การศึกษาปัจจัยที่มีผลต่อความสำเร็จของการดำเนินการ
คลัสเตอร์อุตสาหกรรมในประเทศไทย
A Study of the Factors Contributing to
the Success of Industrial Cluster
Implementation in Thailand

อริยาพร สุรนาทยุทธ์*

Ariyaporn Suranartyuth

*นักวิชาการอุตสาหกรรม กรมส่งเสริมอุตสาหกรรม กระทรวงอุตสาหกรรม

Department of Industrial Promotion Ministry of Industry

บทคัดย่อ

บทความนี้ได้ทบทวนวรรณกรรมเพื่อพัฒนาแนวความคิดการหาปัจจัยสู่ความสำเร็จ
ในการพัฒนาคลัสเตอร์อุตสาหกรรมของไทยให้มีประสิทธิภาพและเป็นพื้นฐานในการเพิ่ม
ขีดความสามารถทางการแข่งขันของประเทศ โดยแนวคิดการพัฒนาคลัสเตอร์อุตสาหกรรม
ถูกริเริ่มจากการที่เศรษฐกิจของไทยรวมถึงนานาประเทศทั้งประเทศที่ถูกจัดอยู่ในกลุ่มประเทศ
ที่เจริญแล้วและกลุ่มประเทศที่กำลังพัฒนาประสบปัญหาอย่างรุนแรงเนื่องจากการเจริญเติบโต
อย่างรวดเร็วของเศรษฐกิจสาธารณรัฐประชาชนจีน ราคาสินค้าต่อหน่วยของจีนมีราคาค่อนข้าง
ต่ำเมื่อเทียบกับราคาสินค้าของนานาประเทศ ทำให้สินค้าไทยมีความสามารถในการแข่งขัน
ทางด้านราคาน้อยลง ด้วยเหตุนี้ รัฐบาลไทยโดยสำนักงานคณะกรรมการพัฒนาเศรษฐกิจและ
สังคมแห่งชาติ (สศช.) จึงมีแนวความคิดในการบรรจุยุทธศาสตร์การยกระดับขีดความสามารถ
ทางการแข่งขันของประเทศไทยเป็นวาระแห่งชาติ โดยได้นำแนวคิดการพัฒนาคลัสเตอร์ที่
ริเริ่มโดย ศาสตราจารย์ Michael E. Porter ผู้มีชื่อเสียงมาประยุกต์ใช้เป็นเครื่องมือในการ
ยกขีดความสามารถทางการแข่งขันของประเทศ ซึ่งแนวคิดการพัฒนาคลัสเตอร์ได้ถูกจัด
เป็นหนึ่งในยุทธศาสตร์หลักของการพัฒนาประเทศ ทั้งนี้ กรมส่งเสริมอุตสาหกรรม (กสอ.)
กระทรวงอุตสาหกรรม ได้รับมอบหมายให้เป็นหน่วยงานหลักในการดำเนินงานพัฒนาคลัสเตอร์
อุตสาหกรรม (Industrial Cluster) โดยปีงบประมาณ 2549 เป็นปีแรกที่ กสอ. ได้มีการโครงการ
พัฒนาคลัสเตอร์อุตสาหกรรม โดยผลจากการวิเคราะห์ปัจจัยสู่ความสำเร็จของการดำเนินงาน
โครงการพัฒนาคลัสเตอร์อุตสาหกรรมในประเทศไทยประกอบด้วย (1) การสนับสนุนจากภาค
รัฐ (2) ความชัดเจนของวัตถุประสงค์ (3) ความสามารถของสมาชิกคลัสเตอร์และเจ้าหน้าที่
ภาครัฐที่ดำเนินการ และ (4) คุณภาพของโครงการ

คำสำคัญ : คลัสเตอร์ ความสำเร็จในการดำเนินนโยบาย ประสิทธิผล ประสิทธิภาพ
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ความชัดเจนของวัตถุประสงค์ ความสามารถของสมาชิกคลัสเตอร์และเจ้าหน้าที่ภาครัฐที่
ดำเนินการ การสื่อสาร และ คุณภาพของโครงการ

Abstract

The paper reviews previous research in order to develop a conceptual framework leading to successful implementation on industrial clusters in Thailand for actually increasing effectiveness and being the foundation to build up Thai competitiveness. The initiative concept of industrial clusters has begun from Thai economy and other countries including developed and developing countries facing serious competition from the fast growing of Chinese economy. The price per unit of Chinese products is relatively low compared to other countries. This has caused Thai products diminishing level of price competitiveness. With these reasons, Thai government by Office of National Economic and Social Development Board (NESDB) has inserted the strategy of enhancing Thai competitiveness in national agenda. The concept of clusters from the popular scholar, Professor Michael E. Porter, is taken to use as an instrument for enhancing Thai competitiveness. The concept of cluster development has been set as one of the national strategies. To continue the strategy, Department of Industrial Promotion (DIP), Ministry of Industry, has been assigned to be the main agency who implements the industrial cluster project. DIP has implemented the industrial cluster project since the fiscal year 2006. The result of key success factors of implementing on industrial cluster project are as follows: (1) perceived support, (2) clarity of goal, (3) ability of cluster members and policy implementers, and (4) quality of project.

Keywords : Cluster, Successful Policy Implementation, Effectiveness, Efficiency, Participation of Stakeholders, Management Ability, Perceived Support, Clarity of Goal, Ability of Cluster Members and Policy Implementers, Communication, and Quality of Project

1.0 Introduction

In Thailand, the total number of SMEs is the biggest portion in the Thai economy and the number of SMEs in Thailand has increased rapidly. SMEs accounted for 99.6 percent, 99.7 percent, 99.8 percent of all enterprises in 2007, 2008, and 2009 (OSMEP, 2010). However, Thai SMEs currently have exerted pressure on profit reduction due to the reduction of unit costs because of the "China rate (price per unit)" and the current rise in material prices. Thai products have suffered from a significant drop in sales due to increases in imports. Therefore, the Thai government has initiated a significant policy concerning an increase in Thai competitiveness and the policy has been counted as a national agenda and a major strategy. A competitiveness strategy will lead to sustainable development and prosperity for the industrial economics of Thailand. Moreover, many studies have stated that SMEs are the most important part in propelling the national economy since they represent the largest portion and are easily adaptable. Therefore, Thai government by the Office of the National Economic and Social Development Board (NESDB) has taken Thai SMEs as a policy customer to enhance Thai business in the whole. The concept of industrial cluster has been applied for building Thai competitiveness (NESDB, 2007).

Regarding the pursuit of the cluster policy, the Department of Industrial Promotion (DIP), Ministry of Industry has been assigned from NESDB to be the main organization to implement the industrial cluster since 2006 throughout every region in Thailand. The DIP had implemented 21 industrial clusters in 2006 and 22 industrial clusters in 2007 during the first and second year of implementation. The yearly allocated budgets from the DIP for implementing the industrial cluster were 20.06 million baht and 12.55 million baht in fiscal year 2006 and 2007, respectively. However, for the study, the second year (2007) of the DIP's implementation will be focused on because the DIP had gained experience for implementing the industrial clusters in the second year; the first year (2006) was the first time that the DIP had implemented the industrial clusters. Thus, the second year is the best period for study. If considering the year after 2007, it found that Thailand faced the situation of declining economy since 2008 due to the investors lack of confidence to invest in Thailand since unstable Thai political situation. As seen in table 1 below, the table shows the growth rate of the domestic product (GDP); the GDP growth rate in 2007 was 4.9 percent, and after that, Thailand faced an economic recession since the GDP growth rate was 2.5 percent in 2008, and -2.3 percent in 2009.

Table 1 : The Growth Rate of the GDP

Year	2005	2006	2007	2008	2009
GDP	4.5	5.0	4.9	2.5	-2.3

Source: NESDB, 2010

2.0 Objectives of the Study

  2.1 To identify the factors that lead to successful industrial cluster implementation in Thailand from an implementation perspective.

  2.2 To offer suggestions for improving the implementation of the industrial cluster.

3.0 Review of Industrial Cluster Implementation

  3.1 Review of the Cluster Concept

  Over decades, the concept of cluster development has gained massive attention from scholars. The term cluster became really famous since Michael E. Porter introduced the cluster concept in his 1990 book, "The Competitive Advantage of Nations." The term "cluster" by highlighting economic geographical concentration, agglomeration, spatial proximity and benefits is derived from increased scales. (Porter, 1998). According to Porter's view, he provides a short definition of cluster as a geographically proximate group of interconnected companies and associated institutions in a particular field, linked by commonalities and complementarities. In Jacobs and de Man (1996) mention that industry clusters can be classified according to the dimensions shown in figure 1 below. The figure illustrates that market trends have resulted in the growing strategic need for firms to increase their competitiveness. One of the most ways of doing so is to develop an innovation strategy. However, because of a lack of resources and in order to obtain economies of scale and/or scope in their innovative activities and firms, especially SMEs are increasingly forced to cluster.
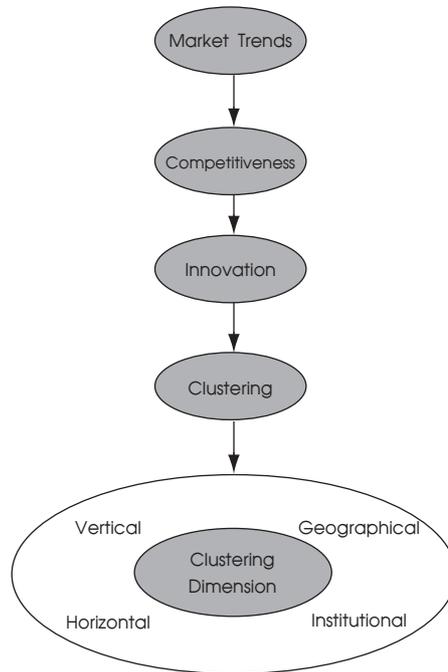
Figure 1 : Framework for Defining the Industrial Cluster
Source : Jacobs and de Man (1996)

Based on both famous scholars as shown above, the definition of cluster that will be used for this study will be defined as a group of related businesses and associated government agencies and educational institutions that gather together through learning processes and interdependencies to manage common meso-economic problems in order to achieve higher economic performance and long-term competitiveness.

3.2 Discussion of Clusters

Clusters can be observed going through a lifecycle with four distinct stages (Porter 1998). The first stage is **the established or embryonic cluster**, which is the starting point of cluster development and will develop to be the second stage, which is **the growth cluster**, and with this stage, there is a room for growth. The third stage is **the mature cluster** which is stable but might not experience growth any more and might be on its way to becoming the fourth stage or **the declining cluster**, which experiences failing growth. A declining cluster can possibly be reinvented and enter into a new lifecycle.

The cluster is formed to relate to the stage of development of the economy and competition. According to Porter

and Ketels (2003) an economy–local and national–can compete mainly within three different modes, and a society should ideally develop continuously and move from one mode to the next. The three modes are outlined below.

"The factor driven mode" –competitive advantage stems from low labor and natural resource costs. This advantage is relatively short lived, because when the economy develops, the wages will rise and the advantage will be lost.

"The investment driven mode"- competitive advantages are based on the efficiency in the production of standard products. Investments are required, and the competitive advantages gained are more long lived, and the wages higher, but financial crises and changes in demand can cause disruptions.

"The innovation driven mode"- the competitive advantage comes from the ability to produce innovative goods using the most advanced technology, and will provide the economy with long term competitive advantages.

Clusters occur within all three modes of economic development, but it is when the economy is innovation driven that highly developed innovative clusters occur, whereas in the investment driven development stage, the cluster mainly provides potential for increasing the productivity in terms of labor and

production cost (Porter & Ketels, 2003).

The competitive position of a company is closely related to the competitive strategy pursued by the company. Porter (1990) has previously introduced two strategies; namely, the cost reduction and the differentiation strategy. Cost reduction can be obtained through reducing human, natural, and capital resource input in the production of or relocating of the production where the required input is cheaper, for instance, in low-wage countries. If pursuing a differentiated strategy, the competitive advantages gained are more lasting due to the difficulties competitors have imitating them. The differentiation strategies can be based on both big and small changes and they can be obtained through both the production and the product. Continuous investments are a part of the differentiation strategy as well as innovation (Porter, 1990).

3.3 Success Factors of Cluster Development

There are some factors that are associated with the success and failure of cluster development (Ketels, 2003; European Commission, 2006). According to both sources, first of all, cluster development seems to be more successful if it is focused on a cluster already strong and set in a location with a good business environment. Second, cluster de-

velopment seems to be more successful if they are based on the sharing of a conceptual framework of competitiveness. Third, cluster development needs at least a small operational budget to finance an office with a dedicated cluster facilitator. Fourth, to involve all relevant stakeholders of the innovation system is to join actions of stakeholders addressing the whole knowledge triangle, for example, interaction between research, education, and innovation, which are key drivers of the knowledge-based economy. Fifth, cluster development needs a clear value added for implementing adequate and concrete actions. Sixth, to develop cluster, it is required strengthens the strategic capabilities of all regional actors, for example, the cluster strategy, adjusting longer-term business models to emerging lead markets. Seventh, the way to develop cluster is to facilitate knowledge flows and learning processes between actors. Eighth, to promote an experienced facilitator/promoter with professional and excellent social competences (human factor) is needed for developing cluster by showing high transparency, clear communication, and efficient and effective governance. Ninth, a common vision and strategy is needed to share by all stakeholders, and combines (often longer-term oriented) co-operation and (more short-term oriented)

competition between businesses (co-competition). Tenth, the cluster development needs to integrate a broad rang of public policies and private sector activities and mobilize sustainable support from stakeholders.

3.4 Common Failures of Cluster Development

Grabher (1993) and Heidenreich (1998) have discussed the general failures of cluster development as follows. First, traditional and strong clusters rely on past success and disregard fundamental changes in the technological, socio-economic, and political environment. Second, policy-driven cluster initiatives, which are chosen by governments as strategic relevant fields for regional development but do not take into account regional capacities and needs, are doomed to failure in the long-run. Third, cluster initiatives with strong reliance on public funds and poor orientation towards future market demands struggle with sustainable cluster development, in particular with regard to the aspect of self-financing.

The changes in technology, socio-economic, and political environment have been ignored by cluster members, they believe what the past of good experiences regarding cluster development is still good for them to follow. In addition, the

national government always inputs new policy to stimulate economy regardless the readiness of their citizens in term of capabilities. Most clusters that still survive have a financial support from the government. In order to remedy the strong and sustainable cluster, all those failures need to be eliminated.

4.0 Criteria of Justifying Successful Implementation of Clusters

In this study, two criteria were used to determine the successful implementation of the industrial cluster, as mentioned in Patton (1979). He recommended that successful implementation can be extended by fulfilling 2 criteria:

4.1 Effectiveness

Effectiveness is the ability to fulfill the objective of policy, measure, planning, or project. By using the effectiveness criteria, the study can be done by making a comparison between "actual results" and "planned results. Effectiveness can be measured by two approaches:

4.1.1 The goal-attainment approach is the method of measuring the outcome at the end of project implementation, not measuring between each step of implementation. In the study, effectiveness is the evaluation of pursuing the industrial cluster project or goal attainment approach; this is derived from DIP's term of reference (TOR). DIP's TOR includes "realization and agree on the importance of industrial cluster," "clarity of industrial cluster," "coverage of the structure of cluster map," "income generation," "reduction of cost," and "participation of stakeholders."

4.1.2 The systems approach is the consideration of a project as to whether the outcome covers from the beginning to the end. In the study, effectiveness is the evaluation of the benefit for being industrial cluster or system approach. This approach includes "benefit for being cluster," "development of innovative ability," "being competitors within the cluster," and "expansion of new business."

4.2 Efficiency

Efficiency is the ability to obtain maximum output under given costs or given outputs with minimum costs. In the study, efficiency is measured by the benefit-cost ratio (BCR). The BCR in the industrial cluster project in fiscal year 2007 equaled 1.4. Therefore, the results of the overall industrial clusters indicated that industrial cluster implementation passed the criterion of efficiency because it was greater than 1.

5.0 Research Hypotheses

Hypothesis I

The major factors that determine the failure or successes of industrial cluster implementation are: 1) the participation

of stakeholders 2) communication
3) management ability 4) perceived support
5) quality of project 6) clarity of goals
and 7) the ability of cluster members and
policy implementers.

1.1 The greater the participation
of stakeholders, the greater the chances
of policy to be a success.

1.2 The more communication
there is, the more chances there
are of the policy to be a success.

1.3 Greater management ability
is positively related to successful
implementation.

1.4 More perceived support leads
to more chances of the policy being successful.

1.5 The quality of project has a positive
relationship with successful implementation.

1.6 The greater the clarity of goals, the
more successful the implementation will be.

1.7 Strong ability of cluster members
and policy implementers creates a high
probability of successful implementation.

Hypothesis 2

**The major factors affecting
communication are management ability
and the quality of the administration
system of involved agencies.**

2.1 Better management ability
means better communication for
information transferred to involved
stakeholders.

Hypothesis 3

**The major factors that determine
the quality of project are: 1) level of
perceived support, 2) level of clarity of
goals, and 3) the level of ability of cluster
members and policy implementers (to
translate policy into action plans or
programs, including ability to manage
problems).**

3.1 The higher perceived support
results, the greater the quality of project.

3.2 The level of clarity of goals is
positively related to the level of quality of
project.

3.3 The ability of cluster members
and policy implementers and the quality
of project have a positively relationship.

6.0 Research Methodology

6.1 Primary data is used for the
study. The unit of analysis is enterprises who
join the industrial cluster policy in fiscal
year 2007; there are totally 22 industrial
clusters. Data was collected by randomly
distributing questionnaires to 10 enterprises
each cluster in fiscal year 2007. Therefore,
the total collected questionnaires are
220 sets.

6.2 The reliability is tested by the
value of cronbach alpha coefficient (α).
The acceptable reliability must have cron-
bach alpha coefficient (α) equals to or is
greater than 0.70 (Cronbach, 1990: 2004;
Nunnally, 1978: 245). The cronbach alpha

coefficient (α) in each factor ranges from 0.7547 to 0.9940; therefore, those factors are considered that they have reliability.

6.3 Exploratory factor analysis (EFA) is used to test the measurement to reassure convergent validity. The indicator to determine convergent validity is the absolute value of factor loading. Chin (1998) and Coakes & Steel (2001) states that if absolute value of factor loading is greater than 0.30, it will be acceptable to claim that measurement has convergent validity. The result of EFA analysis in every construct is reconfirmed that all constructs have convergent validity.

6.4 The study used structural equation modeling (SEM) to test the model since SEM allows for simultaneously study of a series of interrelate dependence relationship among measure and observed variable and latent variable or construct. AMOS version 6.0 is used for data analysis by SEM method.

6.5 Content validity is also used to reconfirm that the data analysis is right and appropriate for making study's conclusion and suggestion.

7.0 Result Finding

7.1 The Hypothesized Model to Be Tested

Referring to the conceptual frameworks of industrial cluster is implementation, there are five independent variables: (1) participation of stakeholders, (2) management ability, (3) perceived support, (4) clarity of goal, and (5) ability of cluster members and policy implementers, two intervening variables: (1) communication, and (2) quality of project, and a dependent variable: successful implementation. The causal relationship of the proposed model is illustrated in figure 2 below.
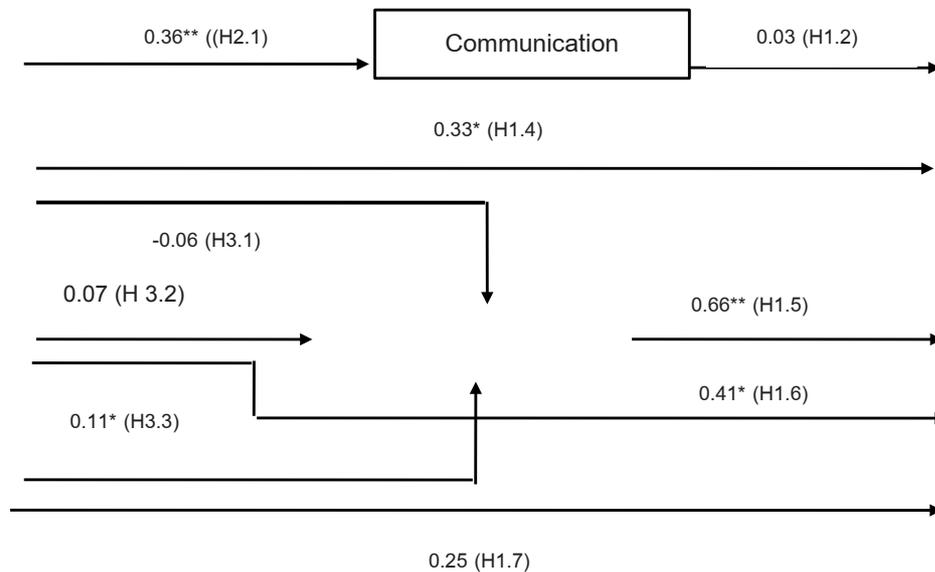
Chi-square =13.290, df = 11, P = 0.125, CMIN/DF =1.208, GFI = 0.987, RMSEA = 0.031

*P<0.05, **P<0.01

Figure 2 : The result of Hypothesized Model of Successful Implementation of Industrial Cluster Implementation in Thailand

According to figure 2, regarding the result of model assessment of the successful implementation of industrial cluster implementation in Thailand when considering the calculated statistical values is found that the chi-square test has no statistical significant the 0.05 (P ≥ 0.05), which is the specified criteria. Moreover, when considering the indices of the specified group at or above 0.90, it is found that all of the indices which are Goodness of Fit Index (GFI), Adjust Goodness of Fit Index (AGFI), Normal Fix Index (NFI), Incremental Fix Index (IFI), and Comparative Fit Index

(CFI) have passed the criteria (Arbuckle, 1995: 529; Bollen, 1989: 270). Regarding the indices which are specified below 0.05, the indices of Root Mean Square Residual (RMR) and Root Mean Square Error of Approximation (RMSEA) also passed the criteria. Moreover, the CMIN/DF index has a value of 1.208 which is below 2 (Brown and Cudeek, 1993: 141 - 162). Therefore, it can be concluded that the model of successful implementation of industrial cluster implementation in Thailand is fit well with the empirical data.

7.2 Analysis on the Coefficient of Determination

The coefficient of determination is used to indicate the validity of the model ranging between 0 - 1. The coefficient of determination R^2 is obtained by ordinary least squares regression, gives R^2 as the square of the correlation coefficient between the original and modeled data values. If R^2 is closer to 1 indicating the goodness of fit of a model. Square multiple correlation or R^2 shows the validity of the model. Joreskog & Sorbom (1993: 26) suggests that the good model should have coefficient of determination ≥ 40%. As indicated in table 2 below, the analysis reveals that successful implementation of industrial cluster implementation in Thailand can be explained very well by the model since R^2 equals to 95.9% (0.959*100).

Table 2: Coefficient of Determination of Successful Implementation Model

Dependent Variables	Squared Multiple Correlations (R2)
COM	0.127
QP	0.036
SI	0.959

Consequently, the Structural Equation Model (SEM) can be proposed as:

COM   =   0.356*** MA; R2 = 0.127

QP   =   -0.057 SUP + 0.073 CG +0.166** ACP; R2 = 0.036

SI   =   0.143 PS +0.268* MA +0.330** SUP+0.406** CG
           +0.254* ACP+0.028 COM +0.661** QP; R2 = 0.959

7.3 Interpretation of Statistical Result

The hypotheses were tested by using the SEM technique. The results of the hypothesis testing are presented below table:

Table 3: Summary of Results by Hypothesis Testing

Hypotheses	Support/Not Support	Effect
H 1.1 Participation of Stakeholders has an effect on the successful implementation of the industrial cluster in Thailand.	Not Support	-
H 1.2 Communication has an effect on the successful implementation of the industrial cluster in Thailand.	Not Support	-
H 1.3 Management ability has an effect on the successful implementation of the industrial cluster in Thailand.	Not Support	-
H 1.4 Support has an effect on the successful implementation of the industrial cluster in Thailand.	Support	DE = 0.334
H 1.5 Quality of program has an effect on the successful implementation of the industrial cluster in Thailand.	Support	DE = 0.661
H 1.6 Clarity of goals has an effect on the successful implementation of the industrial cluster in Thailand.	Support	DE = 0.406
H 1.7 Ability of cluster members and policy implementers has an effect on the successful implementation of the industrial cluster in Thailand.	Not Support	-
H 3.1 Perceived support has an effect on the quality of the project in industrial cluster implementation in Thailand.	Not Support	-

Hypotheses	Support/Not Support	Effect
H 3.2 Clarity of goals has an effect on the quality of the project in industrial cluster implementation in Thailand.	Not Support	-
H 3.3 Ability of cluster members and policy implementers has an effect on the quality of the project in industrial cluster implementation in Thailand.	Support	DE = 0.116

However, the results from the structural equation modeling supported four hypotheses; H 1.4, H 1.5, H 1.6, and H 3.3.

7.3.1 Interaction of positive relationships between participation of stakeholders and successful implementation

Even though Ketels (2003) and the European Commission (2006) state that the participation of stakeholders has a positive effect on successful implementation, as mentioned in the same content as appeared in the organization development model (Chandarasorn, 1993), and a model of inter-governmental policy implementation (Van Meter and Van Horn, 1975). On the other hand, the result of the model indicated that both variables (participation of stakeholders and successful implementation) had no positive relationship without a statistically significant level (p-value ≥ 0.05). This does not mean that the statements by scholars were wrong but that industrial implementation in Thailand is a particular case. All of the

scholars mentioned above claimed a positive relationship between the two variables in general cases. However, the author went further by interviewing and observing people in the real practice of the industrial cluster implemented by the DIP and sought a solution in order to answer the question "why?" What the author found out was that the industrial cluster in Thailand was a new concept for stakeholders during that period (fiscal year 2007) so many of stakeholders did not see the benefits of having an industrial cluster. At the very first of opening of the project, they came to serve their notice and disappeared, and some said that they came for shopping around; therefore, they did not pay a hundred percent attention to sincerely participating. As seen in the collected data from the DIP, it proved that what the author found out was true since the numbers of participants during the very first starting period as higher than when the project had been started for a while. Thus, if takes this time of this period

for studying with external environment in normal situation, the author believes that these two variables will have a strong positive causal relationship with statistical significance.

7.3.2 Interaction of positive relationships between communication and successful implementation

In Van Meter and Van Horn (1975), open communication was discovered to be an important factor affecting successful implementation. Greater non-argumentative communication is more likely to lead to a greater degree of successful implementation. According to the DIP's experience with the communication factor in the industrial cluster project, it was found that good communication sometimes may not cause a high level of successful implementation. In this sense, what the DIP found differs from the reviewed literature, because not all information transmitted from one unit to another is frequent enough to make that information benefit what the individual were doing in the process. However, the author believes that communication and successful implementation really do have a positive causal relationship; however, further studies have to widely prove this factor. Concerning statistical evidence (p-value ≥ 0.05), it illustrates that the causal relationships between two variables are not proven by statistical evidence.

7.3.3 Interaction of positive relationships between management ability and successful implementation

Bardach (1977) and Edward (1980) state that the important part of implementing policy in the administration process includes the expanding of management ability in applying measures and regulations efficiently. This implies that management ability and successful implementation have a positive relationship and management ability has a direct influence on successful implementation. According to the reviews, the results uncorresponded to the statistical evidence since p-value ≥ 0.05. The author studied deeply in details and discovered if DIP officials strictly followed to measurements and regulations of cluster procedures, the industrial clusters would have faster development in implementing the cluster.

7.3.4 Interaction of the positive relationships between perceived support and successful implementation

Van Meter and Van Horn (1975) stated that the size of the agency staff was a major factor to make organizational capacity to implement policy as well as some other needed resources, such as government funds and other financial resources supplied to policy programs for facilitating program implementation. This was parallel to what the author found out, that industrial clusters needed certain

financial funds to run their activities, such as the expenses for the administrative office and other needed activities. To assist with government funding is still needed for every industrial cluster at every development stage. However, the amount needed depends on the financial status of that industrial cluster. Industrial clusters will absolutely fail if they have no supporting budget at the beginning stage since it is difficult to look for cooperation if enterprises still do not see the benefit. As a statistical result, perceived support as positively influential on successful implementation with a p-value < 0.05 and path coefficient = 0.33.

7.3.5 Interaction of positive relationships between quality of project and successful implementation

Regarding the quality of projects, it is agreed that successful implementation influences successful implementation. Elmore (1979) has stressed that the complexity of the function of both the absolute number of actors and the number of transactions between them which is required to accomplished a given task. This can be applicable to measuring the quality of a project since the completed structure of an industrial cluster as appearing in cluster mapping does not seem to be complex but the components of it have what industrial cluster should have in order to accomplish the goals

of implementing the cluster. According to the review of the literature and strong statistical evidence (p-value < 0.01, path coefficient = 0.66), this reconfirms that the quality of a project has a positive relationship with successful implementation.

7.3.6 Interaction of positive relationships between clarity of goals and successful implementation

Clarity of goals can refer to unambiguous policy standards and goals. Van Meter and Van Horn (1975) claimed that both terms, policy standards and goals, should be easily measurable. According to them, those policy standards and goals should have clear directives and should provide a structure implementation process that supports methods for the proper policy implementation. Thus, clarity of goals cannot refuse to count as an important factor in creating successful implementation. The statistical results prove that clarity of goals has a strong positive effect on successful implementation with a p-value < 0.05, and a path coefficient = 0.41.

7.3.7 Interaction of positive relationships of ability of cluster members and policy implementers regarding successful implementation

The key effect of leading policy implementation to be a success cannot deny that the ability of cluster members and policy implementers should be taken

into account. Van Meter and Van Horn (1975) mentioned that successful implementation is a function of the implementing organization's capability to do what is required of it. This statement refers to the ability of policy implementers to overcome any obstacles in implementing the project. With their idea, the organization's capability can extend to that the ability of cluster members is another parallel factor to accelerate the faster of successful implementation. In the real practice of the DIP, it was found that the ability of both cluster members and policy implementers was one of the key success factors in making an industrial cluster project a success. Ability can refer to related work experience, level of education, and cognition and understanding of what procedures make the project reach goals. In this case, statistical evidence (p-value $\geq$ 0.05) does not show the significance; however, the positive path coefficient (+0.25) insures that the ability of cluster members and policy implementers has a positive effect on successful implementation.

8.0 Conclusion

8.1 There are four factors including perceived support, clarity of goal, ability of cluster members and policy implementers, and quality of project are contributing to the success of industrial cluster implemen-

tation in Thailand.

8.2 There are five suggestions for the Department of Industrial Promotion (DIP) to improve the implementation of industrial cluster in Thailand as follows.

First, the author found that the process of formulating cluster policy was crucial to effective policy implementation. Better policy formulation will lead to better policy choice and better implementation. The cluster implementation by the DIP has started to formulate industrial cluster project since industrial cluster has been considered the popular issue by the well-known scholar: Michael E. Porter (1997). With Porter's issue regarding enhancing national competitiveness, it leads the Thai government to apply the sense of initiative cluster is for enhancing Thai competitiveness in the world. Thus, the DIP treated the development of the industrial cluster as a "project" with the objective of having a finite time span for implementation and to give highest priority to quickly meet targets and measurable outcomes. It seems that the development of the DIP industrial cluster tended to be "issue-oriented" and focused on "response" so that the implementation of the industrial cluster by the DIP was misleading concerning the complex and dynamic aspect of the cluster concept. The DIP needs to consider that industrial cluster development is a complex and continuous

development process, not just a project. The industrial cluster involves interdependent actors, and interactions among key actors in clusters are crucial to the success of cluster policy. The recommendations for the DIP to develop a more successful industrial cluster regarded emphasizing the "cluster process" rather than the "cluster project." Therefore, the DIP requires to input the clarity of goal in order to serve the "cluster process" go smoothly since the policy implementers know exactly what are the virtual goal for the cluster.

Second, cluster initiatives seem to be more successful if they are based on a shared conceptual framework of competitiveness. In reality, the lack of a broad consensus about the drivers of economic performance turns out to be the factor most strongly associated with the failure of cluster initiatives. The implication for success is to be more manageable in the interest of different cluster members/ enterprises in the cluster. Enterprises tend to be more interested in productivity growth and innovation, while government tends to be more interested in job creation than higher productivity, so there are differences in interests. This implies? that the sharing of the conceptual framework of competitiveness from the point of view of cluster members and the DIP will be needed to realize successful implementation. The full cooperation

among stakeholders of sharing conceptual framework regarding the cluster developmentwill lead to the good quality of project since it is the fundamental needs for implementing the project.

Third, in order to select an industrial cluster to develop from the empirical statistics, it was found that a cluster seems to be more successful if it focuses on a cluster already strong and set in a location with a good business environment (Ketels, 2003). Therefore, the DIP should focus firstly on the selective activation of clusters rather than on doubtful future clusters. Activating clusters seems to be more successful if it is part of a broader strategy to improve the microeconomic business environment in a particular region or country.

Fourth, the strong support of the successful industrial cluster is that the cluster needs at least a small operational budget to finance its administrative cost with a dedicated "cluster facilitator" or "cluster development agent (CDA)." If such a resource is not available, cluster initiatives are very difficult to sustain over time. It is interesting that no negative effect of government financing for supporting a project as found, including the support for the analytical results in this dissertation. As long as cluster members or enterprises are heavily involved in the governance of cluster initiative, the

government seems to have a positive role in providing an operational budget.

Fifth, DIP should pay more attention to understanding the rationales, motivations, and capabilities of each player in the industrial cluster. The result is to make DIP officials demonstrate the successful development of the industrial cluster since they will be able to understand not merely "what" strategy should be applied but also "when" strategy should be implemented. Frequently, by interviewing cluster members or enterprises, the answer was that DIP officials, many times, considered a popularized strategy in making a policy a success but discarded about appropriate period of time of policy implementation. The terms of understanding rationales, motivations, and capabilities were related to be a partial scope in psychological thought of implementing a policy. The implementation of industrial cluster development should take into account paying more attention to "right time" and to "sequence."

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