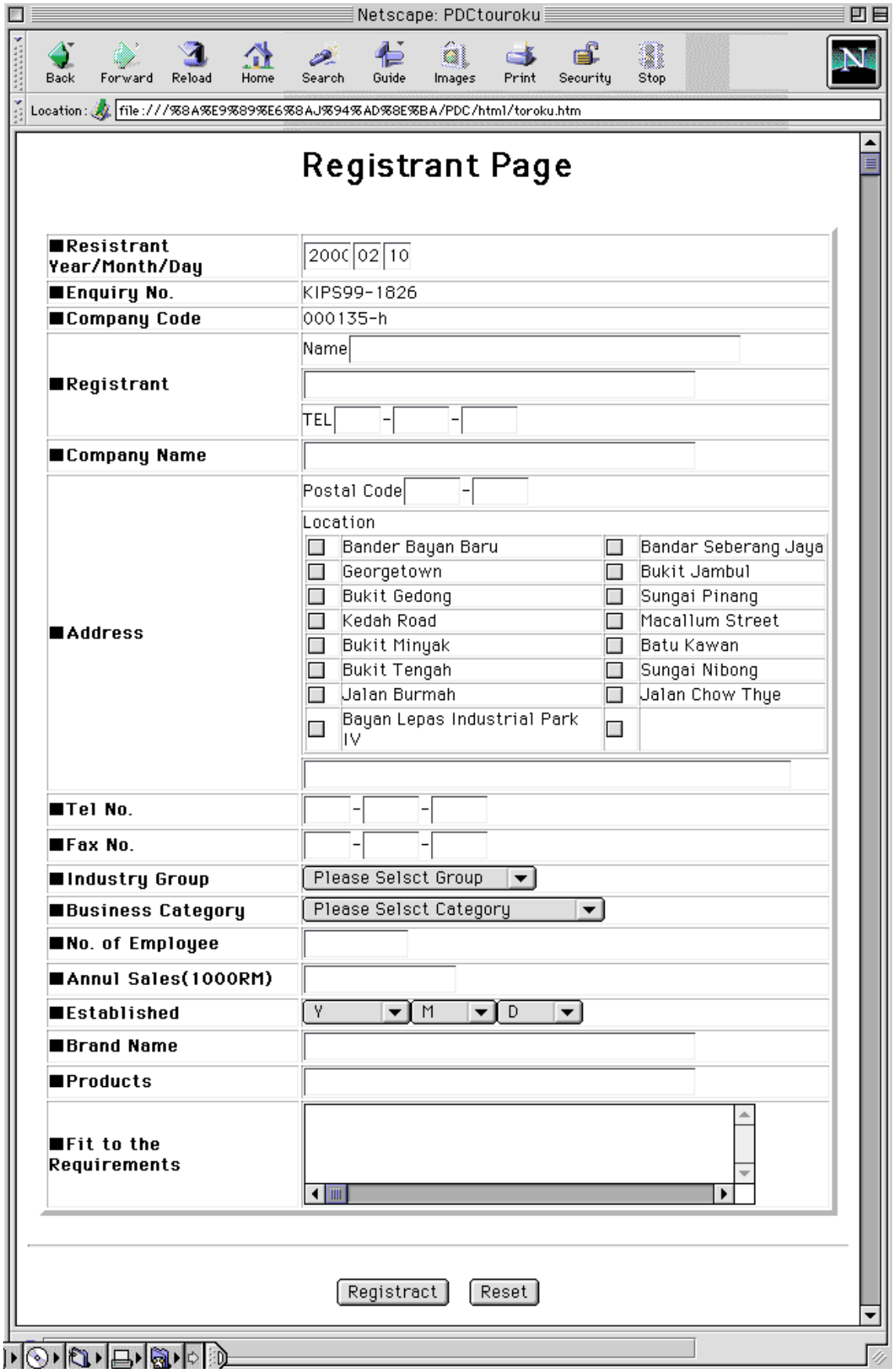
●Details of Company(ies) Found



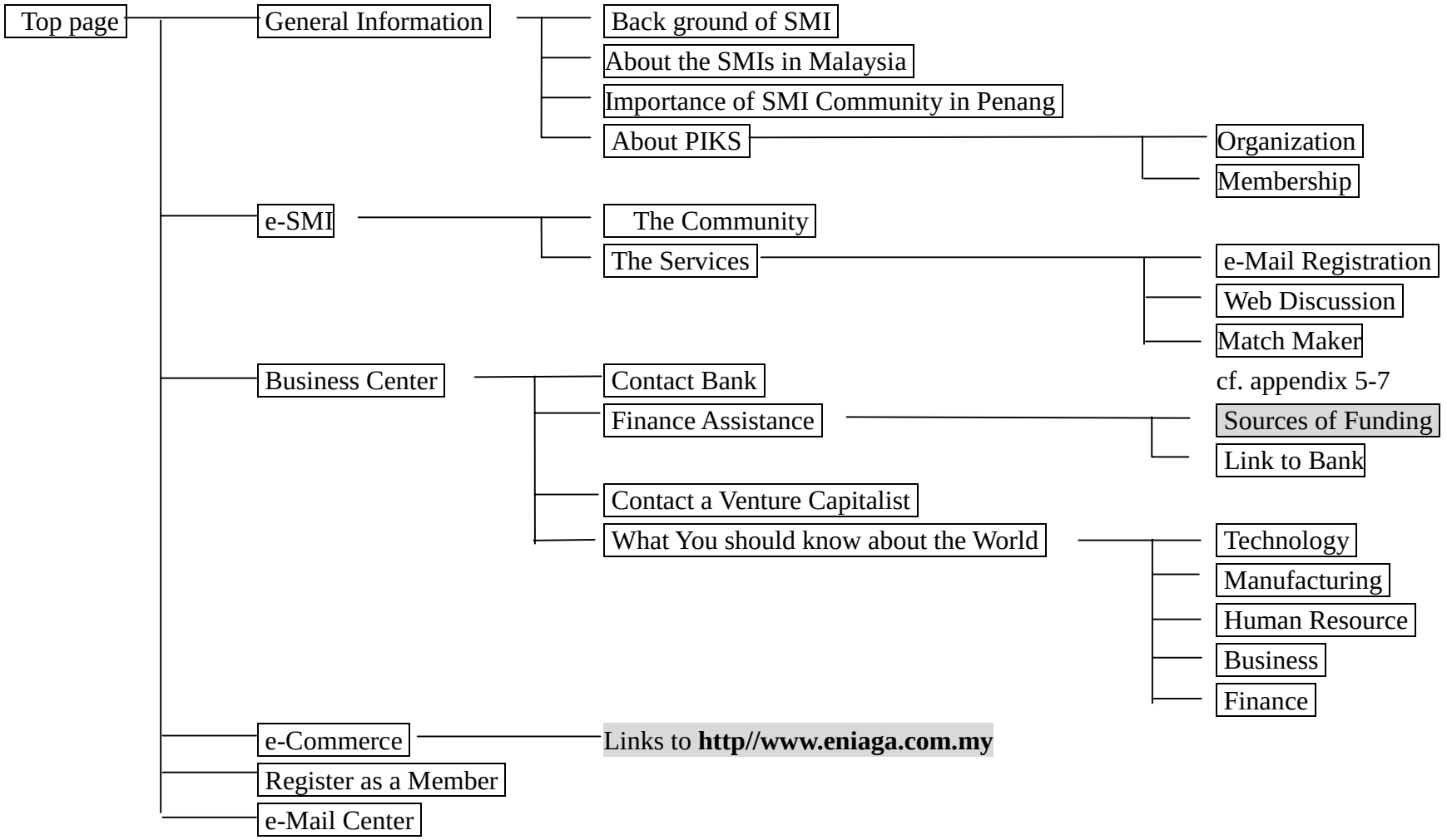
●Search Results Page (if no match is found)



●Registration Page



2. Concept of e-SMI Discussed with Penang Net

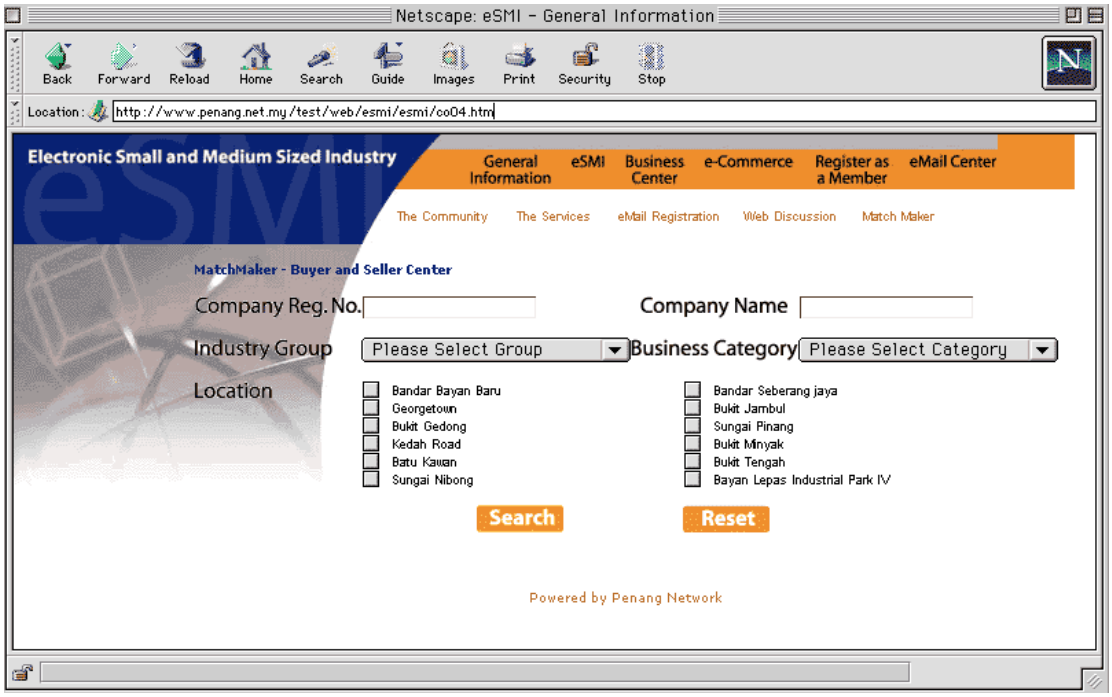


Structure of e-SMI

3. Penang-Net “ e-SMI ” Conception

●Top Page

●Registration Page (the proposed simple input system is employed)



4. Example of Contents of e-SMI Resource Guidance

Sources of Funding

Technology Acquisition Fund (TAF)

The TAF is managed by MTDC (Malaysian Technology Development Corporation) on behalf of the Ministry of International Trade and Industry (MITI) with the sole purpose of accelerating usage of technology in Malaysian Industries. It is also positioned as a method to promote the acquisition of strategic technology.

The grant consists of subsidies ranging from 50 to 70 percent of the eligible project cost. The funding will cover extensive activities including the purchase of high tech equipment and machinery for process improvement and new product development.

Those who are interested can visit http://www.mtdc.com.my/gtgs/gtgs_taf.htm for further information on the fund.

Or contact MTDC at:

Malaysian Technology Development Corporation
@ Malaysian Technology Center
University Research Park
43400 Serdang Selangor

Tel : 603-89412000
Fax : 603-89411100
E-Mail : crdf@mtdc.com.my / taf@mtdc.com.my

Financial Package for SMI (PAKSI)

PAKSI provides SMIs with a soft loan scheme for project financing and working capital financing.

Project financing is a one-stop financing package to SMIs undertaking new projects, expansion or diversification of existing projects. The working capital scheme provides financing for the purchase of raw materials, components and parts, inventory of finished goods and labour costs.

Both new start-up projects and existing projects are eligible.

Terms and Conditions applies as follows:

- Eligible Companies - all manufaturing based SMI companies.
- Type of Project - start-up and expansion projects.

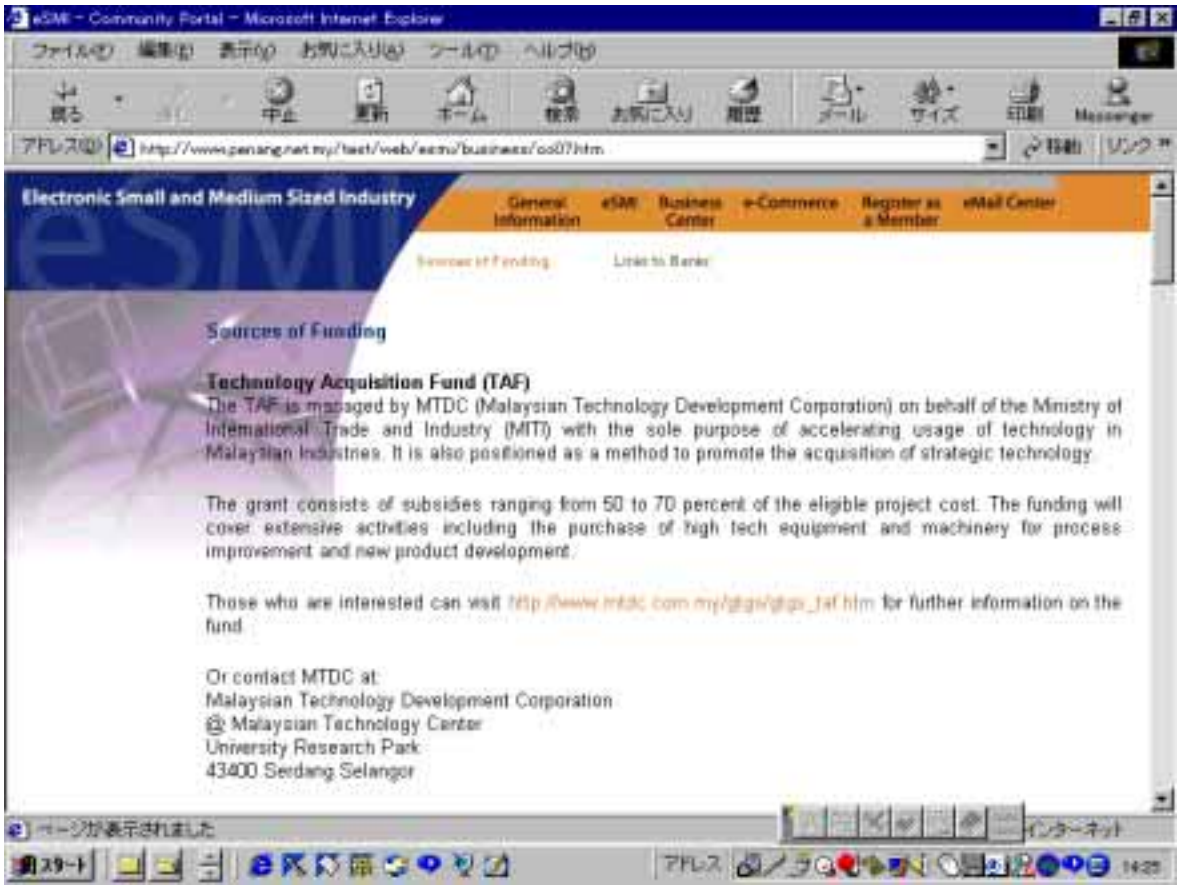
For further information you can visit http://www.bankindustri.com/

Or contact

Bank Industri Malaysia Berhad
Manufacturing Department / Maritime Department,
Paras 16, Bangunan Bank Industri,
Jalan Sultan Ismail,
Peti Surat 10788,
50721 Kuala Lumpur

Tel : (603) 292 9088
Fax : (603) 298 5701
Contact Person : En. Aminuddin Bashah

● Real Page about the Above Fund



APPENDIX X

COMMENTS ON PRODUCTION ENGINEERING

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Production engineering is the technological backbone of manufacturing industries and is an integrated technology to maintain product quality and efficient production. In view of such importance of production engineering, all large companies have some type of organization for R & D of production engineering to conduct continual research work for the development or improvement of production equipment for the purposes of improving their productivity, developing new production technologies and producing new products.

However, many SMIs situated at the lower end of production are unaware of the importance of R & D as the basis for production, partly because the technologies and cost required for such R & D are beyond their financial capability (in the case of large companies, this cost can be added to the product price).

For SMIs to overcome this barrier to becoming excellent companies by acquiring high quality production engineering, they must properly understand the significance of production engineering and maintain the strength to at least conduct development work.

From this viewpoint, the establishment of a production engineering development centre which can be jointly used by SMIs for the purpose of conducting research on new technologies suitable for SMIs while reducing the cost of research work for each SMI is proposed.

An example of production engineering in the case of die designing is described below to facilitate further understanding of the proposal.

Example: R & D on Production Engineering for Plastic Dies

Harmony between the moulding machines, dies, materials and moulding conditions is essential to preserve the quality of plastic mouldings. The Study Team found that while reasonable attention is paid to the moulding machines and dies, there is little understanding of or research on the proper establishment of the moulding conditions. The reason for this lies with the fact that research on the establishment of the basic moulding conditions is unnecessary as most dies are either supplied by end product manufacturers (MNCs) or are manufactured by SMIs based on shop drawings provided by MNCs.

However, MNCs are now shifting to give single-hand responsibility, including that for die design and manufacture, to plastic moulding manufacturers instead of supplying the latter

with completed dies or drawings. To be able to effectively respond to this trend, die manufacturers should work together with plastic moulding manufacturers to commence the manufacture of dies used for actual moulding by conducting tests to design dies, to make prototype dies and to determine suitable moulding conditions based on basic specifications (regarding the shape of mouldings, materials, volume of production and delivery date, etc.) and modifying prototype dies to create the final dies for production use.

Fig. 1 is a schematic diagramme showing the relationship between the number of shots, one element to determine the moulding conditions, and the precision of mouldings as well as the die temperature.

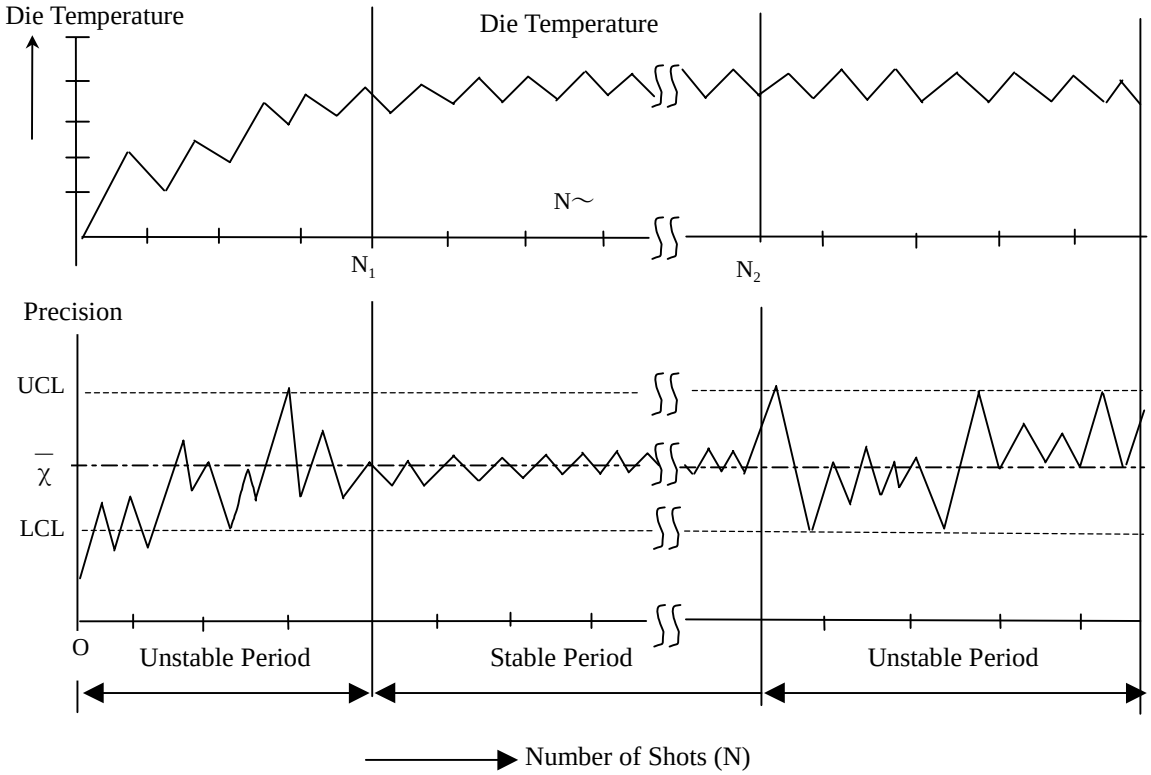

Fig. 1 Modelled Relationship Between Number of Shots and Die Temperature/Precision

As shown in Fig. 1, the level of precision is unstable, exceeding the tolerance, until the die temperature reaches a certain level. This means a high probability of defects and, therefore, it is desirable to discard the mouldings made at this stage and to treat the stage as a purging operation. The number of shots in this earlier unstable period (N1) is commonly said to be around 50 but it is difficult to make an accurate estimate because the value of N1 varies depending on the shape of the mouldings and die structure. As the relationship between the die temperature and moulding cycle or product quality is also difficult to predict for less

experienced engineers, there are cases where an increased defective product rate results from simply shortening the moulding cycle and/or changing the die temperature in response to a cost reduction demand by users.

After this, there is a period of stable production. Then, when the number of shots exceeds the relevant design conditions, it is increasingly difficult to maintain the precision due to the abrasion and distortion of the dies. The number of shots after which the maintenance of precision is difficult (N2) indicates the life of the dies. When the material and structure of dies are designed, the instructed production quantity is taken into consideration. When dies are repeatedly used, their poor assembly, poor mounting to a moulding machine or poor storage will naturally shorten the die life.

While thermal analysis or plastic flow analysis of this important issue, i.e. relationship between the die temperature and moulding cycle/quality, has been conducted in recent years using CAE (computer aided engineering) to obtain relatively accurate data, this type of analysis is hardly conducted in Malaysia. Such analysis as well as research work forms part of production engineering development activities.

The series of work at the trial manufacture stage of dies described above is collectively called production engineering. The shortest way for SMIs to survive as excellent companies is believed to be by accumulating and sharing such technological know-how to improve their technological level.

Note: The cost of research on or improvement of production engineering explained above is not considered to qualify for financial assistance (TAF; CRDF) under the TDP (Technology Development Programme) introduced in the Seventh Malaysia Plan.

APPENDIX XI

COMMENTS FOR THE PROMOTION OF UPGRADING OF TECHNOLOGICAL STANDARD

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MNCs in the electrical and electronics industries are generally classified into labour intensive companies with relatively small equipment investment (household electrical and electronic equipment), companies with large equipment investment and a relatively low labour cost ratio (semi-conductors) and companies lying in between (computer-related). As the technological level of SI companies supporting these MNCs is not necessarily high, MNCs procure a large proportion of advanced parts from major parts manufacturers (MNCs) or foreign parts manufacturers. Accordingly, the procurement of parts from local SI companies is restricted to parts of an intermediate or lower technological level and half-finished products from subcontractors.

Among these MNCs, household electrical and electronic equipment manufacturers have maintained a relatively high level of procurement from local SI companies and, therefore, have nurtured many local SI companies. However, faced with strong pressure for cost reduction amidst harsh market competition, they tend to relocate their production bases to companies with a lower labour cost (so-called country hopping).

The remaining MNCs are shifting their business emphasis to products with a higher technological level or highly advanced parts manufacturing to ensure the survival of their existing business operation in Malaysia, resulting in a strong demand for SI companies to adopt more advanced management/control techniques and production technologies.

Meanwhile, the production of semiconductors demand well-developed infrastructure because of large equipment investment. As it is not easy to opt for country hopping, semiconductor manufacturers are seeking ways to survive while settling down in Malaysia.

Given these business trends surrounding MNCs, it is desirable for local SI companies to upgrade their technological standard with a view to gradually withdrawing from the field of household electrical and electronic equipment and extending their production activities to the fields of precision parts for household electrical equipment, peripheral equipment for computers and semiconductors, all of which are characterised by ever advancing technology.

This conversion or diversification of business activities firstly requires that SI companies upgrade their precision machining technologies as basic technologies. Once they succeed in upgrading their technological standard, they can obtain not only MNCs in Malaysia but also

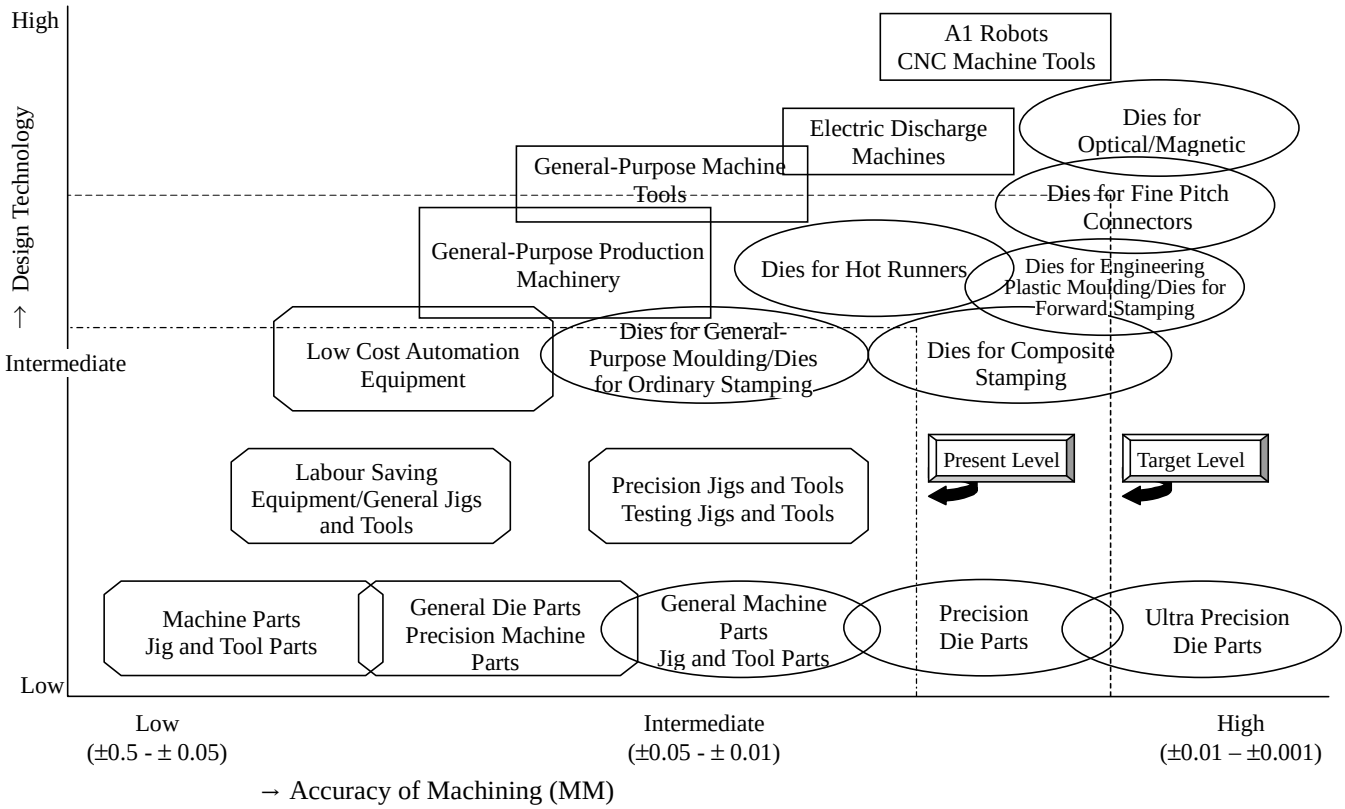
those in neighbouring countries as new clients because of their newly acquired status as companies of an international standard. This will open up promising prospects for them to establish themselves as exporting companies.

In view of such a prospect, the Study Team prepared a technology map for machining and parts processing (see Table 1 and Table 2), evaluated the present level of machining technologies in Malaysia based on knowledge obtained during the company diagnosis and tried to determine the prospects for product diversification through improved machining/processing technologies by projecting targets for technological improvement on the said map.

As this projection clearly shows, local SI companies are urged to understand how substantial the prospect for production diversification is by means of the upgrading of machining technologies.

Given such promising prospects for business expansion, the die industry (in which SMIs form the backbone in Malaysia as in the case of Japan and Taiwan) and the precision parts industry are discussed below to indicate ways to upgrade technologies.

Table 1 Technological Linkage Map for SI Companies (Machining) in Malaysia



Present Level

As the status of local die manufacturing companies, representing the local level of machining, is intermediate, the local procurement ratio of parts is less than 30%. Many parts are imported from Taiwan and Hong Kong.

Target Level

Improvement of the machining accuracy from the order of 10μ to the order of 1μ can lead to an increase of the local procurement ratio (target: at least 70%) of dies for general-purpose moulding and stamping. In addition, the scope of local procurement will extend to dies for engineering plastic moulding, precision stamping and composite/forward stamping. However, such business extension is only feasible with an improvement of the die design technologies and well as CAD/CAM technologies.

1. Technological Upgrading in Die Engineering Field

Technological upgrading in the die engineering field falls into two categories: (i) design technologies/CAD-CAM technologies and (ii) machining technologies.

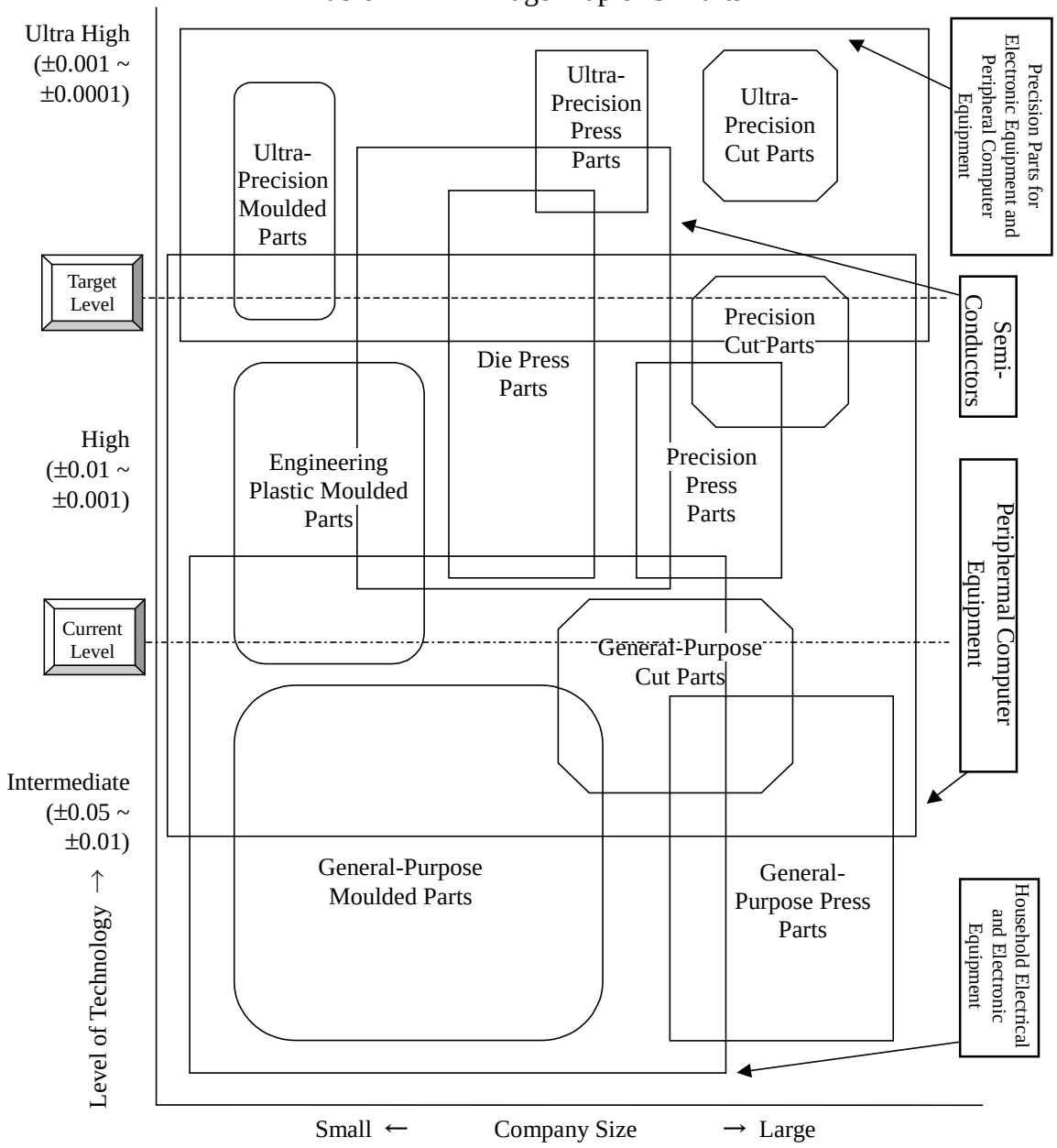
(1) Design/CAD-CAM technologies must be recognised as a comprehensive set of technologies incorporating not only die design technologies but also material, machine tool and machining technologies and machining conditions. The performance, cost and quality of stamped products and mouldings as final products are largely determined by the dies. This means that the performance, cost and quality of dies are decisive factors and it is no exaggeration to say that the standards of these die attributes are determined by the basic die design.

Good design also contributes to improvement of the ease of making dies and die machining technologies and, therefore, is the basis for expansion of the integrated die industry.

(2) When the required level of precision of the parts to be produced is in the order of 5μ to 10μ, the required level of precision of dies or die machining technologies is 5 to 10 times higher, i.e. in the order of 0.5μ to 2μ. While machine tools to meet such a precision level have been installed, the necessary skill to use them is lacking. This leads to the failure of machine tools to perform to their full capability and also to the failure to grab opportunities to receive orders for dies. As advanced machining technologies are required not only for the machining of dies but are also linked to processing technologies for the mechanism elements of household electrical and electronic equipment as well as peripheral computer equipment, they are basic technologies which must be mastered by local SI companies in the coming years.

Local SI companies have already begun to manufacture dies. These dies, however, still remain at the intermediate level and large or high class dies are mainly imported (approximately 90% of the latter are believed to be imported). This situation means that business expansion in the case of large and high class dies is less risky that business expansion efforts in new fields. Given the reasonable available of the required machine tools, etc. for the manufacture of large and high class dies, upgrading of the relevant skills and technologies appears to be the basis for the business progress of local SI companies. The die industry in every country is mainly formed by specialised SMIs and there is good scope to achieve positive effects through the integration of specialist technologies and skills. Accordingly, it should not be difficult to form a group of companies based on the horizontal linkage of specialist SMIs to compete with large companies.

Table 2 Linkage Map of SI Parts



Current Level

General-purpose moulded, press and cut parts are generally manufactured locally. While engineering plastic moulded parts are manufactured by a small number of local companies with a low level of precision, similar parts with a higher precision, precision press parts and precision cut parts are either imported or are supplied by MNCs specialising in parts manufacture.

Target Level

Improvement of the precision to a level of 1μ – 5μ will make the local manufacture of mechanism elements (moulded, press and cut parts) for audio equipment and peripheral computer equipment possible.

2. Creation of New Businesses Producing High Precision/High Performance Mechanical Elements

The high precision/high performance mechanical elements used for household electrical and electronic equipment and peripheral computer equipment are parts which MNCs will be required to locally procure in the coming years. Machining precision in the order to 1μ is required for these parts and such precision can be achieved by the extension of die machining technologies of comparable precision.

This business field also demands financial as well as technological capabilities (financial strength to invest in new or replacement equipment, equipment development capability and maintenance capability, etc.) to respond to technological innovations together with product development capability and sufficient manufacturing technologies.

Moreover, a system capable of swiftly analysing the technical problems of products and raw materials at a high level is required. It is desirable that this system be an open system at a public organization or technical college instead of being introduced in-house. Another target could be the establishment of a system to enjoy the advantages of the centralisation of specialist technologies and information at a single facility with the concentration of specialist engineers and equipment. In this way, the financial burden on individual companies can be reduced.

If local SI companies can successfully establish themselves in this field, they can cope with the country hopping of MNCs (as they can constitute overseas supply sources for MNCs relocating to other countries).

The primary requirement in this field is the proper mastering of the basic technologies/ techniques (management/control techniques, technologies and skills) as it is a high risk, high return market.

- Pacific-Rim Business Information RIM No. 50	Ohki, T.	Sakura Research Institute	2000
- Common Vision of Industrial Development of Tokyo	TMG	Tokyo Metropolitan Government	2000
- JETRO Sensor: December, 2000 Issue	JETRO	JETRO	2000
- New Development of SME Policies	Small and Medium Enterprise Agency (Ed.)	Doyukan Press	
- Overview of SME Policies	Small and Medium Enterprise Agency (Ed.)	Small Business Research Organization	
- Vocational Ability Development Programme	EADO	Employment and Ability Development Organization	
- SMEs White Paper	Small and Medium Enterprise Agency (Ed.)	Printing Bureau, Ministry of Finance	2000
- Overview of Small and Medium Size Industries in Malaysia		JBIC	2001
[Chapter 4]			
* International Workshop on Technological and Management Upgrading of SMEs Through Linkage with TNCs	Seminar, Penang, 8-9 August, 2000	UNCTAC	2000
- Roles of SMEs in Developing Countries and Strategy of World Bank Group	Seminar held by Tokyo Office of WB in July, 2000	World Bank	2000
- Managerial Tasks for Japanese Manufacturing Companies in Southeast Asia	Fujino, T.	Institute of Southeast Asian Studies, Nagasaki University	1997
- Report for Study on Measures to Develop Supporting Industries in Major Asian Countries		Japan Machine Export Cooperative	1999
- Asian Economy XXXIV (pp 92-114): Malaysian National Car Project and Formation of Supporting Industries	Anasawa, M.	Institute of Developing Economies	1998
- The Industrial Bank of Japan, Study No. 291: Business Model for Information-Related Household Electrical Appliances	IBJ	Industrial Bank of Japan, Ltd.	1999
* ROC's MSEs Ready for Next Millennium	SMEs Administration	Ministry of Economic Affairs, ROC	
- Bulletin of Japan Machine Society, Vol. 101, No.954: Design for Easy to Make and Easy to Destroy Products		Japan Machine Society	1998

Note: * English Edition
- Japanese Edition