

Critical Success Factors to Develop an Innovative Learning-Cluster: Empirical Analysis of Footwear Industrial Cluster in East Java

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Abstract. *Cluster approach has attracted discussion among scientists and has been widely used for economic development today. Various studies have shown that clusters can provide economic benefits and become source of economic growth. Many literatures have studied about cluster, but there is still necessity in identifying factors to develop an innovative learning-cluster. This paper proposes the critical success factor to develop an innovative learning-cluster. Through case study in a footwear cluster in Indonesia, it is found that several categories are not sufficient and needs to be strengthened. General preconditions become the foundation or the initial base, while networks & partnership, institutional capacity, and market & infrastructure for learning become the boosting factor. This indicates that there is a process which has to be passed to develop an innovative learning-cluster and it cannot directly be created from its establishment. For footwear cluster, technical skill and knowledge of human resources, particularly designer and marketing personel becomes key factor for learning to achieve innovation. Government policy becomes a limiting factor to form an innovative learning-cluster. Leadership factors also plays important role to direct strategic vision for the cluster.*

Keywords: *Innovative learning-cluster, success factors, innovation capacity, innovation performance, cluster development*

Abstrak. *Pendekatan kluster telah menjadi bahan diskusi bagi peneliti dan saat ini telah banyak diterapkan dalam rangka pengembangan ekonomi. Berbagai studi telah menunjukkan bahwa kluster dapat memberikan manfaat ekonomi serta menjadi sumber pertumbuhan ekonomi. Berbagai literatur mengenai kluster telah banyak berkembang, akan tetapi masih terdapat kebutuhan untuk mengidentifikasi faktor-faktor untuk membangun sebuah innovative learning-cluster. Tulisan ini berupaya mengemukakan faktor-faktor penentu kesuksesan bagi pengembangan sebuah learning-cluster yang inovatif. Melalui studi kasus pada kluster industri alas kaki di Indonesia, diperoleh temuan bahwa beberapa kategori faktor tidaklah cukup dan masih perlu diperkuat untuk membentuk suatu learning-cluster yang inovatif. General preconditions menjadi dasar atau basis awal pengembangannya, sementara networks & partnership, institutional capacity, serta market & infrastructure untuk pembelajaran menjadi boosting factors. Hal tersebut mengindikasikan bahwa terdapat proses yang harus dilewati untuk mengembangkan sebuah innovative learning-cluster, serta tidak dapat langsung diciptakan sejak awal pendiriannya. Untuk kluster alas kaki, technical skill dan knowledge yang dimiliki sumberdaya manusia khususnya desainer dan personel pemasaran menjadi faktor kunci bagi pembelajaran untuk menghasilkan inovasi. Kebijakan pemerintah menjadi limiting factor untuk membentuk learning-cluster yang inovatif. Sementara itu, faktor kepemimpinan juga memegang peranan penting bagi visi strategik pengembangan kluster.*

Keywords: *Innovative learning-cluster, faktor penentu kesuksesan, kapasitas inovasi, innovation performance, pengembangan kluster*

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Introduction

Cluster approach has attracted discussion among scientists and has been widely used for economic development today. Cluster describes the systemic character of modern innovation and interactive innovation process (Hertog, Bergman, & Charles, 2001). Cluster has various definitions. The one which is mostly used is definition by Porter (1998) who defines cluster as geographical concentration of firms and institution in particular area. Other definition by Padmore and Gibson (1998) proposed cluster as concentration of firms which obtain advantage from its interaction, either by competition or cooperation or by its role as supplier or customer in its value chain.

This industrial cluster is not restricted by political boundary, whereas its occurrence can be local in a city or province, or even broader across nations or even international. Other definition by Sonobe and Otsuka (2011) state that cluster is geographical concentration or localization of firms which produce similar or almost similar product in a small area. The definitions stream from business economic and innovation system. Nevertheless, from those definitions, it can be concluded that cluster consist of firms and other supporting institution, and they interact to achieve specific purpose.

Various studies have shown that clusters can provide economic benefits in a state which filled by uncertainty, where the cluster can become source of economic growth (Muro & Katz, 2010). Clusters can also affect productivity through various ways. One is through innovation which is obtained mainly through the activity of learning. In this globalized era, innovation is often depending on the interaction of market and non-market between actors which are mutually dependent. Interaction among actors in a cluster is typically based on trade relations, innovation, or the flow of knowledge in its various forms. Each country or region has a cluster with particular characteristics and different specialties, which

depend on the economic characteristics of the country or the region. Studies of cluster are very useful to be used as an analytical instrument in understanding the economic establishment, specialization and the role played by cluster in broader economic level. In developing countries, for example, to overcome poverty requires the development of industrial clusters because the concept is not only creating opportunities for work employment in the manufacturing sector but also the forerunner to the development of the industry through the creation of economies of their agglomeration (Glaesser, 2010; Choe & Roberts, 2011). However, most of the industrial clusters in developing countries have low performance despite having great potential for growth, especially to be an innovative cluster.

In free trade era, competitive advantage is required to survive and improve business performance. The important question is why there are several successful clusters while others are not able to achieve the same success. In global competition, innovation is an important thing that needed to remain competitive in the free market. Therefore, an ordinary cluster should be developed into innovative clusters. Related with development of a cluster, Kuchiki (2008) developed flowchart approach to look at the stage of cluster development.

In this approach, the second stage is called innovation stage which is usually achieved after the agglomeration step. To reach that stage, some supporting factors are needed (Kuchiki & Tsuji, 2008) such as existence of universities and R & D institutions, infrastructure, human resources, adequate living conditions, as well as the presence of anchor person. Innovation is also determined by the degree to which the company operates (Tavassoli, 2015). In the life cycle of the industry, there are several things that affect innovation. Tavassoli divided them into 2 categories: 1) decisive innovation propensity and, 2) innovation intensity. Determinants of innovation propensity include human capital, and firm size. On the other hand, the factors that determine the intensity innovation include investment in R & D.

DTI (2006) points out seven factors that influence the development of a cluster, which includes the existence of networks and partnerships, the existence of a strong skill base, innovation capacity and R & D, the presence of large companies, a supportive policy environment, and leadership. Meanwhile, the institutional mode of a cluster is determined by the situation in the region, the preconditions, and the selected destination. Mode selection explicit or implicit top-down bottom-up can be attributed to a variety of dimensions, such as geographic scale, regional structural preconditions, stage of the life cycle or the orientation of the sector (Fromhold-Eisebith & Eisebith, 2005). Other concept called GEM models developed by Padmore and Gibson (1998) is a tool to quantify the strengths and weaknesses of regional industry clusters. The model was developed from the expansion of Porter's Diamond Model. GEM consists of three main elements namely Groundings, Enterprises and Markets, which includes three of the six factors. The sixth factor is a fundamental factor that determines the success or failure of a cluster.

From above paragraph, it can be concluded that the study of the factors that influence the development of an innovative cluster is rarely found. One study conducted by the DTI (2006), which discusses the factors that play a role in the development of a cluster in general. Other studies related to the determinants of competitiveness clusters (Padmore & Gibson, 1998; Boja, 2011), and study of factors that influence the development of industrial clusters based on the concept of the innovation system (Rianto, Zulhamdani, Laksani, & Prihadyanti, 2009).

There are also many other studies about cluster. However, there has been no study that discusses factors that influence the development of clusters in particular to be a learner for achieving innovative clusters. Thus, learning becomes the basic foundation to develop an innovative cluster. Most studies are leading to the development of clusters as Kuchiki (2008); Meyer-Stamer (1998); Fleisher, Hu, McGuire, and Zhang (2010).

Another study compared the approach of top-down and bottom-up in institutionalizing the clusters of innovative, role of actors in clusters (Sohn & Kenney, 2007), the performance of innovation (Gebreyesus & Mehnen, 2013), a strategy / policy development for cluster (Lee, 2006; Barbieri, Di Tomasso, & Bonnini, 2012), knowledge management in the cluster (Park, Lee, & Park, 2009; Morosini, 2004), value chain framework for cluster (Giuliani, Pietrobelli, & Rabellotti, 2005), and innovative clusters (Verbeek, 1999; OECD, 2001).

Meanwhile, existing studies of the cluster in Indonesia has also been widely conducted. Weijland (1999) analyze condition of clusters consisting micro enterprises in rural areas. The study shows the importance of clustering in the early stages of development and the importance of government policy in the development process. Another study conducted by Dhewanto et al. (2012). In this case the authors analyze the cluster effect in terms of innovation capabilities and performance of its business, related to the use of information and communication technologies (ICT).

Pakpahan (2012) analyzed the development of the ceramic cluster in West Java. The results of this study show the importance of mental and quality of human resources in the face of the global market as well as the need to change the approach of the actors in the cluster so that clusters can flourish. Purwaningrum, Evers, and Yaniasih (2012) see the knowledge flow of academia-industry collaboration in the automotive industry cluster. Another study conducted by Novani, Putro, and Hermawan (2013) who apply soft system methodology in clusters batik while Burger, Kameo, and Sandee (2001) reviewed agro cluster and found that the target market of enterprises in clusters affect the character of the contract and other forms of interaction in the cluster. Kuncoro (2013) analyzes the condition clusters of the economic aspects of geography, while Narjoko (2008) look at the determinants of industry agglomeration in Indonesia.

This paper will analyze the determinants or can be said as critical success factor to develop innovative learning-cluster. The analysis is directed to identify factors which have influence in how a cluster can be developed into innovative clusters through learning. A learning-cluster can be described as an industrial cluster in which the actors are interacting to conduct learning activities to obtain accumulated knowledge. Furthermore, a learning-cluster strived to achieve an innovative learning-cluster, in order to achieve innovation performance and for last will achieve continuous innovation. To have continuous innovation, actors in the cluster must conduct continuous learning to form sufficient innovation capability to produce inventions and eventually commercialized as innovation.

These learning resources can be obtained through various means such as learning by doing, learning by operating, learning from changing, learning by searching, learning by hiring, learning by training and learning by system performance feedback (Bell, 1984). Additionally, Marcelle (2004) adds learning by sharing, learning by field experimentation, and learning by large-scale project management. By analyzing the critical success factors, through a case study on the footwear industrial cluster in Indonesia, the condition of these factors to identify opportunities these clusters to grow as innovative learning-cluster is being analyzed.

Research Methodology

This study used qualitative approach with positivistic paradigm, by conducting a case study in a footwear industry cluster in East Java. At first, author proposed several categories of factors as critical success factors to develop an innovative learning-cluster. Data/information was collected through literature study, in-depth interviews and focus group discussions (FGD) with parties associated with clusters. These parties include the businesses in clusters, especially the prevailing party as footwear manufacturers,

associations, policy makers both central and local government, as well as the working group as a cluster manager. First of all, an extensive literature study is conducted to obtain category of factors and their operational variables. The next step, data and information about the condition of the factors that influence the development of clusters to be innovative clusters and perception of cluster members to those factors are collected. Data/information is collected through indepth interview and FGD with actors of the cluster, including footwear manufacturers and sellers, associations, policy makers both from central and local government, as well as the working group. In-depth interview is conducted to obtain general condition and preliminary understanding about the cluster. FGD is conducted to discuss and make a qualitative assessment about the real and ideal condition of the factors. A follow-through indepth interview is conducted to deepen the information and gain more understanding about the factor's condition.

Factors analyzed in this article include general preconditions, network & partnership, learning capability & innovative capacity, institutional capacity, and market & infrastructure for learning. The operational variables were shown in Table 1 while the model for developing an innovative learning-cluster is shown in Figure 1. Qualitative analysis was performed on the real conditions of each of these factors and their effect on the performance of the cluster by causal analysis to see the gap between the real and ideal condition.

Table 1.
Research Variables

No.	Factor Category	Operational Variables	References
1.	General preconditions	Geographic condition Sufficiency of infrastructure Market presence Availability of supporting industry	Padmore & Gibson (1998); Fromhold- Eisebith & Eisebith (2005);Kuchiki (2008)
2.	Networks &partnership	Partnership with supplier and supporting industries Leadership Common vision/strategy	Hart (1997; 2000); Padmore & Gibson (1998) UNIDO (2001);DTI (2006);Sydow et al (2011)
3.	Learning capability and Innovative capacity	Technical skill and knowledge of human resources Technological capability	Bell (1984); Lall (1992); Marcelle (2004); DTI (2006); Tavassoli & Tsagdis (2014)
4.	Institutional capacity	Government policy Educational institution, R&D institution and university	Padmore & Gibson (1998); Tavassoli &Tsagdis (2014);Tavassoli (2015)
5.	Market and infrastructure for learning.	ICT for learning infrastructure Learning-enabler market	Hempell(2004); McCormick & Oyelaran Oyeyinka(2007); Idota et al (2014)

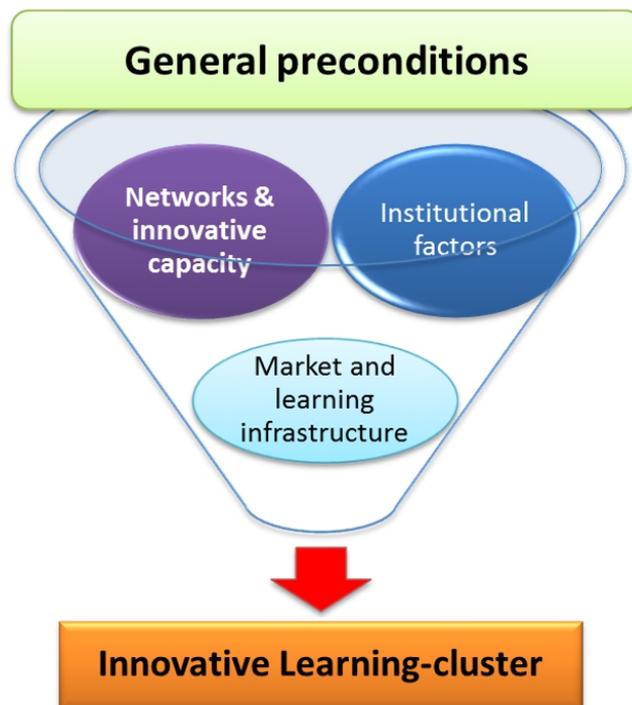


Figure 1. Critical Success Factors to Develop an Innovative Learning-Cluster

Results and Discussion

Results

Based on results of interviews and FGD, this section will describe the condition of the variables associated with the development of innovative industry clusters. Explanation of conditions of each variable of innovative learning-cluster is as follows:

A. General Preconditions

General preconditions cover various aspects so that a cluster can run the business as a routine. If a cluster has not met the minimum preconditions, then the cluster would be difficult to develop to become innovative learning-cluster. Preconditions include things such as resources or geographic condition, infrastructure, the presence of sufficient market, labour, as well as the presence of the supplier company and supporting companies.

Based on the result of FGD, East Java cluster had strategic location and potential to be the second largest footwear industry in Indonesia especially supplying East Indonesia area, and also world value chain which is particularly concerned with tannery activities. Labour is considered to be sufficient in terms of number. In infrastructure, East Java has inter-island harbour with sufficient transportation infrastructure which is supportive for accelerating export activities and also toll road but still need more improvement to served better access to the harbour. In energy, cluster member felt that the availability is sufficient, but the price is expensive, especially with progressive tariff. Based on these, it can be concluded that overall, the general precondition is sufficient for the cluster to conduct routine daily activities.

B. Networks and Partnership

Factors in this category include those which embedded in business actors in the cluster. The factors are needed to enable learning in order to build innovation capability.

Partnership with Supplier and Supporting Firms

To be an innovative learning-cluster, presence of supplier and supporting firms are not only needed to create business relationship, but also interaction for innovation.

Therefore, cooperative and agile relationships are needed to create cooperation resulting in innovation in the supply chain and even value chain. Partnership is also needed in R&D and other innovation activities, so that a cluster can develop dynamically. Positive principles in these cooperations become particular importance because in a cluster there are many actors of which inertia among those actors is interrelated and influencing its development to which will create system innovation.

For footwear industrial cluster, the main raw material is from skin of sheep or cow. Therefore, it is vital for the cluster to have sustainable supply of raw material. In footwear cluster in East Java, the natural raw material was interchanged by synthetic one, due to the scarcity of the natural one. The local supply is very rare, due to its high export. Farmers chose to export the natural skin because it gives them higher value than to sell it to local industry. This condition becomes drawback particularly when footwear industry is willing to have higher production related with high demand from customer, because the raw material is very limited and the price is very high. Therefore, very often, the industry chose to buy low quality material from different supplier from different islands in Indonesia.

Cooperation among firms in the cluster has a tight bond, which can be seen from activities in the association, in which the firms were trying to solve problems together. Nevertheless not all firms in the cluster became the member of the association. The association had important role particularly in helping industry for solving problems which were related with external parties. The structure of the company in terms of scale enterprise is an important factor for the sustainability of the footwear industry cluster.

The structure of the footwear company that operates in East Java is quite varied. There are small, but there is also dominating players (mostly large firms). The structure of the company in terms of products and services produced is also considered an important factor.

There are companies that produce raw materials such as leather tanning, stitching services firms, some firms which produce end products such as various kinds of shoes, etc. The structure of the company in terms of financial strength is considered to be an important factor in the development of the footwear industry cluster. The structure of the financial strength of the footwear industry in East Java usually varies according to the size of business scale. SMEs' financial strength is mostly weak, but there were also a large industry that has high financial strength. Competition among companies in clusters is considered to be an important factor. This competition in the footwear industry cluster in East Java last is not too tight, because the segment of production or targeted market share varied and differ among firms.

Leadership

Leadership factor with vision and management capability in technology and innovation is needed to create supportive learning environment in order to achieve successful innovation. Therefore, a technology visionary leader with technology awareness is hoped to direct the development and cooperation in the cluster and also conduct coordination function with related parties either inside or outside the cluster. The leader can be individual or organizational actor either formal or informal. In East Java cluster, role of leadership of cluster facilitator was very important to drive cluster strategic direction. The facilitator possesses good managerial skill, with good understanding. This is supported with support of working group director which was hold by Director of Industrial Agency. Membership in the working group had no significant change every year and they had high commitment to develop the cluster.

This is also supported by great leadership of cluster facilitator in mobilizing and uniting firms to build the cluster. The cluster facilitator also understands how government sector works and adapts it with private sector. This is important particularly to align funding program from government with cluster activities.

Cluster facilitator: *“working group's members are directly engaged. We are not always met— only when there are problems occurred. When there is appropriate time, I will ask all of our member to have a meeting and they will present their progress (of their business performance). From there I can draw the strategic planning for this cluster. ... I can help facilitate the budget for the development of this cluster using government budget. I try and do my best to combine because I have experience in working with government. I have access with local and central government and I use it to develop this cluster”*.

Common Vision and Strategy

Beside leadership factor, to direct the development of cluster and cluster inertia, common vision and strategy is needed particularly for firms in the cluster. This is important to expedite common innovation activities to form system capacity to anticipate and to react for chance and threat for their business. One form of the common strategy in the cluster is the presence of common willingness which included in the common vision of cluster members. In our case, the vision to develop cluster together are already implemented for most firms and almost all of large firms, especially for firms who becomes the member of association.

Cluster's actor from business side (in an FGD): *“there are shared vision to develop a sustainable cluster and it has been implemented by part of the whole players, especially to build the industry together”*.

C. Learning Capability and Innovative Capacity Technological Capability

Basically, technological capability includes investment capability, production capability, and linkage capability (Lall, 1992).

Investment capability includes skill and resources that are needed to identify, prepare, obtain, design, construct, fulfill, employ, and create new facilities or conduct an expansion. Production capability includes basic skill such as quality control, operation, and maintenance to achieve higher capability such as adaptation, improvement, or development of technology for higher level, started from research, design, until innovation. Linkage capability relates with skill in transmitting information, skill and technology to other parties and receive it from other parties e.g. supplier, subcontractor, consultant, or technology institution.

Machine and equipment are part of 'hard' technological capability, which is important for production system. In footwear industry, the technology is important because it defines industrial productivity. In East Java case, most of the firm in the cluster have obsolete with low efficiency. The firms feel necessary to invest in new machinery, but not enough in their capital. The available capital is only for operational, but not for strategic investment. To solve the problem, government has tried to revitalize machines with several enlightenment schemes.

Besides availability of the machines, accessibility of machine and equipment also remarked as important factor for footwear industry. In East Java, the accessibility factor is concerned to be easy because there are many machine and equipment suppliers in the area, either for the local or imported ones. Nevertheless, the production capability was bounded by the limited number of qualified human resources.

Technical Skill and Knowledge of Human resources

Knowledge and skill of human resources in some extent are very important for learning activities which is important in innovation process and therefore becomes key factor for a cluster to innovate. They are important in defining cluster capacity to create improvement either incremental or radical. This aspect is also important and influencing absorptive capacity which is needed to master

a technology and further for conducting technological learning. This capability sticks on human resources through formal and informal education. To improve it, internal effort from firms as human resource development program and also government support through training becomes particular needs.

In East Java cluster, number of skilled labour was insufficient. This caused labour piracy among firms in the cluster. Some training are tried to be conducted to produce more skilled labour but the results was unsatisfying. Most workers cannot categorized to be skilled ones, due to unreadiness to work as professionals, particularly when they should worked underpressure in high demand project or when they were moved to other area. Other reason is related with certification obtained with particular skill that must be mastered. Regeneration of skillful operator of high-tech machinery which often works in large firm is also very slow.

Other important position in a footwear firm is the designer. The capacity to create design determined customer satisfaction. Number of designer is sufficient, but the skill and creativity still needs more improvement, although there are educational institutions related with design in the area. Their capacity to design a product still cannot be compared with foreign designer, e.g. from Italian designer who have ever worked in the cluster. Most of the local designers are only refer to available design. Most of the designer could not serve technical complaint from customer as what the foreign designer able to do. Firms in the cluster did not considered high education for designer but only their capacity, and also considering their capability to pay the salary.

Other important worker in footwear cluster is marketing officer. Its role is very important due to unfixed distribution channels. Therefore, experience marketing officer was basically needed. This is mostly used by SMEs, while the large firms usually more focus on export demand. Large firm will only involved SMEs when there is over capacity order.

D. Institutional Capacity

Factors included in institutional innovative capacity cover entities or activities by actors except the firms which may influence cluster's innovative performance. Factors in this category include:

Government Policy

Supportive government policy particularly for innovation either local or national also determines system behavior of a cluster. Besides, policy from national institution or even government from other countries either regional or global also have influence to cluster activities, particularly if the cluster engaged with global value chain. Generally, government policy can support the cluster but in more specific, there are still some unsupportive policies.

Local policy maker: *“in my opinion, the government policies are generally good enough but the implementation and how to translate the policies are not good enough... coordination is necessary and still need to be improved”*

Incentive policy also becomes important policy of cluster development in East Java. Nevertheless, actors in the cluster felt that this policy was still unsupportive, particularly to support industrial activities for mass production. In human resource development policy, Industrial Agency was actively training the labour to obtain new skill, although the result was not yet optimum. Nevertheless, managerial training was not yet conducted although it was also needed. Policy for supporting investment for firms had attempted to give credit access particularly for shoe producer. Nevertheless, the access is only absorbed for 1% and it can be said to be inoptimum.

Government has also give credit scheme, but many firms did not benefit for it due to its small amount (maximum for only Rp 10 million). Nevertheless it is more successful than the first program because it was used by 30% of firms. This policy even cannot save footwear industry which was already categorized as sunset industry. This made the industry difficult to obtain sufficient and appropriate funding.

Another related policy in energy which is very important to supply power for machinery and equipment was felt to be unsupportive. Progressive tariff implemented made high production cost and therefore the product price was not competitive.

Education Institution, University and R&D Institution

University and education institution play important role in supplying qualified human resources as innovation actor in a cluster. The role is crucial in forming absorptive capacity and knowledge base and also creative culture for innovation. In East Java industrial cluster, R&D institution and university give supporting function in a cluster e.g. for sharing machine/equipment for production or testing services. They gave support for R&D activities and also improvement activities although not in the crucial aspects and firms particularly the large ones had also conducted internal R&D and improvement.

There are some impediments for university to give full support to the cluster: 1) limited capacity of university in East Java to conduct R&D/improvement which ready to implemented by the firms, 2) other university/R&D institution in different area which has longer distance cannot provide graduate/student with competitive skill due to limited human resources in the specific area who were highly dedicated, 3) unsupportive government policy related with expertise, curriculum, and mobility of researcher/lecturer to cooperate with industry, 4) unsynchronize research topics from university and R&D institution and technology needs from the industry.

E. Market and Infrastructure for Learning

To conduct successful and continuous innovation, firms in the cluster needed to conduct learning. This activity may be driven by market through its demand, or by strategic intention of the firms in the cluster. These must be supported by sufficient access to the source of knowledge. The most possible and potential media which has rapid growth at present is ICT.

ICT infrastructure

East Java area has good internet connection. Nevertheless, the firms in the cluster are mostly used it for marketing, and still very manual, particularly for export purpose. The firms still needed to develop the ability in marketing and also increase their capacity to innovate. Unfortunately this was not supported by capacity of the human resources.

Footwear business owner: *“we have used internet for our business but only for marketing activities, and it is still simple activities, for example for email or social media to market our products abroad”*.

Market as Learning-Enabler

Domestic market was the largest source of demand for the cluster, either from East Java or other area in Indonesia. Marketing activities of the product was supported by inter-island trade representative for which was owned by large firms and also trade exhibition organized by government. Complexity of the product for domestic market was also important to drive development of footwear industrial cluster. Domestic market relatively no demanding complex design. Nevertheless, it still needed innovation although it is only incremental ones. For export purpose, the design was more complicated and the customers demand for after-sales services. The demand was usually increasing in special days. This needs to be supported by innovation in the production system.

Discussion

All of the factors explained in the previous section are interrelated and influencing one to another. General prerequisites are basic factors to conduct business routines, without any improvement. Some factors can be grouped as learning enablers, which include technical skill, technological capability, educational institution, R&D institution, university, ICT infrastructure, and partnership. The learning enabler forms learning quality. Together with innovation capability driver and enabler which include common vision, government policy, and leadership, learning qualities will affect to innovation performance in the cluster (Figure. 2).

Based on the results, it can be said that the footwear industry in East Java face several issues that will inhibit the cluster to grow as an innovative learning-cluster. The cluster has sufficient general prerequisites but still have weaknesses in networks & partnership and innovative capacity, and institutional capacity. Without any change and intervention to the system, this cluster would not achieve level of innovative learning-cluster.

Buerkler (2013) argues that a government's support and active involvement in innovation platforms with several independent participants may create successful innovation, as long as the participants have sufficient common interest in the planned innovation and also complementary and appropriate resources (both human and financial) for joint learning and developments. Based on the case study in East Java cluster, this is not enough since the weak government policy and in excellent general prerequisites still occur in the cluster.

Salami, Darberazi, and Khani (2015) proposed that common innovative infrastructure will determine innovation process in a cluster. Innovative resources in the cluster will develop innovation and result in innovative output and finally create downstream commercialization. In this case we should be careful to define whether the innovation is conducted dominantly in-house or dominated by other external parties. Some research had proven that dominant in-house innovation is more successful and has longer effect to a firm.

In innovative learning-cluster, a dominant internal innovation development should have the same result too. This relates with learning activities in the cluster, which involve many parties with common vision and leadership from key person supported with government policy which are united as innovative capability driver enabler. What happened in East Java cluster has proven that all of the factors should occur in order to develop an innovative learning-cluster.

Table 1.
Factor's Condition in Indonesian Footwear Industry

Category	Factors	Qualitative Assessment	Factor's Condition
General prerequisites	Geographic condition	Very strategic	Near to harbour; strategic location for marketing
	Sufficiency of basic infrastructure	Good	Good in transport infrastructure; good ICT connection; expensive electricity tariff
	Market presence	High	High domestic market; great potential in international market, but less competitive than China; quite complex consumer demand, but less intricate than the international ones.
	Availability of supporting industry	Sufficient	Imported raw material; the best quality of raw material was exported; imported raw material could only obtained by large firms, while the less quality was used by SMEs. Increase in price of raw material was due to 'mono poly' of raw material by large firms.
Networks & partnership	Labour availability	Sufficient	Available, but deficient in number (particularly in ramp up season, and that time the wage was expensive)
	Partnership with supplier and supporting industries	Low	Firms had no understanding about the importance of cooperation; wrong mindset
	Leadership	Good	Person with good leadership was available, but had no strategic/innovation management skill
	Common vision/strategy	Available but only implemented by some actors in the cluster	There was common vision and strategy, but only implemented, mostly by large firms and firms which was included in the working group.

Table 1. (continued)
Factor's Condition in Indonesian Footwear Industry

Category	Factors	Qualitative Assessment	Factor's Condition
Learning capability and innovative capacity	Technical skill and knowledge of human resources	Low	Low skill of designer; no specific marketing persons; very rare skilled labour.
	Technological capability	Sufficient	Non-fabricant firms was dominant; most were using manual sewing machine; easiness to obtain machinery (high accessibility)
Institutional capacity	Government policy	Less supportive	Expensive price of electricity due to energy policy of progressive tariff; very unsupportive import policy nad development policy of raw material; support on machinery revitalization, training.
	Educational institution, R&D institution and university	Available but with inoptimum function	Support from university; contribution of R&D institution; support from technical implementation unit; the support cannot solve main problems in the cluster.
Market and infrastructure for enabling learning	ICT infrastructure for enabling learning	Sufficient	Sufficient but the human resources in the clusters could not optimally use it for learning (only use ICT for marketing and communication, but not for knowledge sharing or source of knowledge)
	Market for enabling learning (learning-driver market)	Available	Available but difficult to respond it since the human resource capacity is low and limited high quality raw material.

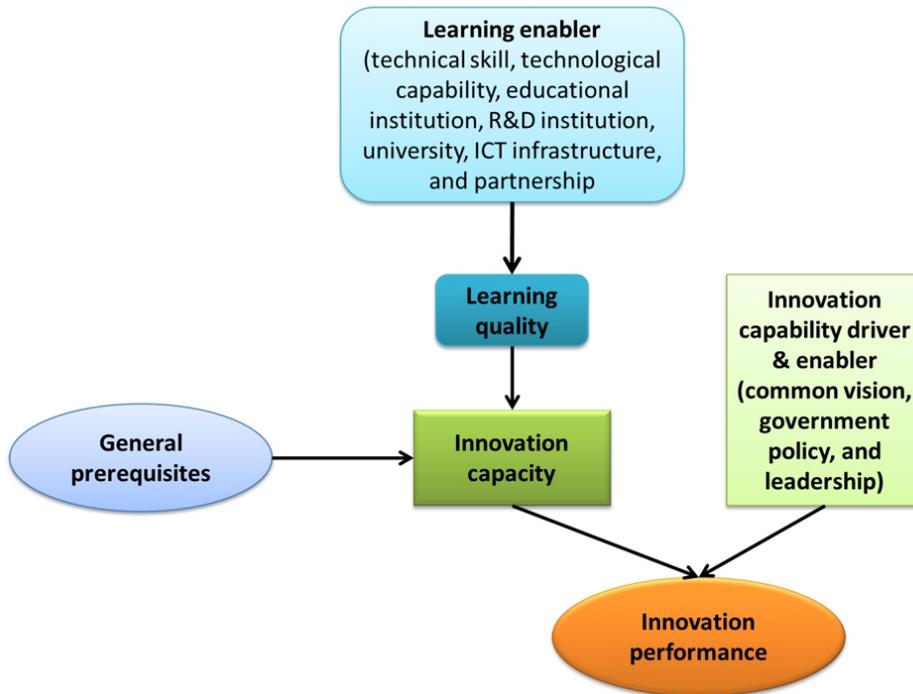


Figure 2. Formation of Learning-Based Innovation in Industrial Cluster

Successful clusters mostly involve a complementary mix of three kinds of businesses (Scheer & Zallinger, 2006), which include internationally active companies, suppliers or supplementary business, and particularly dynamic knowledge-based specialists. The internationally active companies seem to be not very important in short-term due to the high domestic demand. Nevertheless, it will become particular importance in the future. The supplier and supplementary business was also become important for East Java cluster, and it has not yet well built in the cluster. Whilst, the dynamic knowledge-based specialists are not available in the cluster. Thus, it should be part of the role of universities and R&D institution, even the level of knowledge is not very high due to the nature of footwear production. Higher level of knowledge for marketing purpose is more necessary. Seeing further to the role of universities and R&D institution, it is indicated that the national innovation system (NIS) does not running well. This is due to the limited support and unideal condition of their role to support the cluster.

According to ECIA (2013), innovation mode should consider different types of knowledge. In the context of footwear cluster, it refers to knowledge base of the main product which included as market-driven knowledge and lead to art-based innovation process. In this case, footwear cluster should be supported by strong design capacity and branding strategy.

Overall, this study still has some weaknesses, particularly in explaining about level of impact of each factor to the formation of the innovative learning-cluster. Thus, future research should obtain empirical model using quantitative analysis to obtain the level of variable relationship and its impact to probability of the formation of innovative learning-cluster. Other future research should encounter impact from the absence of a variable to the cluster formation and its innovativeness. Regarding the limitation of positivistic paradigm, other study should consider different paradigm, such as triangulation or critical realism. For triangulation study, the most possible method should combine qualitative and quantitative study.

Nevertheless, this method should have great effort in data/information collection process, due to knowledge gap in scientific language and considering participative willingness from the actors of the industrial clusters in Indonesia. Other paradigm, such as critical realism can also be applied for cluster study. Such paradigm will need higher effort to collect data/information from several clusters with similar characteristics.

Conclusion

This study proposes that to develop an innovative learning-cluster, several categories of factors are needed. General preconditions become the foundation or the initial base, while networks & partnership, institutional capacity, and market & infrastructure for learning become the boosting factor. This indicates that there is process which has to be passed to develop an innovative learning-cluster and it cannot directly being formed from its establishment. The factors are interrelated and influencing.

Based on the case study in footwear cluster, we can have several lessons learned. The cluster cannot develop further to be an innovative learning-cluster due to the absence or low quality/quantity of some factors. The cluster has sufficient preconditions, but not enough in networks & partnership, institutional capacity, and market & infrastructure for learning. For footwear cluster in Indonesia, technical skill and knowledge of human resources, particularly designer and marketing personel becomes key factor for learning to achieve innovation. This is due to the low level of technology used for the product and the competition with foreign competitors. Based on the analysis, it seems that government regulation plays a key role. Although the cluster has already conducted learning but the the government policy is limiting the key innovation activities, therefore the cluster cannot have enough strength to compete with global competition. Leadership factors also plays important role to direct strategic vision for the cluster.

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