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著者	Choi Sang Chul, Jiang Xinwei
journal or publication title	Kansai University review of business and commerce
volume	20
page range	21-44
year	2021-03
URL	http://doi.org/10.32286/00022666

Decline of Local Industrial Clusters in Japan and the Role of Merchant Coordinators for Sustainable Development of These Clusters

Sang Chul CHOI*, Xinwei JIANG**

Abstract

This study describes the present situation of the Chemical Shoes industrial cluster in Kobe city to empirically clarify issues related to Japanese industrial clusters. It reviews the extant literature on linkage firms and focuses on the crucial role that they play in the sustainability of industrial clusters. Additionally, a new rationale for the sustainability of industrial clusters is provided, and “merchant coordinators” are described as the new leading actors in the sustainability of industrial clusters by applying commercial theory, value network theory, and the latest network theory of community capital. Furthermore, the rationale for transcending beyond geographical constraints and the hidden cause for the difficulties faced by industrial clusters in being sustainable are explained. Finally, a hypothetical process model for the sustainability of industrial clusters is proposed by focusing on linkage firms and merchant coordinators.

Keywords: Kobe Chemical Shoes industry, linkage firms, merchant coordinators, sustainability of industrial clusters, hypothetical process model

*Professor, Faculty of Business and Commerce, Kansai University

**Lecturer, Faculty of Business Administration, Yamanashi Gakuin University

1. Introduction

Local industrial agglomeration (hereinafter referred to as a “cluster”) in Japan has long been exposed to the trends of modernization and globalization. However, Japan’s industrial cluster-related policies, which were implemented using a lot of subsidies and workforce for a long time, have rarely been effective. This lack of effectiveness has led to a continuous declining trend in many industrial clusters scattered throughout Japan. Although, Japanese industrial clusters have attracted considerable attention for their outstanding supply chains and specialization and division of labor within the region, they are now confronted with severe situations to a major degree.

Such situations are evident in two cases that have long been praised as a symbol of Japan’s innovative industrial clusters and have turned out to be highly successful in the transformation toward producing high value-added products. One case is the eyeglasses industrial cluster formed in 1905 in the agricultural area of Sabae city in Fukui Prefecture. The other is the metal flatware industrial cluster formed in Tsubame city in Niigata Prefecture in 1911.¹⁾ However, these two industrial clusters had current sales that have declined to less than one-third of their peak levels. Based on the “failure of marketing strategies,” the causes of collapse in these clusters are analyzed as being highly dependent on original equipment manufacturer products rather than on their own brands. Additionally, many companies went bankrupt or closed down because of competition from low-priced products from Asian countries.

In contrast, when these industrial clusters are examined, “a decline due to regional lock-in” brought by path dependence used in evolutionary economics is sometimes highlighted as the cause of the collapse considering that industrial clusters have a lifecycle similar to industrial products (Toyama, 2009; Toyama and Yamamoto, 2007). Theoretically, industrial clusters demonstrate their geographical advantages by developing a productive supply chain at an early stage within a particular region and then closely linking various stakeholders. However, when industrial clusters pass their maturity stage in their lifecycle curve, their geographical advantages are likely to become serious hindrances to environmental adaptability (Jiang, 2019). This study focuses on the “decline from a regional lock-in (locality)” rather than “failure of marketing strategies.”²⁾

1) For an analysis of the actual conditions of industrial clusters in Sabae and Tsubame, refer to Nishimura (2015).

2) Choi (2001; 2015) analyzed industrial clusters from a marketing strategy perspective.

A new research perspective based on sustainable development must be adopted that differs from the conventional “local community-based” perspective to break away from the fetters of declining lifecycle phases of industrial clusters in Japan that are confronted with such severe conditions (Ueno and Institute for Policy Science, 2008). Some studies have been based on the viewpoint of “transcending beyond geographical constraints” (The Medium and Small Business Research Institute, 2001; Watanabe, 2002) but do not explicitly discuss the reality and role of leading actors beyond the geographical constraints and “sustainable process” that they performed when attempting to be continually working industrial clusters.

To empirically clarify the situations faced by Japanese industrial clusters, the severe situation of the Chemical Shoes industrial cluster in Kobe, Hyogo Prefecture—that has not attracted much attention—is first described. Then, the linkage firms that play a central role in the sustainability of industrial clusters are focused on, and past studies on linkage firms are reviewed; these discussions are then summarized. Subsequently, to illustrate a rationale for the sustainability of industrial clusters, “merchant coordinators” are described as the new leading actors in these clusters’ sustainability. Commercial theory, value network theory, and the latest social network theory—community capital—are employed to explain the rationale for transcending beyond geographical constraints and the unknown hidden causes for why industrial clusters face a number of difficulties with respect to sustainability. Finally, a hypothetical process model is proposed for the sustainability of industrial clusters centered on linkage firms and merchant coordinators.

2. Case Study: Chemical Shoes Cluster of Kobe City

(1) Formation and development of Kobe Chemical Shoes industrial cluster

The predicaments of the eyeglass industrial cluster in Sabae and the metal flatware industrial cluster in Tsubame are as previously described. The locations of the two industrial clusters are similar—they are situated far from urban centers and their large consumption. Therefore, these locational features create a time lag in distribution channels and logistics until the products that these clusters manufacture are distributed to central urban areas, which represent the main consumption area. Although the two production clusters are superior in terms of the supply chain, they face disadvantageous conditions in terms of the demand chain.

In this regard, a worthwhile subject of focus is the Chemical Shoes industrial cluster, which is in an outstanding location in the central part of the Kansai metropolitan area—the second-largest consumer market in Japan. Compared with the aforementioned industrial clusters in Sabae and Tsubame, the Chemical Shoes industrial cluster is extremely advantageous geographically because it encompasses Kobe and Osaka as its consumer markets. The industrial cluster was once a large, famous urban-located industrial cluster that extended over the commercial areas in Osaka Prefecture even though it was still located in Kobe, known as an international fashion city. However, despite the advantages of both the supply and demand chains, this industrial cluster failed to break its dependence on local wholesalers because of its excessive reliance on their trade relationship. The cluster soon became trapped in an unproductive price competition that has accelerated its decline since 2000 (Choi, 2015; Yamamoto, 2011). The formation and development process of the industrial cluster is reviewed before the actual state of the Chemical Shoes industrial cluster is analyzed.³⁾

The cluster is thought to have formed around 1952. In the postwar era, Japan faced supply shortages. Shoes made from new synthetic materials were invented in Nagata Ward in Kobe City, which is believed to be the beginning of the Chemical Shoes cluster.

Nagata Ward was originally known as the center of the rubber industry. After the Port of Kobe opened in 1868, huge shipbuilding, steelmaking, and textile factories were built on the east and west sides of the port, transforming Kobe from a small village into a newly industrialized city. Small match factories also operated around these large factories. The manufacture of matches represented the main export industry in Kobe—an industry that reached its peak in the 20th century. However, foreign capital entered the market after World War I, and match factories went bankrupt. Instead, the rubber industry started to grow rapidly and replaced the match industry. Because this rubber-related industrial cluster subsequently became an industrial cluster that produces an innovative product called Chemical Shoes, the history behind this transition is briefly discussed.

In the 1920s, rubber shoes started to attract attention as a new consumer product made from rubber, and factories spread rapidly in areas around Nagata Ward. Demand for rubber shoes as a new product was high, but labor supply at

3) The contents following this section are based on Koh (2015) and interviews with the Japan Chemical Shoes Industrial Association.

production sites faced a chronic shortage. Foreign workers, namely, many Koreans living in Japan at that time, filled the shortage and worked in the industry. During World War II, the rubber shoes industry in Nagata Ward endured a period of having a command control economy; rubber material supplies came from nearby production factories and increased considerably from the end of the War to the outbreak of the Korean War in 1950. However, the rubber industry suffered difficulties because of a decline in rubber product prices in 1951. Accordingly, almost the entire rubber shoes industry, created and sustained by Koreans living in Japan, went bankrupt.

In Nagata Ward, when the rubber shoes industry was struggling, an entirely new type of shoe that was unrelated to the conventional rubber supply chain emerged in response to the “style” or “fashion” era that arrived shortly after the struggle began. In 1952, the so-called Chemical Shoes were invented that used rubber for the sole and synthetic materials, such as vinyl chloride and nylon, for the upper part. This completely new synthetic material was superior to rubber in acid, oil, and abrasion resistance, in addition to having a beautiful appearance and being easy to process (Koh, 2015). Improvements in materials, the development of adhesives, and research on processing technologies have been accumulated, starting with the development of this innovative synthetic material.

(2) Current situation in the Chemical Shoes industry

The Chemical Shoes industry in Kobe developed new materials, constantly improved the levels of materials, and nurtured its design development capability, resulting in the establishment of a definitely firm position in the Japanese shoe market as the incontrovertible manufacturing base for fashionable shoes. The Chemical Shoes industry also actively exported shoe products, reaching a peak in 1971 at 40 million pairs that had a value of 24.6 billion yen. The industry’s status was that of a powerful industry in terms of earning foreign currency.

The Chemical Shoes industry consistently followed a growth path since its inception in 1952. However, in the 1970s, the Nixon Shock and the oil crises occurred, which devastated exporting manufacturers. The Chemical Shoes industry was also forced to transform itself to fit with the low-growth era rather than the high-growth era because of changes in the environment. Since then, Chemical Shoes manufacturers have mostly returned to the domestic market, and the industry as a whole shifted to being a domestic demand-driven industry. In the meantime, shoe demand gradually recovered, partly because of a boom in casual fashion shoes in the mid-1970s and a boom in boots starting in the 1980s.

Figure 1 illustrates the annual product sales and the number of employees working for manufacturers affiliated with the Japanese Chemical Shoes Industrial Association. The peak of the total amount of production in a year—of 86.6 billion yen—was reached in 1990, when Japan was in the midst of its economic bubble. From the 1970s to the mid-1990s, the Chemical Shoes industry had nearly 7,000 employees.

However, the Kobe Chemical Shoes industry suffered catastrophic damage from the collapse of the economic bubble and the sudden occurrence of the Kobe earthquake in 1995. Most companies found it impossible to operate their production lines. Moreover, Japan entered a period characterized by a deflationary economy and faced rapid increase in imports of low-priced footwear from Asian countries. Furthermore, the industry was continually attacked and damaged by the yen’s rapid appreciation, high crude oil prices, and other unexpected external factors, such as the Lehman Shock and the Great East Japan Earthquake. Consequently, the industry has continued to struggle with difficult situations, resulting in annual production declines. As Figure 1 illustrates, in 2019, product sales and number of employers were 33 billion yen and 2,500 persons, respec-

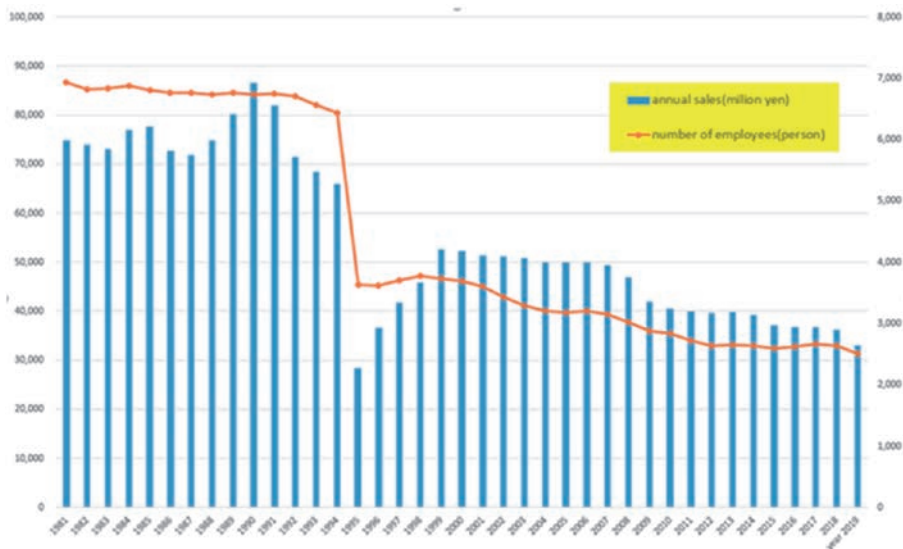


Figure 1: Trends in annual sales and year-end employees of Japan’s Chemical Shoes industry since 1981

Source: Prepared by the author using materials published by the Japan Chemical Shoes Industrial Association.

Note: The figures on the right axis represent companies that are members of the Japan Chemical Shoes Industrial Association.

tively—both of which declined to less than 40% of their peak.⁴⁾ The production amount and the number of employers are expected to continue to decline in the future considering the uncertain economic outlook and the continued withdrawal of manufacturers because of a lack of successors.

(3) Present situation of Chemical Shoes industrial cluster

In the 1960s, the Chemical Shoes industrial cluster in Nagata Ward, Kobe established its foundation as a production site. At its production peak in the 1980s, the industry operated in a framework of social division of labor with up to 70 manufacturing processes. The industry grew to approximately 1,600 related companies, including subcontractors who participated in cutting and sewing, for almost 20,000 workers. The industry was in a golden age and attracted attention as a so-called “urban-type local industry” in which local wholesalers, retailers, and logistics companies participated as stakeholders. During this period, the industry met and supported the needs of consumers in large cities, such as Osaka and Kobe, as its consumption areas.

However, as previously mentioned, the industry was forced to pursue an inevitable phase of market shrinkage because it had yet to change. The industry remained as a typical industrial cluster sustained by business networks for conventional production, sales, and local community markets despite the severe situation resulting from a supply chain damaged by the Kobe earthquake and mass imports of inexpensive footwear from Asia.

The study uses the report on the Korean Chamber of Commerce and Industry in HYOGO (2001; 2015)⁵⁾ in which Choi (2001; 2015)—one of the authors—participated in the investigation and analysis of the Kobe Chemical Shoes cluster. The report is used to clarify how the cluster failed to implement drastic measures and continues to attach to the conventional locality.

4) All figures refer to companies that are members of the Japan Chemical Shoes Industrial Association. The association was founded in 1957 and had 206 companies as members at that time. Many of these companies were managed by Koreans living in Japan. In 1981, 262 manufacturers were members of the association. After the Kobe earthquake, the number of manufacturers that closed permanently or withdrew increased rapidly. By 2019, the number of association members had fallen to 89.

5) This questionnaire-based survey was conducted with business managers, and general delivery by mail was used to obtain responses. The survey was distributed and collected from December 2014 to March 2015 to 106 companies, including the members (89 companies) of the Japan Chemical Shoes Industry Association. We received valid responses from 52 companies. The previous survey was conducted between May and August 2000 using the same distribution and collection method and targeting the same member companies. That survey was distributed to 209 companies, and valid responses from 33 companies were received. To conduct a comparative consideration with the previous survey, most of the survey items had the same content. For more details, refer to the Korean Chamber of Commerce and Industry in HYOGO (2001; 2015).

① **The Kobe Chemical Shoes industrial cluster has not attempted to break away from the locality: based on the 2015 survey results**

According to the Korean Chamber of Commerce and Industry in HYOGO (2015), the survey conducted 14 years ago showed that a number of managers of shoe manufacturers that were members of the Japan Chemical Shoes Industrial Association recognized that the Kobe Chemical Shoes industrial cluster would continue to function as a vital regional resource because it operated as an irreplaceable regional industrial cluster.

First, when asked about “from the current status of the Chemical Shoes industry, the assessment of its contribution to future regional development,” 84% of the managers gave credit to the Chemical Shoes industry for its contribution to regional development, as evident in Figure 2. However, when asked about the possibility of the industry’s future contribution, only 64% provided a positive assessment. This result represents a 20-point decrease, indicating that these managers lost confidence in the cluster’s continuous contributions in the region. In contrast, when asked about leaving the Chemical Shoes industry and shifting to other industries in the future, 50% of them responded, “Do not think so,”

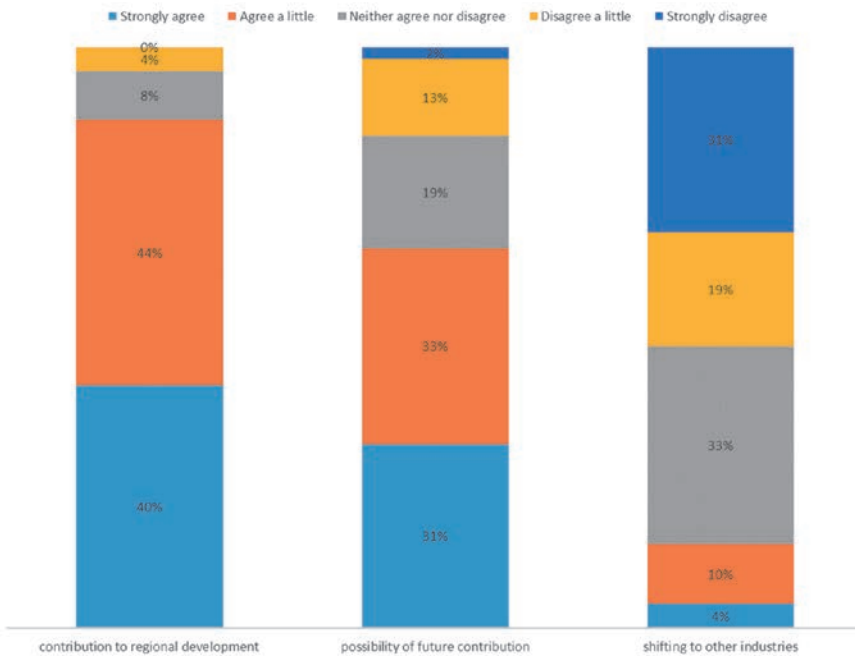


Figure 2: Responses for the Current Status of the Chemical Shoes Industry, Assessment of its Contribution to Future Regional Development, and Future Dependence

Source: Extracted from Korean Chamber of Commerce and Industry in HYOGO (2015).

whereas 33% of them responded, “Neither.” It became clear that they barely considered changing their production items despite the pessimistic future prospects of this industry.

Figure 3 shows the results from asking about “business relationships with business partners in the Chemical Shoes industry.” Although specific explanations are omitted, many respondents expressed that they have favorable relationships with their subcontract manufacturers, wholesalers (*Tonya*), and small and medium-sized retail stores in proximity to the production sites. In contrast, although they acknowledged that they maintained relatively positive relationships with department stores and major retail specialty chains possessing significant buying power, they have relatively more favorable relationships with their subcontractors, wholesalers, and small and medium-sized retail stores. Although no significant differences existed in their need to continue relationships among business partners, in general, they expressed a stronger desire to continue relationships with their subcontracted manufacturers and wholesalers (*Tonya*). Accordingly, they seemed mostly to recognize the necessity of creating a cooperative system with companies in the industry. This result suggests that the Chemical Shoes industrial cluster places importance on relationships with stakeholders within existing regions rather than seeking new breakthroughs to avoid further market shrinkage. Consequently, arguably, this is the very reason that prevents them from breaking

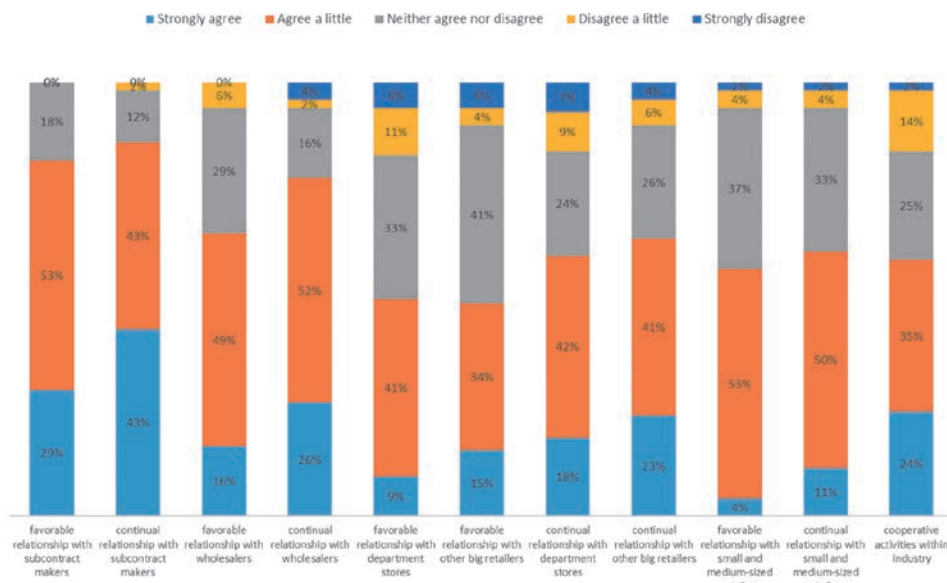


Figure 3: Responses for the Relationships with Business Partners

Source: Extracted from Korean Chamber of Commerce and Industry in HYOGO (2015).

away and enabling new industrial clusters to move forward (see Figure 2).

② **Possibility of relocating the Kobe Cluster overseas: comparison with the previous 2001 survey**

The Kobe Chemical Shoes industrial cluster was already struggling in 2001 when the previous survey was conducted. When the survey was conducted, the damage from the Kobe earthquake was certainly enormous, but the industrial cluster had already passed the maturity stage of its lifecycle curve and, by 2015, was closer to its declining stage. Considering the situation, the Kobe Chemical Shoes industrial cluster could have taken into account the “relocation of the industrial cluster to new regions” as a fundamentally challenging strategy. It is well known that the Korean textile and athletic footwear industries quickly broke away from industrial clusters in South Korea by shifting their production bases to China in the 1990s, where production costs, such as labor costs, were relatively low. The country has recently attempted to move its production bases from China, where it has become difficult to secure cheap labor, to ASEAN countries (Choi, 2001).

Unfortunately, managers of the Kobe Chemical Shoes industrial cluster seem not to have considered such a strategic option. Figure 4 shows their responses to questions about Asian countries that have implemented a division of labor in production. The results of the 2015 survey were compared to those of the 2001

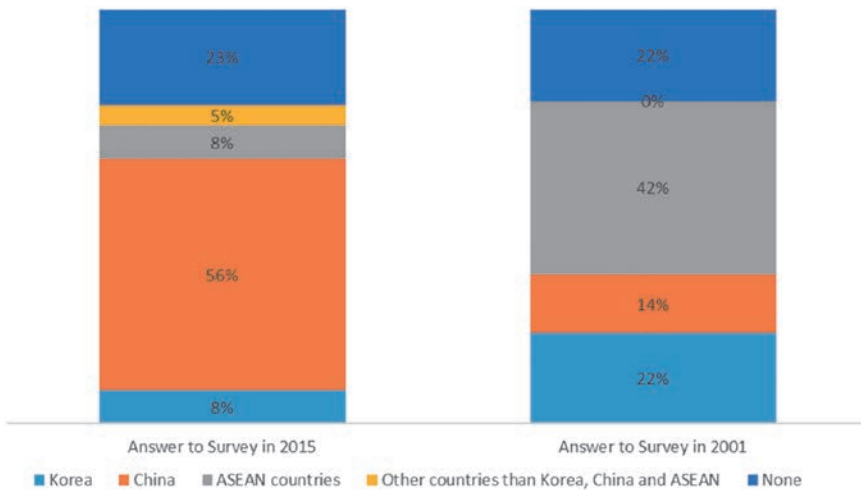


Figure 4: Responses Regarding Asian Countries and Regions that have implemented a division of labor in production

Source: Extracted from Korean Chamber of Commerce and Industry in HYOGO (2001; 2015).

survey.

In short, none of the managers expressed an intention to transfer the industrial cluster to Asian countries.⁶⁾ Instead, they prefer a division of labor in production with Asian countries, particularly by procuring materials locally in Asia and bringing them to Japan. Approximately 75% of the companies have such a division of labor relationship. What is interesting is that the previous survey showed that nearly 80% of the companies had a relationship based on such a division, mainly with ASEAN countries. However, the results of the 2015 survey showed that the division of labor system in production with ASEAN countries had declined significantly. In particular, approximately half the companies have established a division of labor system with China, implying that manufacturers in the Kobe Chemical Shoes industry focus on China to procure inexpensive materials, given its close proximity.

(4) Summary of Chemical Shoes industrial cluster

The discussion in this section is summarized as follows.

First, the Chemical Shoes industrial cluster was comprised of local industries that had been cultivated during the postwar reconstruction era, mainly in Nagata Ward, which was originally a match and rubber-producing town. However, the cluster suffered catastrophic damage from the Kobe earthquake. The Nixon Shock and the oil crises in the 1970s created catastrophic conditions for export manufacturers, which also forced the Chemical Shoes industry to reposition itself to fit with a low-growth era.

Second, Nagata Ward in Kobe is an industrial cluster that began with shoes made from raw rubber pieces before the war and soon transitioned to producing rubber boots following a dramatic increase in demand after the war. Finally, Chemical Shoes were developed, and they successfully satisfied society's demand for low prices and a good style, along with high economic growth. Although the Chemical Shoes industry continued to grow by responding to Japanese consumers' needs, it gradually lost its entrepreneurial spirit and failed to create and challenge new marketing innovations.

Third, the reason for the loss of entrepreneurship was that the industry failed to break away from the supply chain in conventional manufacturing sites. At these sites, deterioration continued, as did the bondage of business partners and

6) Worth mentioning is that SPA companies, such as Fast Retailing, which operates UNIQLO, and Ryohin Keikaku Co., Ltd. and has been expanding MUJI products, have grown by actively moving their manufacturing bases from Japan to China and then to ASEAN countries.

stakeholders who preserve old-fashioned commercial practices, and it has conveniently clung to the superiority of urban locations, such as Osaka and Kobe.⁷⁾

Finally, the cluster, which has no production innovation and did not seek new export markets, should have considered transferring to the rapidly growing Asian region as a fundamental strategic choice. However, no such innovative entrepreneurs existed at the cluster. As a result, the cluster will run into a rapidly diminishing market phase, as did other industrial clusters in Japan.

Considering Japanese industrial clusters' severe situation and strategic failure, including the aforementioned Kobe Chemical Shoes industry, the next section provides a theoretical analysis of industrial clusters.

3. Previous researches on linkage firms

(1) Forerunners in the research of linkage firms

Influenced by various theories of industrial clusters that originated in Western countries, Japanese scholars began to focus on the sustainability of industrial clusters in the 1990s. Itami et al. (1998) is believed to be the first study on the sustainability of industrial clusters in Japanese academic society. This outstanding study focused more on the continuation of industrial clusters than on their emergence and highlighted two direct reasons for “why small and medium-sized enterprise clusters create continuity.”

The first reason is that new market demand continues to flow from external sources through enterprises that have direct contact with the external market. Clusters' size and continuity are determined depending on the sustainability of external demand. Itami et al. (1998) viewed the function that connects information within the cluster with market information outside the cluster as a linkage function and called the enterprise that implements this function a “linkage firm.”

The second reason is that the “specialized technology enterprise group” within the cluster can continue to maintain flexibility as a group. In other words, a cluster's sustainability necessitates continuing to respond to changes in external demand.

As previously discussed, the first major players to emerge in the context of industrial clusters' sustainability were specialized technology enterprise groups and linkage firms. However, the presence of linkage firms is contingent on the ability to actualize flexible specialization because they provide market demand

7) For the superiority of urban locations for the Chemical Shoes industrial cluster, refer to Yamamoto (2008).

information to industrial clusters and control the specialized technology enterprise within clusters. Therefore, linkage firms can be viewed as the main players that sustain industrial clusters. Next, an overview of previous studies that focused on linkage firms is provided.

(2) Studies on linkage firms focused on social capital

In addition to Itami et al. (1998), past studies that focused on linkage firms include those conducted by Takahashi (2012), Takahashi and Kawai (2013), and Tanaka (2018). These studies discussed the continuation of linkage firms and industrial clusters based on the theory of social capital. This theory originated from sociology and political science and has been applied in various fields of social science.

Takahashi (2012) and Takahashi and Kawai (2013) used the discussion of “regional cooperation network” presented by Saxenian (1994) and Granovetter (1995) to argue that the extent of the functioning of linkage firms—the key players in sustaining industrial clusters—depends on the degree of social capital, such as trust, norms, and networks, in these clusters. These authors first organized two types of social capital—“bonding,” which refers to the structural effects of a cohesive network, and “bridging,” which implies the effects of bridged bands that combine open networks. Furthermore, these authors classified “bonding” and “bridging” in industrial clusters according to the functional properties of the enterprises in the clusters. In other words, the “bonding function” is required more for specialized technology enterprises to realize external economic benefits and flexible specialization. In the linkage firm group, the “bridging function” is required more to collect information and opportunities from various viewpoints and to connect clusters and markets. In conclusion, industrial clusters comprise both “bonding” and “bridging” social capital types.

By contrast, Tanaka (2018), who focused on the importance of the network in industrial clusters, argued that the factor that maintains industrial cluster superiority is the endogenous development of linkage firms, which are at the top of networks in clusters. Tanaka (2018) first highlighted the importance of social capital focused on relations, such as blood relations and local relations, based on the discussion of “the network of ethnic Chinese” led by Taiwanese firms. Tanaka (2018) adopted the theory of entrepreneurship and also presented an analytical perspective of “entrepreneurship that created new combinations” to use and develop social capital within the clusters and continuously generate benefits, such as flexible specialization, innovation, and the creation of new businesses. Then, he

constructed a systematic framework for industrial cluster analysis and conducted empirical studies of three industrial clusters: Okayama Jeans industrial cluster, Imabari Towel industrial cluster, and Gifu Women’s Apparel industrial cluster. In summary, as illustrated in Figure 5, given linkage firms’ activities in the Okayama Jeans and Imabari Towel industrial clusters, the two clusters continue to evolve as the type of industries and businesses in the industrial clusters changed. The Gifu Women’s Apparel industrial cluster, which had no linkage firms, began declining because it depended on a passive business style that was eventually separated from the market.

4. New rationale for sustaining industrial clusters and hypothetical process model

Based on these discussions, the function and importance of linkage firms to the sustainability of industrial clusters are clear. Unfortunately, the data indicate that, for the Okayama Jeans or the Imabari Towel industrial clusters—where linkage firms function—to return to their peaks is unlikely. Additionally, discussions on linkage firms that are based on the tacit assumption that locality and local communities are involved ignore the possibility of transcending beyond geographical constraints despite the spatial movement of the business network of ethnic Chinese and the historical traits of cross-border trade merchants. Based on the

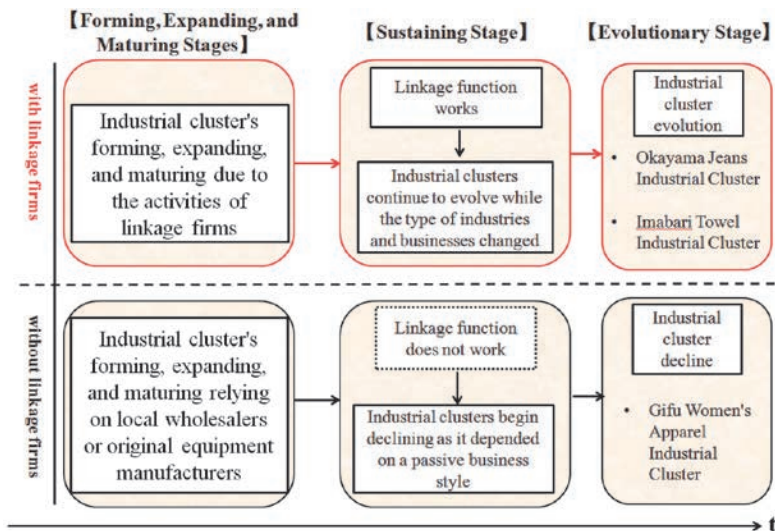


Figure 5: Process Model for Sustainability of Industrial Clusters Centered on Linkage Firms
 Source: Prepared by the authors.

following three questions, this section presents a new rationale for sustaining industrial clusters to explore the possibility of sustainability that is not constrained by locality.⁸⁾

(1) Who should engage in the sustainability of industrial clusters?:

Focusing on commercial theory

① Merchant coordinators as the new leading actors

The basic role of a merchant—reflected in the “information contraction function” in which information obtained from casual conversations with people and purchases of local specialty products from various regions are gathered, and the product selection from production to consumption are streamlined (Tamura, 1980)—is consistent with the essence of a linkage firm, which carries out the coordination function between supply and demand.

However, these merchants have a different aspect that is independent of regional characteristics—unlike linkage firms that always attach importance to regionalism. This study introduces a commercial theory perspective that differs slightly from the industrial cluster theory, which refers to special merchants who are active in the sustainability of industrial clusters as “merchant coordinators,” and explains the characteristic of being indifferent to regionalism as exhibited by merchant coordinators who serve as new leading actors.

② A trait that is indifferent to regionalism

The findings of Ishihara (2002) and Kato (2006) support the regional trait of merchant coordinators. First, in response to the question of “why industrial clusters functioned soundly in contrast to declining commercial clusters,” Ishihara (2002) argued that the firm’s organizing function to designate complementarities within industrial clusters does not exist in commercial clusters. Regarding these organizing functions, Ishihara (2002) emphasized the firm’s variability in the organization of specialization in industrial clusters, in addition to the supply–demand coordination function summarized in Itami et al. (1998). Ishihara (2002) explained the two implications of the variable organization by the organizer function. First, having a fixed relationship is not necessary, as is assumed for traditional subcontractor relationships. Second, variability in vendor organizations is

8) According to the METI, the number of business establishments in textile product manufacturing in Okayama Prefecture in 2016 was 542, down by one-sixth from 3,300 in the 1970s. According to the Imabari Towel industrial association, the number of towel companies in the Imabari region was 109 in 2018, down by one-fifth from 494 in 1975.

the key to elasticity in industrial clusters. Moreover, he implicitly argued that industrial clusters should overcome the limitations of regionalism in the future.⁹⁾

In the meantime, Kato (2006) proposed a new viewpoint of the commercial supply–demand coordination mechanism that differs from the conventional commercial site, such as the “market” in which social goods are pooled. According to Kato (2006), a merchant who does not have unlimited time to open stores travels to various places with the products in his hands that he purchased at a certain local spot, purchases other products at faraway local spots in exchange for selling his original products, and expands the transaction network when reselling in other regions. These actions bridge the gap, which is the origin of the Japanese word for “merchant” and exemplify the act of bridging the gap between demand and supply. Although Kato (2006) referred to these actions as “commercial flexibility,” he pointed out that “commercial flexibility” is action specific to the commercial capital that is guaranteed because it is free from the constraint of the “fixedness of the production process.”

(2) What are the hidden causes of difficulties related to sustainability?:

Focusing on the value network theory

① Decline in industrial clusters due to path dependence

Similar to the product lifecycle, the industrial cluster development stages can be divided into the “initial stage,” “quantitative and qualitative development stage,” “maturity stage,” and “contracting and declining stage.” From the perspective of the industrial cluster lifecycle, Toyama (2009) cited path dependence as a key reason for the difficulties in rebuilding industrial clusters in the declining stage in which the market continues to shrink. According to Toyama (2009), in industrial clusters transitioning to the maturity stage, various types of positive path dependencies and positive lock-in effects that functioned in the initial and the quantitative development stages begin to decline. Additionally, path dependence—the driving force behind the expansion of companies and clusters—becomes dysfunctional as it progresses to the development and maturity stages. In short, the accumulation of production systems, specialization structures, equipment, technology, and human resources in clusters during the maturity stage (path dependence of organizational routines in which enterprises and clusters

9) According to Ishihara (2002), industrial clusters, which were supposed to be the foundation of the regional development that would remove geographical constraints from innovation in logistics and the spread of the Internet, evolved from local clusters into clusters seeking global markets and would eventually become players in global competition.

were formed in the past) makes it difficult for individual enterprises and clusters to transform as a whole, resulting in a negative lock-in effect.¹⁰⁾

② **Industrial cluster value network and the dilemma of sustainability**

Why do various positive effects that functioned from the initial stage to the development stage turn into negative effects in the matured and declining stages? Why do many firms facing downsizing of industrial clusters have difficulty escaping the organizational routine that was formed in the past? The causes of these issues are explained by introducing the “dilemma of innovation” proposed by Professor C.M. Christensen of Harvard Business School.

Christensen (1997) used the phrase “dilemma of innovation” to describe a situation in which reputable companies cannot easily abandon the continually sustained innovation, which is the source of success when facing a disruptive innovation. One of the major causes of such a dilemma of innovation is not the firm’s will or judgment but the external environment, which is comprised of a group of customers with common needs and firms that provide value to them (Christensen, 1997). Christensen (1997) defined this external environment as a “value network” and stated that companies recognize and respond to customer needs, resolve issues, procure resources, compete, and pursue profits in this environment.

The value network exists in manufacturing and retail. In this study, the value network’s dynamics are also considered as important in the development of industrial clusters, as in manufacturing and retailing. Accordingly, the development of linkage firms, specialized technology enterprise groups, logistics enterprises, wholesalers and retailers, and markets forms a value network in industrial clusters. From the development to the expansion stages, the value network attempts to exert either positive path dependence or positive lock-in effects. Therefore, the more those firms are suited to the value network environment of these industrial clusters, the more difficult it is to recognize and understand the new value of other industries and markets. Consequently, industrial clusters that have been unable to meet the needs or respond to markets experience dilemmas of sustainability and enter the shrinking and declining stage once reaching the maturity stage. This study defines this phenomenon as the “dilemma of industrial

10) Path dependence is a phenomenon in which self-strengthening or development—through which transcription and transfer are easily carried out by copying, imitating, and learning once technology, organization, systems, and others are selected by chance and become established and standardized—is succeeded (Toyama, 2009). Refer to Arthur (1994) and David (2001) for specific examples of path dependence.

cluster sustainability,” which is the hidden cause of difficulties in sustaining industrial clusters.¹¹⁾

③ **Escape from the existing value network**

As previously described, the most significant factor in achieving continually working industrial clusters is to consider how to escape from an existing value network.

As previous studies on linkage firms revealed, regionalism-oriented linkage firms mainly work on transforming the existing value network. Such work represents a constraint for them as they change their business type and operation within the clusters.

By contrast, this study presents a new possibility for sustainability that is centered on merchant coordinators who are indifferent to regionalism. As evidenced in the following discussions, merchant coordinators who are members of the value network use the unique human network called community capital to constantly explore new business opportunities in different regions. Their merchant activities, which are not constrained by clusters, allow industrial clusters facing decline and contraction to escape from the existing value network and continue in new regions. Next, the rationale to transcend beyond geographical constraints is explained.

(3) How can geographical constraints be transcended?: Based on community capital theory

The key to understanding the rationale to transcend beyond geographical constraints can be found in the small-world concept discussed by Milgram (1967) and the community capital theory explained by Professors Nishiguchi and Tsujita, who focused on Chinese Wenzhou merchants when further developing the concept.

First, the “small-world” phenomenon is professionally called six degrees of separation. Watts (2004) clarified the “small-world” phenomenon presented by

11) Christensen (1997) pointed out that McNair’s “Wheel of Retailing” hypothesis has had a significant impact on disruptive innovation studies. Moreover, Christensen and Tedlow (2000) examined retail innovation in the United States and analyzed the changes in department stores, supermarkets, and online retailing. Then, they described how retailers that earn profits by lowering prices—even if their products are inferior to retail services—dominate existing retailers as disruptive technologies. Additionally, Choi (2018) pointed out the importance of the value network in changing retail formats and summarized the value network concepts presented by Christensen as follows: “Companies can provide and profit from value that can meet customers’ needs through collaboration in an ecosystem environment—a value network consisting of other suppliers, wholesalers, retailers, and logistics companies. If examined further, competitors and related organizations inside and outside the company will also become members of this network.”

Milgram using studies based on computer simulations that applied graph theory and defined the small-world network. Subsequently, Nishiguchi (2007) redrew the small-world network proposed by Watts in a simple manner and illustrated it as a “sunflower model.”¹²⁾

Nishiguchi and Tsujita (2016, 2017) further advanced the small-world network and proposed the concept of “community capital.” They conducted a critical review regarding the ambiguity of conventional social capital theories. As a methodological response to the question of ambiguity, they do not use “human” or “social” but chose “community” as an analytical unit that lies in an intermediate area between the two and is clearly demarcated by a particular membership.

Additionally, Nishiguchi and Tsujita (2016) examined the two traditional classifications of the functional characteristics of community based on “bonding” and “bridging” (refer to Table 1). They argued that the two classifications of traditional “bonding” and “bridging” are not appropriate to demonstrate the small-world network but should be discussed by focusing on their contrasting attributes. In conclusion, the small-world network occurs between type ② and type ④ within a certain activity area, thereby meeting the requirement of simultaneously achieving two normally conflicting distinct attributes. The authors pointed out that the network of internationally active Chinese Wenzhou entrepreneurs’ community can simultaneously achieve cohesiveness and external exploration, leading to an approximation of the philosophy of small-world networks. They also

Table 1: Characteristic of Bonding and Bridging Community

		Bonding	
		weak ←————→ strong	
Bridging	↑ weak	① weak community cohesion and weak external exploration ability	② strong community cohesion and weak external exploration ability
	↓ strong	③ weak community cohesion and strong external exploration ability	④ strong community cohesion and strong external exploration ability

Source: Nishiguchi and Tsujita (2016, p.59), revised and translated by the authors.

12) Six degrees of separation is the rule of thumb whereby all target persons around the world can be connected by tracing about six times through five acquaintances.

argued that this community capital is the key to the success of Wenzhou entrepreneurs.

(4) A hypothetical process model for sustaining industrial clusters

Based on the lifecycle of industrial clusters, the process of sustaining industrial clusters can be classified as follows: (i) forming, expanding, and maturing stages, (ii) sustaining stage, and (iii) evolutionary stage. These discussions revealed that linkage firms or merchant coordinators play a key role at each stage.

First, the functions of linkage firms and merchant coordinators are the same during the (i) forming, expanding, and maturing stages. In other words, market information brought by linkage firms or merchant coordinators spills over to encourage entrepreneurship and leads to the formation and development of industrial clusters. Consequently, industrial clusters expand and eventually reach the maturity stage.

Next, when industrial clusters enter the sustained stage (ii), a “dilemma of sustained industrial clusters” appears resulting from the formation of the value network that reached the maturity stage. Because of differences in the importance of locality, the functioning mechanisms of linkage firms and merchant coordinators also differ. Consequently, the (iii) evolutionary stage of industrial clusters, which are centered on each locality, also becomes different.

In short, linkage firms are influenced by regionalism when faced with a dilemma of sustained industrial clusters because certain characteristics place importance on regionalism with regard to patterns of sustainability centered on linkage firms. In other words, as previous studies revealed, linkage firms that focus on regionalism primarily work to change the value network in the clusters to overcome the dilemma of sustained industrial clusters. Such work enables industrial clusters in their mature stages to reboot and evolve.

By contrast, because there are two types of dynamism—utilization of community capital and the existence of entrepreneurship shown in the new rationale described in the previous chapter of this study—industrial clusters centered on merchant coordinators are assumed to aim to sustain and evolve outside the clusters to overcome the dilemma of sustainability and then derive the process of sustaining and evolving outside the clusters as a new pattern of sustainability.

This study considers the two patterns of sustainability and evolution previously summarized and proposes the process of sustained industrial clusters entering the maturity stage as a hypothetical model, as shown in Figure 6.

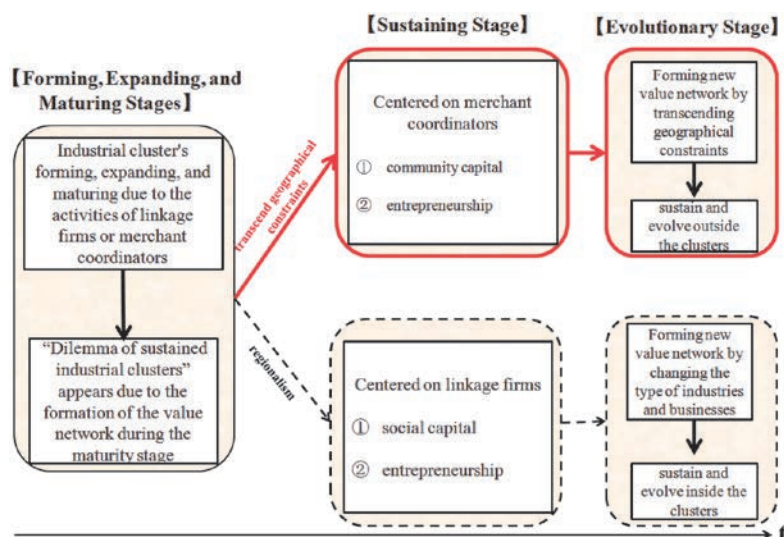


Figure 6: Hypothetical Process Model for Sustainability of Industrial Clusters

Source: Prepared by the authors.

5. Conclusions

This study summarized the actual conditions faced by the Kobe Chemical Shoes industrial cluster to investigate how the cluster should continue when industrial clusters shifting to the maturity stage must address market shrinkage and decline. Past studies on linkage firms as related to the sustainability of industrial clusters were reviewed. These past studies were critiqued in relation to sustainability within the clusters. This study then derived new leading actors called merchant coordinators by applying commercial theory, value network theory, and the latest social network theory—community capital. Finally, a hypothetical process model was proposed for the sustainability of industrial clusters centered on linkage firms and merchant coordinators by explaining the rationale to transcend beyond the geographical constraints and hidden causes that make it difficult for industrial clusters to continue.

However, the hypothetical process model proposed in this study is still debatable and merely hypothetical. Therefore, empirical studies on merchant coordinators are required to verify and refine the proposed model.

Finally, case studies of industrial clusters abroad should be analyzed to provide practical implications to break away from the constraints of a shrinking market, whereas many industrial clusters in Japan typically face difficulties similar to those faced by the Kobe Chemical Shoes industry. Furthermore, to break away

from the dilemma of sustainability raised in the theoretical analysis, the significance and challenges of creating new industrial clusters by making full use of a strategy that “prevents them from attaching to the locality,” as described in Figure 6, will continue to be analyzed.

Acknowledgement: This paper is supported in part by a Grant-in-aid (KAKENHI) from Japan Society for the Promotion of Science (Project Number: 18H009090 & 18K018771). Parts of this paper were published in Japanese as Choi (2001; 2015) and Jiang (2019).

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