(3) Problems facing wood products and furniture industry

Figure 6.13 Problems Facing Sample Group of Wood Products and Furniture SMEs

Analysis found that the most important problems facing these 52 factories owned by SMEs came from manufacturing and technology, followed by management, marketing, human resources, and finance and accounting respectively.
Figure 6.14 Problems Facing Sample Group of 10 Wood Products and Furniture SE

Diagnosis of the 10 small enterprises’ factories joining the project found manufacturing and technology to be their most typical problem, with management, marketing, and human resources following.

Management problems:
1. Planning: management system for the factory was absent.
2. Visions; lack of directions and competition policy.
3. Reporting or information system, lack of data collecting for analysis purposes.

Manufacturing problems:
1. Quality problem: high defect rate in manufacturing process and inability to reduce it, fluctuations in quality.
2. High manufacturing costs.
3. Delays
4. Lack of unity, poor coordination.
5. Organizational structure: internal management system not in place, using family business management style.
4. Absence of manufacturing planning and control.
5. Waste in work process leading to low production effectiveness.
6. Other problems including improper stock management.

Figure 6.15 Problems Facing Sample Group of 42 Wood Products and Furniture ME

The 42 medium enterprises’ factories also had manufacturing and technology as their top problem; their list, by order of importance, included management, marketing, human resources, and finance and accounting.
Management problems:
1. Planning: lack of work plan, no goals set for operating purposes, no indicators for organization management, high volume of backlog orders, high volume of raw materials inventory, no finished products storing before delivering.
2. Reporting or information system: no management of information system, outdate, inaccurate data, not useful for assisting decision making and management, available data not being used for analysis and finding of solutions for problem or improving work performance, inability to measure or assess operating result or management in each division, inability to tell volume of defects in process, lack of communication for mid-level executives and employees to acknowledge the organization’s direction, policy and goals. The companies adopt policy made by parent companies, under close guidance from the management but their own status against competitors is not known.
3. Lack of unity including poor coordination among clients and among different divisions, resulting in delays in delivery; poor communication among division also cause inability to meet the manufacturing goals.
4. Organizational structure not clearly defined.

Manufacturing problems:
1. Manufacturing planning and control: poor manufacturing planning and control causing waste by using wrong size processed Para wood, absence of control and monitoring; serious efforts to find solution to problem and to determine implementation were absent.
2. Waste in manufacturing process, poor effectiveness in labor utilization, have frequent movement during manufacturing process, defects caused by processed Para wood sawing and slicing process, high rate of loss and waste from using models that allow unnecessary length for cutting adjustment, fluctuations in quality.
3. Quality: lack of defect control, lack of effective defect and redundant work recording in order to find the way to reduce them
4. Low production effectiveness, over use of labor.
5. High manufacturing costs, lack of comparison analysis between actual manufacturing cost and what was planned at the step of sample making.
6. Low production capacity.
7. Others, including employees’ low rate of work, insufficient space, poor equipment arrangement.
(4) Result and achievement from follow-up of the diagnosis

Results of diagnosis are divided into 3 components consisting of performances before the diagnosis, after it and utilization of diagnosis reports. The conclusions are as follows:

Before the diagnosis

![Reasons for requesting diagnosis]

- To improve management: 32.3%
- To learn one’s managing performances: 85.7%

![Reasons for learning one’s managing performances]

- Labor improvement: 42.9%
- Management improvement: 71.4%
- Production process improvement and costs reduction: 85.7%
After the diagnosis

Types of diagnosis preferred by enterprises

- Production process improvement and costs reduction: 71.4%
- Management improvement: 57.4%

Diagnosis report utilization

- Able to use diagnosis:
  - No: 7.1%
  - Yes: 92.9%

- Requesting plan for future diagnosis:
  - No: 29.8%
  - Yes: 71.4%

Advantages gained from diagnosis

- Create staff’s awareness on increasing productivity: 42.3%
- Provied information for management: 42.9%
- Clearer managing directions: 50.0%
- Provied basis for organization development: 85.7%
6.3 Clusters Development

6.3.1 Introduction

The Thai government identified competitiveness development as one of its crucial strategies to create economic expansion and prosperity, improve people’s livelihood and promote sustainable development in the country. Development of groups of enterprises in the form of cluster was therefore an important tool to increase competitiveness in both manufacturing and service sectors. It also directly contributes to the country’s competitiveness in international market.

The concept of cluster to improve competitiveness among industries was introduced by Professor Michael E. Porter. The term ‘cluster’ can be defined as a group of businesses and associated institutions geographically concentrated in one region and sharing the same interests. Clustering provides members an opportunity to cooperate and support each other. Within clusters, both types of linkage can be found e.g. the vertical and horizontal links. The former portrays link between varieties of enterprises operating upstream to downstream businesses, while the latter reflects link among supporting industries i.e. service suppliers, trade associations, training and education institutes, research and development institutes and other relevant government agencies. The goals for joining as cluster are to improve productivity and competitiveness in a sustainable way.

The main components of cluster include:

1. the private sector, comprising relevant businesses both upstream and downstream
2. the government sector, controlling policy, measures and rules and regulations
3. institutes/associations/service suppliers, providing basis for technical development and creating industrial groups
4. educational institutes, providing basis for human resource development and innovation
The keys to success in developing cluster is building cooperation in co-competition, participatory development of core objectives, participatory strategy development and exchange of information and resources among stakeholders to increase collective efficiency and productivity of the cluster. For instance, the entrepreneurs in the cluster could collaborate in research and innovation development in order to add value to their products and services. Their costs on development would lower, while they could maintain their competitive edges on manufacturing efficiency. In a like manner, both upstream and downstream entrepreneurs could participate in planning and managing the supply chain to improve manufacturing efficiency and be able to market goods with higher value added throughout the supply chain.

6.3.2 Development of Clusters in Thailand

(1) Steps in cluster development include the following:

1. Conduct feasibility study and clusters selection for supporting programs. In-depth studies should be conducted on industries creating significant economic impacts, and selection should take into account factors including leadership and commitment among its members to collaborate in developing the cluster. Finally, the cluster should demonstrate potential for development.

2. Stimulate and create a process to build understanding and raise awareness in collaboration, make the parties understand that the objectives and goals of clustering involve improving productivity by not undercutting others or creating price war; trust must be established as well as the advantages of joining expertise for group development pointed out; the group leadership would naturally occur in this step.

3. Select the Cluster Development Agent (CDA) from the private sector with knowledge of the cluster’s industry in order to receive training on coordination and consulting under the cluster’s approach.

4. Diagnose the relevant parties’ linkage in product development throughout the product value chain, this will in turn dictate roles of members and relevant parties in the chain in further coordination.
5. Conduct economic performance analysis to determine strategy; members of cluster should analyze their industry’s weaknesses, strengths, opportunities and limits under the diamond model concept comprising factors such as manufacturing, demand, supporting industries and tactics applied by the industry, in order to determine their collective goals and strategy. 

6. Develop strategy and action plan; after the group has agreed upon their strategy, a clear and concise action plan should be developed with prioritized activities to demonstrate immediate benefits of clustering.

7. Conduct monitoring and review of plan/project, in order to evaluate the implementation and help member understand the advantages of joining cluster.

Many clusters were successfully established in a range of industries. The key involved parties comprised the Department of Industrial Promotion, the Kenan Institute Asia, and the Bangkok Bank Public Company Limited. All of them received full cooperation from entrepreneurs in each cluster, indicating the industrial entrepreneurs’ increasing awareness in joining and creating network in the form of cluster. Established clusters currently in operation are summarized in table 6.7.
### Table 6.7 Results from Clusters Development and Relevant Agencies’ Implementation (as of November 30th, 2004)

<table>
<thead>
<tr>
<th>Cluster Name</th>
<th>Current Status</th>
<th>Agency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Lampang Ceramics</td>
<td>- initiated December 2002&lt;br&gt;- had 6 member groups, the cluster’s visions, tactical plan and action plan developed&lt;br&gt;- Cluster Development Agent (CDA) developed&lt;br&gt;- implementations of plans in progress</td>
<td>- the Industrial Finance Corporation of Thailand</td>
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<tr>
<td>2. Chaiyaphum Textiles</td>
<td>- initiated May 2003&lt;br&gt;- had 21 members; their key issue was labor discipline and skill.&lt;br&gt;- the activity to address this issue was preparation of master plan for human resource development&lt;br&gt;- CDA developed</td>
<td>- the Industrial Finance Corporation of Thailand</td>
</tr>
<tr>
<td>3. Lanna Handicraft Network</td>
<td>- joined as the Handicrafts Manufactures and Exporters Association in 2002, with 128 members&lt;br&gt;- visions, development strategy and action plan developed&lt;br&gt;- currently stalled due to lack of funding</td>
<td>- Northern Handicrafts Manufactures and Exporters Association - Chiang Mai University</td>
</tr>
<tr>
<td>4. Chantaburi Precious Stone Producer/Trader</td>
<td>- focused on creating market opportunities&lt;br&gt;- training/seminars and overseas study tours conducted, memorandum of understanding signed&lt;br&gt;- strategy for gemstone business value added developed, comprising brand building and establishing the quality accreditation institute</td>
<td>- the Khem Institute Asia</td>
</tr>
<tr>
<td>5. Bangkok Motor Vehicle Parts</td>
<td>- initiated May 2003&lt;br&gt;- expanded from Bangkok and vicinity to other areas&lt;br&gt;- had 53 members&lt;br&gt;- tactical plan was being formulated&lt;br&gt;- CDA developed</td>
<td>- Bureau of Supporting Industries Development, the Department of Industrial Promotion</td>
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<tr>
<td>6. Motorcycle Parts (507)</td>
<td>- initiated 2004&lt;br&gt;- had 75 members, group leaders already received CDA training&lt;br&gt;- visions, missions, objectives, goals and organisation plan developed, business plan formulated&lt;br&gt;- members collaborated in developing new products and building domestic brands</td>
<td>- Bureau of Supporting Industries Development, the Department of Industrial Promotion</td>
</tr>
<tr>
<td>7. Chonburi Motor Vehicle Parts</td>
<td>- initiated March 2004&lt;br&gt;- CDA training conducted&lt;br&gt;- industry diagnosis for vision and strategy development was in progress</td>
<td>- Bureau of Entrepreneur and Enterprise Development, the Department of Industrial Promotion - JICA</td>
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<td>8. Khon Kaen Silk Industry</td>
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<td>9. Surat Thani Para Wood Industry</td>
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### Table 6.7 Results from Clusters Development and Relevant Agencies’ Implementation (Continued)

<table>
<thead>
<tr>
<th>Cluster Name</th>
<th>Current Status</th>
<th>Agency</th>
</tr>
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<tbody>
<tr>
<td>10. Thai Orchids Group</td>
<td>- collaboration began January 2003 to address issues facing entrepreneurs</td>
<td>- Bangkok Bank Public Company Limited</td>
</tr>
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<td></td>
<td>2. comprised 3 key groups: 1. orchid breeder, 2. cut orchid producer,</td>
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<td></td>
<td>3. tissue culture producer, 4. supplier (fertilizer, chemical and material</td>
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<tr>
<td></td>
<td>and equipment manufactures), 5. exporters, 6. transporter, 7. researcher, 8.</td>
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<td></td>
<td>government staff and 9. florist (consumers)</td>
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<td></td>
<td>- collaborated with the Ratohaburi Agriculture and Technology College in</td>
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<tr>
<td></td>
<td>developing a curriculum for orchid technology division to build and develop</td>
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<td></td>
<td>skilled labor base for the industry</td>
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<td></td>
<td>- the group’s 34 members participated in a study focusing on orchid</td>
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<td>manufacturing, marketing and the 8th Asia Pacific Orchid Contest, Taiwan</td>
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<td></td>
<td>between March 24th-26th, 2004; members conducted the SWOT analysis on 3</td>
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<td></td>
<td>topics including 1. the APOC 2004 contest, 2. the Noi Po auction market and</td>
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<td></td>
<td>3. orchid farms, in order to gain lessons for Thai orchid industry</td>
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<td>11. Central Region Food</td>
<td>- initiated May 2003, currently has 76 members</td>
<td>- Bureau of Supporting Industries Development, the Department of Industrial Promotion</td>
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<tr>
<td>(Vegetable/Fruit, Snacks and Canned Food)</td>
<td>- CDA developed</td>
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<td></td>
<td>- visions, missions and tactical plan developed</td>
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<td></td>
<td>- implementation of activities according to the tactical plan including</td>
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<td></td>
<td>exploring and experimenting China market, joining domestic and international</td>
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<td></td>
<td>fairs and visiting food factories, was in progress</td>
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<tr>
<td>12. Shrimp Industry</td>
<td>- collaborated with the Thai Chamber of Commerce in developing the shrimp</td>
<td>- National Science and Technology Development Agency, the Thai Chamber of Commerce</td>
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<tr>
<td></td>
<td>industry cluster</td>
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<td></td>
<td>- researches on shrimp breeding stock was being initiated</td>
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<td>13. Rayong Tiger Prawn Farmer Network</td>
<td>- formed by groups of shrimp farmers in Rayong</td>
<td>- Bangkok Bank Public Company Limited</td>
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<td>province to adopt the code of conduct (COC) concerning manufacture of high</td>
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<td>quality shrimp; the network had 252 members</td>
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<td>- cluster development was requested; a meeting was held on June 9th, 2004</td>
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<td></td>
<td>to collaborate in problem solving and developing quality system, standard,</td>
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<td></td>
<td>and mechanism for development of tiger prawn industry in Rayong</td>
<td></td>
</tr>
<tr>
<td>14. Sogkla Seafood and Aquatic Animal Producers</td>
<td>- training/seminar conducted, MOU signed</td>
<td>- the Kenan Institute Asia</td>
</tr>
<tr>
<td>Group</td>
<td>- studies on business value adding and manufacturing standard conducted</td>
<td></td>
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<tr>
<td></td>
<td>- CDA development program being prepared</td>
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</table>
Aside from implementation concerning clusters in Table 6.6, the Federation of Thai Industry also promoted the clustering of industrial groups in different industries (Table 6.8).
Table 6.8 Promotion of Industrial Clusters by The Federation of Thai Industries

<table>
<thead>
<tr>
<th>Cluster Name</th>
<th>Current Status</th>
</tr>
</thead>
</table>
| 1. Fashion Cluster               | • the cluster committee established  
• results from implementation are as follows:  
  • cooperation among fashion industries in human resources development, designing and technology transfer developed and initiated  
  • fashion industry restructuring to eliminate barriers  
  • the Fashion Industry Framework approved, bridging the core industry with peripheral industries and linking them to the government's supports  
  • information on government's projects disseminated including the Bangkok Fashion City scheme, to allow participation from every part of the industry  
  • the Thailand Market Place established, road shows organized in order to build overseas partnership  
  • information exchange with supporting industries encouraged  
  • building one's own brand promoted  
  • use of domestic raw materials promoted for displays in international markets  
  • public relation activities conducted to promote Thai fashion brands, with private sector's participation  
  • foreign designers commissioned to assist in designing  
  • emphasis on market development for the fashion industry as a concerted effort, organizing road shows with department stores, solving and eliminating problems especially cross concerning personnel, raw materials and restructuring of tariffs in each fashion industry |

| 2. Motor Vehicles and Parts Cluster | • the cluster development committee established  
• six working groups were formed to undertake the following tasks:  
  1. human resources development; the Yen loan proposal was developed to allow training programs hosted by the Ministry of Treasury  
  2. rules and regulations; the Mutual Recognition Arrangement (MRA) concerning car standards was part of the Free Trade Agreement  
  3. supplier base establishment; many programs providing suppliers with supports were initiated including the quality control project in collaboration with the Thailand Automotive Institute, the motor vehicle parts cluster project in collaboration with the Department of Industrial Promotion and a study on establishment of automotive testing center  
  4. combating traffic congestion; a seminar was held on Bangkok traffic crisis  
  5. tariffs; a study was conducted on tariff reduction for completely built-up (CBU) and completely knocked-down (CKD) automobiles under the APTA, PTA and WTO provisions as well as criteria for other privileges  
  6. dedicated fund; a study was conducted on setting up of dedicated fund
### Table 6.8 Promotion of Industrial Clusters by The Federation of Thai Industries (Continued)

<table>
<thead>
<tr>
<th>Cluster Name</th>
<th>Current Status</th>
</tr>
</thead>
</table>
| 3. Electronics Cluster (Hard Disk Drive HDD) | - the Asian Institute of Technology and the Asian Policy Research were commissioned to study the HDD cluster by assessing the strength of leading players in the industry (in collaboration with companies, universities and research institutes) as well as the strength of their links  
- the study led to 7 recommended projects to strengthen the clusters, and was approved by the International Disk Drive Equipment and Materials Association (IDMA)  
- the National Science and Technology Development Agency planned to hire the AIT personnel with expertise and experience in HDD industry to be the HDD cluster agent to collaborate with staff of the Industrial Technology Assistance Program (ITAP) in realizing these 7 programs  
- the HDD Cluster Steering Committee established, chaired by the director of NSTDA and representatives from the IDEMA as committee members, the committee would assess the cluster manager's performance |
| 4. Electrical and Electronic Appliances and Air Conditioning Cluster | - the cluster development committee established  
- five working groups were formed to carry out the following tasks:  
1. compile and sort data, the Office of Industrial Economics and the National Electronics and Computer Technology Center were currently collaborating on this  
2. technical cooperation with the NESSTEC to develop the cluster's directions  
3. tariff and regulations, copper tariff adjustment was being monitored  
4. foreign affairs: studies were conducted on the impacts of Thailand's Free Trade Agreement with a number of countries  
5. network coordination; the electrical appliance and air conditioning products show was held between September 14th-18th, 2005 in collaboration with the Department of Export Promotion, at the same time with the Bangkok Refrigeration, Heating, Ventilation and Air-Conditioning 2005 (HVAC 2005), develop the electrical, electronics and air conditioning cluster database were developed in collaboration with the Electrical and Electronics Institute, the Office of Industrial Economics and the National Electronics and Computer Technology Center (NECTEC) |
| 5. Food and Pharmaceutical Products Cluster | - establishment of the cluster development committee was underway  
- currently gathering information to build understanding prior to preparation of the cluster development plan |
| 6. Materials and Supporting Products Cluster | - the cluster committee established  
- currently developing a database to link each industrial group by their products and sorted by product category; the database would be presented to the committee |
| 7. Construction Materials Cluster | - the cluster committee established  
- four working groups were formed to carry out the following tasks:  
1. expand markets and public utilities: support projects on public utilities and real estate, either government or privately-owned, and expand markets for construction materials to foreign countries, especially in ASEAN  
2. technology and environment: develop recognized standards  
3. support SMEs: create opportunities for new SMEs  
4. public relations: promote and support construction material industry, conduct outreach activities  
- the 4 working groups were preparing their work and budget plan for the committee's approval |
Table 6.8 Promotion of Industrial Clusters by The Federation of Thai Industries (Continued)

<table>
<thead>
<tr>
<th>Cluster Name</th>
<th>Current Status</th>
</tr>
</thead>
</table>
| 8. Paper Pulp and Printing Cluster | - the cluster committee established  
- the implementation results were as follows:  
  - developed sufficient raw material source, collaborated with the Ministry of Industry, the Ministry of Agriculture and Cooperatives and the Ministry of Natural Resources and Environment in the project to promote fast growing tree plantation and support the establishment of the center for fast growing tree research and development  
  - adopted new offset printing plate standards, developed printing standard and conducted public relations activities as well as prepared the detailed plan for establishment of the printing standard research and development center project  
  - develop printing personnel, collaborated with government and educational institutes to develop skill and labor standards and conducted testing of national printing skill and labor, established educational institutes providing specific training on printing and printing technology  
  - developed program to promote collaboration through educating/training/seminar, exchanged information on marketing and printing technology, and developed marketing cooperation in both domestic and overseas such as organizing travelling exhibitions |
| 9. Petroleum Cluster | - the cluster committee established  
- the implementation results included:  
  - three committee meetings were conducted, items in the agenda were productivity improvement, promotion of small enterprises, linking industrial groups in the cluster and participatory development of the cluster's strategy, measures and the cluster development action plan  
  - three working groups were established, comprising the gas, refinery and chemical groups to develop strategy and work plan for the cluster, the groups were gathering information on each industry to identify linkage and determine the directions of the development |
| 10. Metal Working Machinery Cluster | - the cluster committee established  
- the implementation results included:  
  - developing the Thai agricultural and metal working machinery inventory to replace imported machinery  
  - development of short, medium and long term strategy for the machinery and metal work cluster in progress  
  - developing the cluster’s database on the agricultural machinery industry and the metal work and machinery industry to link the manufacturers with their customers  
  - study on establishment of a certified body for import of used machinery in progress |

Source: the Policy and Planning Division, the Office of Small and Medium Enterprises Promotion
(2) Lessons learnt from cluster development

Lessons drawn from development of different clusters can be summarized as follows:

1. Though business development through the cluster approach is possible in any type of enterprise, the government should focus on small and medium enterprises to improve their competitiveness. Coordination is best done by associations or neutral individuals who would not cause conflict of interest, and a leader or manager to push through activities in which the cluster members share their goals.

2. Cooperation to develop clusters usually begins among small groups, and then eventually expands.

3. The best methods for members to learn about cluster are study tours and joint marketing in trade fairs.

4. Initial activities for cluster should be ones that yield immediate benefits which are shared by members.

5. Cluster development is changing the entrepreneurs’ attitude to compete by joining together. It requires time and continuous efforts.

6. The key steps in cluster development can be applied to any kind of goods and any industry, though difference in detail must be observed.

(3) Key factors in development of clusters

A number of factors can be considered as the key to success for cluster development in Thailand. This includes external factors comprising supports from the government’s sector or other relevant agencies, and internal factors comprising a range of conditions within the cluster itself. Key factors found in successful cluster development consisted of:

1. leadership and coordination; the cluster’s leaders and coordinators played crucial roles in stimulating coordination and solving problems facing the cluster.

2. trust and confidence: building, among members, the trust and confidence towards product development using the cluster approach.
3. selecting the cluster to develop and its founding members; the selected cluster must have good leadership and founding members who recognize the needs for development using the cluster approach; that is to say, competition by joining together as a capable industrial or business group

4. all members pursue their tasks with respect for other’s roles

5. the cluster action plan should link to the provincial cluster development plan, the province development plan or other government plans

6.3.3 SMEs Clusters Development

Concerted effort to develop SME clusters is yet to be formulated. However, the Office of Small and Medium Enterprises Promotion is the main agency responsible for developing a plan and policy to promote Thai SMEs at both national and regional levels. The plan focuses on promotion and development of SMEs as the main economic engine for the country and community, as well as promotion of cluster development of each targeted industry at community and area levels. The OSMEP therefore develops the area-based SMEs cluster development plan to: 1. provide strategy and guideline for cluster development to promote SMEs for each area in accordance with the national SMEs promotion plan and the strategy for provincial cluster development adopted by the integrated provincial administrative system, and 2. provide SMEs promotion plan for each area’s developing cluster.

The target groups comprise:

1. SMEs pilot project in the upper Northern region (Provincial Cluster 1) i.e. Chiang Mai, Chiang Rai, Lampang, Lamphun, Phayao, Phrae, Nan, Mae Hong Son; the 8 provinces on the Gulf of Thailand coast, the Southern region i.e. Chumphon, Surat Thani (Provincial Cluster 15), Phatthalung, Nakhon Si Thammarat (Provincial Cluster 16), Pattani, Yala, Narathiwat (Provincial Cluster 18), Songkhla (Provincial Cluster 19).

2. SMEs with desired capabilities in other 8 areas including the lower Northern (Provincial Cluster 2, 3), Central (Provincial Cluster 4, 5), Western (Provincial
Cluster 6, 7), Eastern (Provincial Cluster 8, 9), central and upper North Eastern (Provincial Cluster 10, 11, 12), lower North Eastern (Provincial Cluster 13, 14), and the Andaman coast of the Southern region (Provincial Cluster 15, 16, 17, 19).

**The cluster development plan**

The plan comprises 3 stages as follows:

1. Development of strategy and guideline for cluster development to provide basis for preparation of each area’s action plan for SMEs promotion by industry. This results in framework for each area’s action plan including strengths and weaknesses, cluster capacity assessment, visions, missions, cluster development goals, goals of each strategy, measures and work plans.

2. Implementation of the strategic plan comprising 2 approaches as follows

   2.1 determining guidelines to improve the efficiency of area-based stimulation by

      i. building awareness among the parties involved in the development of cluster at both policy and implementing levels

      ii. supporting the Cluster Development Agency on both national and regional levels to become a key mechanism or coordinating and linking to create substantial stimulation.

   2.2 strengthening cluster development for area-based SMEs by supporting cluster of each targeted industry

3. Management; the working group should be established after the analysis of area-based cluster’s potential is completed. The working group should focus its effort on both national and regional levels and develop a database to link the area-based cluster to central parties. Monitoring and evaluation of implementation should also be in place.

The potential of the 5 key SMEs industries being developed as clusters by both government and private sectors in 19 provincial clusters across the country is demonstrated in figure 6.16. The OSMEP and relevant agencies would continue
their coordination to promote and support implementation of the cluster development plan for SMEs in each industry and area. This linkage between networks would help strengthen and allow them the competitiveness required in the fierce environment of both domestic and international trade.

Figure 6.16 Industrial Capacities of SMEs in Different Industries Receiving Cluster Development Efforts from Government and Private Agencies; by Region
1. The Upper Northern Provincial Cluster
Chiang Rai *freshwater aquaculture
Phayao *processed fruit, *cotton fabric,
**gemstone cutting (NESDB)
Prae *Mo Hom textile
Lampang -/**ceramics (NESDB), *ecotourism
Lamphun -/**electrical and electronics appliances(NESDB)
Mae Hong Son -*/ecotourism
Chiang Mai **dried fruit, **canned fruit (NESDB), **fabric (NESDB)

2. The Central Northern Provincial Cluster
Tak *organic agriculture, *border trade, *carved jade tree
Uttaradit *fruit, *border trade
Phitsanulok *rice, -*/agricultural machinery (NESDB), *health tourism
Petchabun *biotechnology agriculture, *health and nature tourism
Sukhothai *traditional goldsmith, *traditional fabric, *carved wood

3. The Lower Northern Provincial Cluster
Kamphaeng Pet *carved stone, marble
Phichit *organic pomelo
Uthai Thani *organic agriculture

4. The Upper Central Provincial Cluster
Phra Nakhon Si Ayutthaya *chilly paste, **agricultural machinery (NESDB), -/**electrical and electronics equipment (NESDB)
Pathum Thani *processed agricultural products

5. The Upper Central Provincial Cluster
Lop Buri -/** processed chicken meat (NESDB)
Saraburi **animal feed(NESDB), *nature tourism
6. The Lower Central Provincial Cluster
Kanchanaburi *border trade
Ratchaburi /**textile and garment (NESDB),*border trade, **orchids (BBL),
*ceramics, pottery
Nakhon Prathom -/**pork (NESDB),
*aquarium fish, -organic vegetable (KIASIA)

7. The Lower Central Provincial Cluster
Samut Songkhram *organic vegetable, *palm sugar
Samut Sakhon **frozen shrimp (NESDB)
Phetchaburi *ecotourism, **canned pineapple (NESDB)
Prachuap Khiri Khan -/**iron (NESDB),
*border trade

8. The Lower Central Provincial Cluster
Prachin Buri *herbs
Chachoengsao *rice, *culture tourism
Sa Kaeo *organic agriculture, *border trade
Samut Prakan -/**leather goods (NESDB)

9. The Eastern Provincial Cluster
Chonburi -/**motor vehicles and parts (DIP, the Federation of Thai Industries, NESDB, JICA ), -/**petrochemical (NESDB), -/**electrical and electronics appliances (NESDB)
Rayong **tiger prawn, -/** motor vehicles and parts (DIP, the Federation of Thai Industries, NESDB, JICA), -/** pharmaceutical and chemical products (NESDB), -/**petrochemical (NESDB), -/** iron and steel (NESDB)
Chantaburi **pepper (NESDB), -/**precious stone and jewelry (NESDB, KIASIA)

10. The Upper Northeastern Provincial Cluster
Nong Bua Lam Phu *organic agriculture, *gemstone cutting
Udon Thani *world heritage triangle, *border trade

11. The Upper Northeastern Provincial Cluster
Sakon Nakhon *mao wine, beef, -/**tailor (NESDB),*indigo dyed fabric
Nakhon Phanom *silk

12. The Upper Northeastern Provincial Cluster
Khon Kaen -/**sugar (NESDB), -/**silk (DIP, JICA)
13. The Lower Northeastern Provincial Cluster
Chaiyaphum */* textiles (DIP)
Nakhon Ratchasima *visit Lam Takhong dam,
-/*plastics (NESDB), Dan Kwian earthenware
Buriram *visit Ancient Khmer civilization

14. The Lower Northeastern Provincial Cluster
Amnat Charoen *Jasmine rice
Yasothon *organic agriculture, * Kit' fabric/
Kwai pillow
Ubon Ratchathani -/*precious stone
(NESDB), -*border trade
Si Sa Ket *hand woven fabric, organic
vegetable

15. The Upper Southern Provincial Cluster
Ranong *fisheries
Surat Thani *process aquatic animals, **para
rubber (DIP, NESDB, JICA)

16. The Upper Southern Provincial Cluster
Nakhon Si Thammarat *para rubber wood
Trang *cake, barbeque pork
Phatthalung *coconut shell handicraft

17. The Upper Southern Provincial Cluster
Phuket *batik, *tourism (KIASIA)
Phang-Nga -/*para rubber

18. The Lower Southern Provincial Cluster
Pattani -/* para rubber

19. The Lower Southern Provincial Cluster
Songkhla *seafood (KIASIA), **canned tuna
(NESDB), -/*para rubber and para wood
furniture (NESDB)

Source: Policy and Planning Division, the Office of Small and Medium Enterprises Promotion
Note * progress made in cluster developing by the private sector (the Thai Chamber of
Commerce and the Kenan Institute Asia)
** progress made in cluster developing by the government sector (the Department of
Industrial Promotion, the Japan International Cooperation Agency and the National
Economic and Social Development Board)
-/* both the provincial cluster’s capacity and progress of cluster development by the
private sector (the Thai Chamber of Commerce)
-/** both the provincial cluster’s capacity and progress of cluster development by the
government sector