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**The Development of Vietnam's Industrial
Cluster and the Challenges in the Post-Covid-
19 Scenario.**

Supervisor

Ch. Prof. Giancarlo Corò

Graduand

Thi Cam Nhung Nguyen

Matriculation number

877537

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ABSTRACT

This study aims to illustrate the development of Industrial Clusters in Vietnam. Industrial Cluster plays a significant role in Vietnamese industrial development and economic restructuring. The formation and development of industrial clusters, export processing zones and industrial parks are a driving force of the country's economic industrialization and modernization progress. They help in creating more jobs for workers, creating a culture for rapid technology transition, producing a variety of goods for domestic consumption, and highly competitive export products. Additionally, they contribute to creating conditions to attract a large amount of foreign investment capital for industrial development and socio-economic development in general. The number of industrial zones in Vietnam continues to increase as foreign investment pours in. However, The Covid-19 has affected almost all corners of the world, the world may be seeing how the Covid-19 pandemic could impact the global supply chain and disrupt manufacturing operations. Despite the limitations of resources, developing countries including Vietnam have faced many challenges in combating the pandemic. Vietnam has been considered an attractive and safe destination for foreign investors looking to relocate and diversify their operations thanks to its stable policy framework. Many industrial zones have been established across Vietnam which have contributed remarkably to the country's industrialization process and economic development. The study continues with a focus on the challenges that Vietnam's Industrial Cluster facing in the post-covid scenario.

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INTRODUCTION

Industrial clusters play a very important role in the growth of the economy. Because of the formation of industrial clusters in developing countries, there are more opportunities for industrial development and faster industrialization.

The thesis is divided into four chapters:

The first chapter focus on the review of the main cluster theories.

The second chapter demonstrates the experience of developing industrial clusters in China, Taiwan, South Korea, and Malaysia. In recent years, Asian countries have risen FDI in Vietnam. The foreign investors in Vietnam come mostly from China, Taiwan, South Korea. Recently, multiple firms from Taiwan, Malaysia are also active in the country. The COVID-19 pandemic is complicated and has a negative impact on the economy, but also creates opportunities to shift investment into Vietnam. Despite the fact that the Covid-19 epidemic is still affecting and causing many difficulties for investors, foreign investment capital (FDI) has been recorded as "flowing" strongly into the industrial clusters of the region from the beginning of 2021.

The third chapter is centralized on some main clusters in Vietnam, including Dinh Vu Industrial Zone in the north, Hao Khanh Industrial Zone in the center, and Vietnam – Singapore Industrial Zone in the south. The chapter highlights some industrial cluster policies as well as the importance of industrial clusters to Vietnam's growth. It has influenced many aspects of the economy, such as economic restructuring, industrialization, modernization, and bringing Vietnam closer to the global production value chain.

The fourth chapter primarily concentrates on the challenges that industrial clusters in Vietnam are facing in the post-covid. The complicated developments of the Covid-19 have caused investment and business cooperation activities of foreign enterprises in Vietnam to face many challenges. There are some problems and challenges that Vietnam Industrial Clusters have to confront, such as efforts to explore the investment potential of domestic and foreign investors in Vietnam, reducing the opportunity to attract investment; supply chain disruption due to the impact of the COVID-19 epidemic.

CHAPTER I: A REVIEW OF THE MAIN CLUSTER THEORIES

1.1 Cluster Definition

1.1.1 What is a Cluster?

Clustering is widely discussed in the academic world due to its advantages. It helps to determine which sectors of the regional economy have more competitive advantages to build short- and long-term strategies for regional economic growth. Clustering allows firms to gain access to new markets and enjoy some positive benefits such as high-quality products at competitive prices, new products innovation, and development, knowledge about advanced technology, industry-specific skills, industrial logistics, and so on.

Marshall (1890) was the first academic who mentioned the occurrence of clusters. He stated that concentrating industry in specific areas provides a number of benefits. Alfred Marshall suggested that the concentration of enterprises within 'industrial districts' enable firms to benefit from large-scale industrial production and advanced technology and organizational improvements. When a large number of firms centralize in one region, there is more economic activity. As a result of the clustering, spillovers increase the overall factor productivity of firms in the same county.

Approximately a century after Marshall's initial theoretical analysis of the industrial district was published, Giacomo Becattini made a significant addition to the study. In 1979, Giacomo Becattini reintroduced Alfred Marshall's notion of the industrial district to illustrate the agglomerations of small Italian enterprises that emerged in late 1970s. According to Becattini, an industrial district is "*a socio-territorial entity characterized by the active presence of both a community of people and a population of enterprises inside a naturally and historically defined area*" (Becattini, 1990).

The concept of clustering was popularized by Michael Porter, a Harvard Business School professor in "The Competitive Advantages Nations" in 1990. He defined clusters as a "*geographically proximate group of companies and associated institutions in a particular field, linked by commonalities and complementarities*". In this definition, he stated a clear meaning of cluster and its characteristics. The success of a company is no longer determined by itself, but by the system of supporting enterprises, infrastructure, and institutions that surround it. There are some key elements in Porter's concept including "*geographically proximate group*", "*associated institutions*", and "*a particular*

field”, which specifies a geographical concentration of interrelated enterprises in a specific industry with links to associated institutions such as financial institutions, educational institutions, and governments. These entities are connected together by “*externalities*” and “*complementarities*”.

Porter also represented in his study “ Clusters and the New Economics of Competition” in 1998 that “*Clusters also often include firms in downstream (e.g. channel, customers) industries, producers of complementary products, specialized infrastructure providers and other institutions that provide specialized training, education, information, research, and technical support, such as universities, think tanks, vocational training providers, and standards-setting agencies*”

Another accepted description regarding clusters could be taken into account is the research of Krugman (1991). According to Krugman, “*Clusters are not seen as fixed flows of goods and services, but rather as dynamic arrangements based on knowledge creation, increasing returns and innovation in a broad sense*”. He stressed the word “*dynamic*”, clusters are dynamic. They can change their structure in response to changes in the industries surrounding them by diversifying their technology base or entering a new market.

In Krugman and Porter's analysis, the process of innovation occurring within the cluster through the transmission of information, know-how, and experience is added to the economic connections and goods flows.

Recently, Many economists, scholars, practitioners, and non-governmental organizations have all made significant contributions to the popularization of the concept throughout the world. So the concept of the cluster has been characterized in a variety of ways. The following were some of the most notable definitions of industrial clusters:

1. According to the Organization for Economic Co-operation and Development (OECD), “*Clusters are defined as “networks of strongly interdependent enterprises, knowledge-producing organizations (universities, research institutes, knowledge-intensive business services), bridge institutions (brokers, consultants), and customers.”*”

2. The United Nations Industrial Development Organization (UNIDO) defines an industrial cluster as: “*Cluster can be defined as concentration of micro, small and medium*

enterprises in a given geographical location producing same or a similar type of products or services and these enterprises face a similar type of opportunities and threats. The cluster is known by the name of the product being produced by principal firms and the place they are located in.”

3. Rosenfeld (1997) defined cluster as *“Geographically bounded concentration of similar, related or complementary businesses, with active channels for business transactions, communications, and dialogue, that share specialized infrastructure, labor markets and services, and that are faced with common opportunities and threats.”*

4. Feser (1998, p. 26) *“Economic clusters are not just related and supporting industries and institutions, but rather related and supporting institutions that are more competitive by virtue of their relationships.”*

5. Enright (1996, p. 191) *“A regional cluster is an industrial cluster in which member firms are in close proximity to each other.”*

Generally, clusters are viewed as having a significant effect on promoting economic growth, improving industrial quality, increasing regional competitiveness, as well as ensuring the success of regional markets (Sun et al. 2010; Lin and Sun 2010; Spencer et al. 2010; Spencer et al. 2010; Sun et al. 2010).

1.1.2 Different Types of Cluster

Clusters can be classified based on their characteristics, origination, function, size of cluster enterprises, and market orientation. For example, a manufacturing cluster is if firms within a cluster are manufacturers, and a service-oriented cluster is if enterprises of a cluster provide service. Clusters could be classified as SME clusters if the firms that make up the cluster represent the small and medium-sized enterprises (SMEs) in the industry.

According to the book *The Competitive Advantages of Nations* (1990), Porter outlined two types of clusters:

- **Vertical Clusters:** consist of industries that are connected via buyer and seller interactions. A vertical cluster is built between related businesses combining on problem-solving within supply chains.

- **Horizontal Clusters:** include similar firms engaged in comparable activities that can benefit from shared access to a regional pool of highly skilled labor, technology knowledge, and they can also benefit from the opportunity to learn from their competitors.

The relationship between clusters participants helps in facilitating the implementation of collaborative activities. With vertical integration of a cluster, Competition amongst suppliers within a cluster structure is often unavailable due to the fact that they supply differentiated products or services. Activities with horizontal integration are capitalized as a result of cost savings in production and marketing, increased product supply reliability, and improved quality control.

Markusen (1994) established clusters into four types (Markusen, 1994) including Marshallian clusters; Hub-and-spoke districts; Satellite platform clusters; State-anchored clusters.

Marshallian clusters: are made up of a number of small, innovative, and locally owned companies that are strongly embedded in local and regional linkages to other co-located businesses under a broadly cooperative governance system that promotes their existence and adaptability.

Hub-and-spoke districts: One or a few large enterprises – may be geared to external markets – surrounded by several of the small suppliers and service providers. In this type of cluster, the central hub firm(s) is surrounded by a large number of small enterprises over which it exercises market dominance and power, enabling it to bind clients and suppliers to long-term contracts.

Satellite platform clusters: are those that are dominated by externally-oriented enterprises, with limited intra-cluster exchanges and the cluster's dominant firms more focused on the parent headquarters and other sister subsidiaries located outside.

State-anchored clusters: they are government-owned or supported, usually not for profit. Public officials often support state-anchored clusters by locating important research centers, universities, military bases, and so on

Later in 2000, Michael J. Enright (2000) also put a classification on 5 categories of clusters in his report “Survey on the characterization of regional clusters”. They are

Working clusters; Latent clusters; Potential clusters; Policy-driven clusters; and Wishful thinking clusters.

- *Working clusters are those in which a critical mass of local knowledge, expertise, personnel, and resources create agglomeration economies that are used by firms to their advantage in competing with those outside the cluster.*
- *Latent clusters have a critical mass of firms in related industries sufficient to reap the benefits of clustering but have not developed the level of interaction and information flows necessary to truly benefit from co-location.*
- *Potential clusters are those that have some of the elements necessary for the development of successful clusters, but where these elements must be deepened and broadened in order to benefit from the impact of agglomeration.*
- *Policy-driven clusters are those chosen by governments for support, but which lack a critical mass of firms or favorable conditions for organic development*
- *“Wishful thinking” clusters are policy-driven clusters that lack, not only a critical mass but any particular source of advantage that might promote organic development.*

1.1.3 Cluster’s Advantages

The advantages of industrial clustering are well documented in research. Industrial clustering’s advantages are primarily based on increased information sharing and lower transaction costs. As a result, industrial clustering typically:

- Expanding the use of outsourcing and vertical integration to boost productivity and innovation;
- Enhancing the responsiveness of local institutions to the cluster's specific needs;
- Encouraging communication, networking, and growth among firms in the clusters by getting involved in industry leaders in a region;
- Assisting policymakers and researchers in making better economic policy suggestions;
- Enhancing knowledge and information creation and flow;
- Increasing the number of public goods produced as a result of the investment;

- Improving the relationship and awareness to the social-cultural aspects of local society
- Continuing to develop incentives and performance evaluation;
- Offering a solid research foundation;
- Rising the amount of knowledge and human capital available to the region, which will aid in the resolution of local common problems.

In order to benefit from industrial clustering, It is important to identify groups of firms in related industries located in a concentrated geographic area that has the potential to join forces and create a new industrial cluster. An analysis should be conducted to determine resources and foundations of competitive advantage (for instance, labor force pools, knowledge, academic institutions, and infrastructure) and which ones act as a barrier to increased cooperation and efficiency. The development of the industrial cluster has the possibility to offer a wide range of advantages to both the companies that make up the cluster and the broader regional economy as a whole.

The development of industrial clusters has the possibility to offer a wide range of advantages to both the companies that make up the cluster and the broader regional economy as a whole.

1.1.4 Cluster's Disadvantages

Along with the potential benefits of industrial clustering, there are some shortcomings to industrial clustering theory that have been pointed out by critics:

- Those who are suspicious of industrial clustering point to the fact that it applies to the entire industry with unspecific limits and is therefore difficult to define as a drawback of the theory (Desrochers and Sautet, 2004).
- Measurement of the effects and impacts of industrial clustering is one of the downsides of cluster theory (Caniels and Romijn, 2005).
- Skeptics of industrial clustering consider the ambiguity of the definition of clusters to be a significant problem.
- Cluster theory is operational and observed only in leading industries such as Silicon Valley, and benefits are limited in other regional industrial clusters.

- Many economic experts and policymakers think that a range of industries, from the smallest to the largest, can all benefit from the core principles of cluster theory.
- Most research deals with manufacturing industries that are subjected to measure efficiency improvements quantitatively. A further challenge arises when applying cluster theory to the service industries as service efficiency is much more subject to discussion and subjective evaluations.

1.1.5 Cluster Theory's Opportunities

Much more research is required in the areas of industrial clustering, cluster theory, and the contributions of industrial clusters to local and regional economic development. Following are some instances of specific areas that provide opportunities for greater awareness and knowledge:

Acquiring additional information on the costs associated with industrial clustering. It is particularly critical to decide in which cases should these costs be carried by the private sector and which cases should they be carried by the public sectors. Recognizing how many benefits are obtained by sectors that bear costs, as opposed to sectors that bear less or none of the costs.

- The role and responsibilities of local governments and industry associations are being clarified and integrated.
- Competition and efficiency in industrial clusters are becoming more intense.
- Evaluating long-term estimated costs and benefits in relation to medium and long-term consequences (Rocha and Sternberg, 2005).
- Keeping up with the development in the constantly improving field of industrial clustering and cluster theory on the global scale (Waits, 2000).

1.2 Conditions for Cluster Development

This section explores the factors that contribute to cluster success. Cluster theory and empirical evidence gathered over the last few years go into these conclusions.

1.2.1 Competition and Cooperation

An important characteristic of an "industrial district" is the delicate balance that exists between competition and cooperation among enterprises (Alfred Marshall, 1927). Competition and cooperation have been viewed as critical notions for explaining the relationships between firms in clusters (Porter, 1998; Martin and Sunley, 2003; Delgado et al., 2010).

According to Porter's work (1998) in his paper *Cluster and New Economics of Competition*: "*Clusters promote both competition and cooperation. Rivals compete intensely to win and retain customers. Without vigorous competition, a cluster will fail. Yet there is also cooperation, much of it vertical, involving companies in related industries and local institutions.*". Porter suggested the benefits of clusters came as a result of collaboration between firms, and competition was a significant driving force. Due to the cluster's cooperation and improved communication, businesses have a better understanding of emerging innovative trends, which contributes to the spread of information and, eventually, to the acquisition of competitive advantage. Also, a high level of local rivalry puts more pressure on firms to continuously innovate; in other words, instead of being followers in the field of innovation, they will become pioneers. This again emphasizes the success of a cluster depends greatly on cooperation and competition.

The cooperation between firms within a cluster will enable them to compensate for their limitations as well as increase their flexibility. There are various forms of collaboration that exist within industrial clusters. By reviewing the clusters theories (Carbonara et al., 2002; De Toni and Nassimbeni, 1995; Dei Ottati, 1994; Markusen, 1996), different types of collaboration can be discovered:

Horizontal cooperation: this refers to similar enterprises operating in the same production process. There will be several formal or informal agreements between competitors to share R&D risk or obtain access to particular market areas. There also could be unofficial price-fixing agreements among competitors or patents are being licensed to competitors through cross-licensing agreements. For instance, in Silicon Valley, semiconductor companies generously cross-licensed their patents to competitors in order to assure the rapid dissemination of technological improvements.

Vertical cooperation: This refers to contracts and agreements between buyer and provider on a long-term basis, and technical partnership agreements between manufacturers and infrastructure providers with the goal of developing new production infrastructures. For example, in the process of co-design new product development, there is a collaboration between local infrastructure providers and manufacturing enterprises in the Como and Prato textile districts, as well as the Sassuolo ceramic district (Visconti, 1996).

Competition is essential to economic growth and is a fundamental component of a market economy. A cluster might fail without competition. The competition encourages businesses to develop their manufacturing techniques on a constant basis, to raise the grade of their products and services (Becattini, 1997; Piore and Sabel, 1984; Porter, 1998). Companies compete against one another in order to achieve a demand volume large enough to fill their available manufacturing capacity. Competition is not only focused on cost but also on the quality of products and additional services (Digiovanna, 1996).

A company's competitive advantage is the most important indicator of the success of its positioning as it determines whether companies will be successful in the global competition and able to convert the threats into opportunities. However, competitiveness can be achieved by linking enterprises together in clusters. Competition between firms within clusters will encourage innovation, productivity, and the development of new competencies. In his analysis, Porter determined: “*Competition in today's economy is far more dynamic*” (Porter, 1998). In a dynamic environment and knowledge-based economy, clusters represent a critical mass of competitive performance for enterprises, regions, or countries. Today's competitiveness is much more “dynamic” as it is based on productivity rather than on the availability of inputs. Companies can be extremely productive in any field, whether they are in the shoe industry, agriculture, or semiconductors. Competitive advantage is built on the ability to make more productive use of available resources, advanced technology, resource sharing, and knowledge-intensive as well as the growth of innovation.

1.2.2 The Role of Innovation

Joseph Schumpeter (1934) is widely considered the first scholar to propose that innovation is critical to the capitalist economy's development. In The Oslo Manual (OECD, 2005), innovation is defined as the implementation of new products or services, a new business model, a new process in the company operations or workplace organization. For instance, in order to introduce a new product to the market, the manufacturing company needs to change the way it manufactures products. This means a company will be involved in both product and process innovation in this manner.

In general, innovation can be divided into four types of categories: product innovations, process innovations, marketing innovations, and organizational innovations.

Firstly, product innovation is when you introduce a completely new or significantly improved product based on the product's characteristics and intended uses.

Secondly, process innovation is a significant improvement in the method of manufacturing or delivering a service. The goal of improving production or delivery is to lower the costs of production or delivery in order to reduce costs.

Thirdly, a marketing innovation is a type of innovation that includes the implementation of a new marketing method that involves significant changes in product design or packaging, product placement, product promotion, or product pricing, among other aspects of the product life cycle.

Fourthly, Organization innovation refers to the adoption of a new organizational process in the firm's business practices, workplace organization, or external relations. These organizational innovations are intended to improve the overall performance of the organization. A reduction in the cost of administration or transactions may be achieved in this way. As well as increasing employee satisfaction at their place of employment. Increasing employee satisfaction at work may have a positive impact on the productivity of the workforce.

There are a variety of ways for a company to be creative. It is possible that a company will have to change the way it manufactures a new product after developing it

Clusters are critical to a company in order to increase its ability to innovate as well as its productivity. According to Micheal Porter, companies within a cluster can experiment at a lower cost and defer large investments until they are more confident that a particular innovation will succeed.

Businesses within a cluster may develop more close relationships with buyers, thereby increasing customer knowledge. Some successful clusters have diversified and transitioned to a new product line. For instance, Silicon Valley was first considered a semiconductor manufacturer but now has expanded to electronics, biotechnology, nanotechnology, and information technology (information and communication technology).

The firm's affiliation with research institutes and universities is a major contributor to innovation in a cluster. Potter (2009) points out that industries that rely heavily on tacit knowledge, such as biotechnology and nanotechnology, are the ones that benefit the most as the development of this type of technology is closely associated with university-based research.

In the cluster production model, there are many incremental innovations and less radical innovations. Large companies benefit from radical innovations due to superior R&D investments, but knowledge and learning can be spread due to spatial proximity and inter-company relationships.

1.2.3 The Role of Government

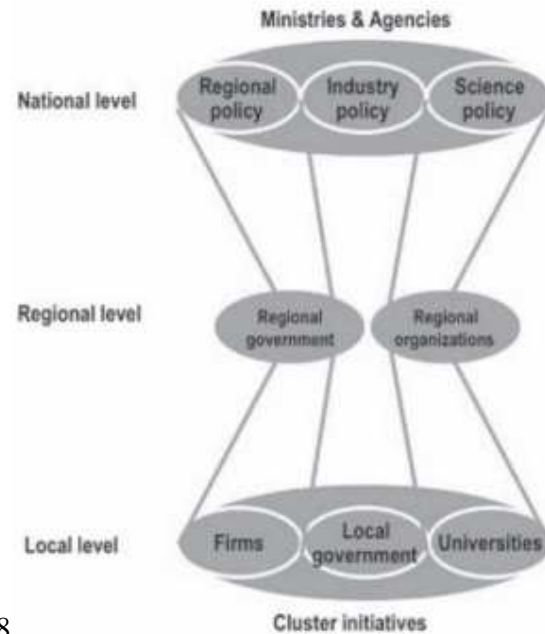
Wolfe and Gertler (2004), like many other academics, emphasize the importance of public-sector involvement in cluster formation. They emphasize that although the private sector is clearly important, the provincial and national institutional frameworks play an important role in the shaping of the region also.

Porter (2000) asserts that clusters should therefore play a significant role in state and local economic policy. Similarly, he argues that governments must ensure a steady supply of high-quality inputs, such as an educated population and a well-functioning physical infrastructure. Economic system infrastructure provided by the government can help industrial clusters grow. In order to become more productive and more successful in

innovation, the government must regulate competition through the use of intellectual property rights and enforce antitrust statutory provisions. Porter states that the government should first enhance the quality of inputs and institutions. Then the government must create general competition rules and incentives that encourage productivity and growth. Finally, the government should develop an economic upgrading program to help cluster development.

Additionally, cluster development requires increased institutional and organizational support from the private sector. According to Cumbers and MacKinnon, institutional frameworks at the provincial and national levels are critical in shaping clusters (2004). Institutions such as universities, colleges, government laboratories, and other organizations play a critical role in the development of knowledge infrastructure in regions.

Clusters facilitate the collaboration of innovation, resulting in the development of new products, new businesses, and increased employment. Clusters bring together the activities of enterprises, local government institutions, and research units to help local economies grow dynamically. A cluster initiative is a coordinated effort involving cluster companies, government, and research to boost the growth and competitiveness of clusters in a given region (Sölvell, Lindqvist, Ketels, 2003). Top-down clustering is becoming increasingly popular, with the initiative coming from the central government. Figure illustrates three levels of formation: national, regional, and local.



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- *Figure: Actors involved in the creation of cluster initiatives at the national, regional and local level*
- *Source: Ö. Sölvell, Clusters – Balancing Evolutionary and Constructive Forces, second edition, Ivory Tower Publishers, Ödeshög, January 2009, p. 47.*

From the above figure, regional policy, industry policy, and science policy are the three components of the national level; regional level includes regional government and regional organizations; local level is composed of firms.

Currently, cluster policy is the central focus of regional and local policy for many governments worldwide, as many governments recognized the role of innovative clusters in the creation of national economic development and were clustered as economic drive engines. The cluster-based policy is a set of tools and measures used by authorities at various levels to boost competitiveness by creating or expanding existing clusters, primarily at the regional level. A cluster-based policy can involve one of the four components of model solutions.

1. The first policy aims to boost competitiveness in key economic sectors.
2. The second policy intends to promote SMEs' competitiveness.

3. The third policy model seeks to improve regional competitiveness.
4. The fourth model focuses on innovation for science, research, and industry.

There are four categories of cluster policy:

1. Policies aimed at improving the efficiency with which services are organized and delivered.
2. Policies that direct investments to specific clusters.
3. Policies aimed at increasing the networking and learning opportunities for clusters.
4. Policies that enhance the workforce in clusters.

1.3 The Role of Industrial Clusters in Developing Economies

Developing economies frequently lacked an efficient institutional framework as well as extensive infrastructure. This also caused economic activities in these countries to be largely concentrated in a few areas, most notably in major cities (Fujita et al., 1999; Jacobs, Ducruet, & De Langen, 2010). In order to effectively utilize non-local resources, clusters have developed as preferred frameworks for allocating foreign capital, specialized knowledge as well as for encouraging the local business environment's global economic development. It serves as a bridge between these gaps (Khanna & Palepu, 2010).

Clusters are especially important in the development of a country's economy, particularly in developing countries. These countries are in the stage of industrialization with an export-oriented industrial strategy and on the basis of attracting capital, technology, and management experience of industrialized countries. Industrial development and industrialization are accelerated by being able to combine and learn the most recent advances in science and technology, organization and business management, and reaping the benefits of foreign investment capital for economic development. Additionally, clusters were established in most provinces and cities throughout the country; be distributed on the basis of promoting geo-economic advantages and potentials of key economic regions in order to encourage local industry growth.

So what could be the role of clusters in developing economies? the question can be answered as below:

1.3.1 Attracting both Domestic and Foreign Investment

Cluster is characterized as a location where complete, synchronous, and modern infrastructure has been invested in order to attract investors to pool their resources in a specific geographic area, making it an ideal location for consolidating and combining resources. With unified management regulations and preferential policies, industrial clusters have made business investment more attractive to foreign investors. Furthermore, multinational companies have leveraged clusters to channel their investment, technology, knowledge, and imported input (Valeria Giacomini, 2017). For example, the development of an industrial cluster is consistent with multinational corporations' and companies' business strategies of expanding the scope of activities based on taking benefit of tariff preferences from the host country, cutting costs, increasing profits, and tapping new markets in developing countries.

As a result, the industrial cluster contributes to increased capital mobilization and improved capital utilization for economic growth, and it serves as an important focal point for attracting domestic investment capital as well as an effective solution for attracting foreign investment. FDI is an important component in assisting the country in implementing and accelerating the cause of industrialization and modernization, thereby promoting economic growth. The operation of capital originating from FDI, on the other hand, has had a favorable impact on promoting the flow and operation of domestic capital.

Encouragement of industrial clusters investment from domestic economic sectors will lead to a large inflow of domestic capital into clusters. This is a significant amount of potential capital in society that has not been fully utilized. Domestic enterprises' investment capital in the construction of industrial park infrastructure and investment in production in the industrial clusters will build trust and become a driving force in attracting foreign investors to invest.

1.3.2 Acquiring Cutting-Edge Technologies, and Management Techniques

It is believed that the adaptability of advanced techniques and technologies to the unique circumstances of each country is one of the strategies developing countries use to accelerate the industrialization process. The FDI sector's technology transfer to domestic enterprises has helped in increasing productivity and bringing high economic efficiency to industries. They will create conditions for domestic firms in developing countries to gain access to advanced management and business practices from other countries, as well as modern manufacturing technologies, new manufacturing capabilities, new industries. They will open up opportunities for local businesses to participate in the global supply chain and compete with multinational corporations from other countries.

Thanks to the scientifically organized and highly advanced technology equipped with FDI enterprises, managers and workers working in the clusters will be trained and re-trained in management experience, modern technology working methods, industrial style... These findings have a significant impact on domestic enterprises in terms of renewing technology and equipment, improving product quality, changing management methods, and so on in order to increase competitiveness to maximize high economic efficiency.

1.3.3 Creating Job Opportunities

The development of clusters has made important contributions to creating jobs and generating incomes for workers in developing economies. They have brought a large amount of labor to work in, reducing unemployment and poverty rates in the population community. FDI employs workers with high technical skills needed for the application of new technologies to regional and international production. So, clusters help to redistribute labor in society and foster the growth of a skilled and knowledgeable labor force. They will motivate employers and employees to practice and constantly improve their skills.

Besides, It makes a significant contribution to the development of human resources with the professional and technical skills compatible with new production technologies applied at the regional and international levels. Numerous colleges and training institutions have been established to educate workers. Particularly, a model of training integration and human resource utilization between industrial parks and

education institutions has been created, which will contribute greatly to resolving the current severe shortage of technical workers.

1.3.4 Improving Infrastructure

Infrastructure development in the clusters has created a network of infrastructure works of long-term value, contributing to the modernization of the infrastructure system across the country. For instance, a number of important infrastructure projects have been completed including major traffic routes, deep seaports, domestic airports, international airports, power supply, water supply, communication, resettlement area infrastructure, industrial park infrastructure, etc. all of which have met the needs of investors and contributed positively to the region's development...

The investment in infrastructure in clusters not only attracts new investment projects but also creates favorable circumstances for companies to expand their scale in order to increase production capacity and competitiveness, create conditions for localities to solve pollution problems, and protect the urban environment.

1.3.5 Clusters Development Associated with Ecological Environment Protection

Firms within clusters have relatively well complied with environmental laws, actively contributing to the protection of the ecological environment. For example, clusters are considered as a place where industrial enterprises are concentrated, creating conditions for centralized waste treatment, avoiding the situation in which enterprises' activities are difficult to control due to their dispersion in production locations.

1.4 Porter's Diamond Model

The level of innovation in a country's industries determines whether it has a competitive advantage. Competitiveness is an important factor in determining a country's existence and development. So, why are specific industries possible in different countries?. Porter's diamond model is an economic model that aims to highlight and

explain why specific industries or countries have become highly competitive in a specific location at the national level and spread to the whole world.

According to Porter's Diamond Model, countries can also advantage from superior manufacturing technology, skilled and efficient human resources, advanced technology, and favorable government policies that support the country's economy. Among the most important determinants of a country's ability to support economic growth are its natural resources, population, land, and geographic location.

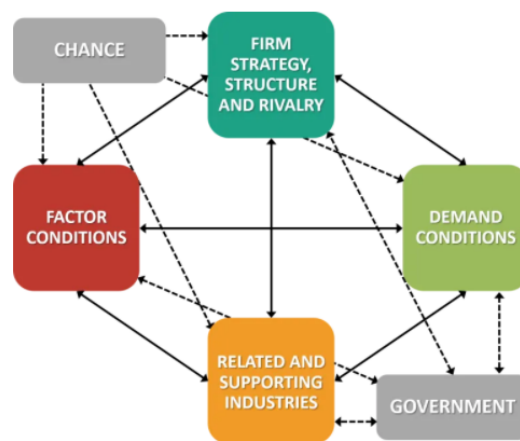


Figure: Porter's Diamond Model of Country Competitive Advantage

Source: <https://www.business-to-you.com/porter-diamond-model/>

There are four factors that determine a country's competitive advantage. They are factor conditions; demand conditions; firm strategy, structure, and rivalry; related and supporting industries.

Firstly, factor conditions such as capital resources, human resources, natural resources, information technology, scientific knowledge, and infrastructure. These factors will have an impact on enterprise labor productivity. In order to create a competitive advantage, it is necessary to effectively exploit and fully combine the available conditions.

Secondly, firm strategy, structure, and rivalry: are policies that promote labor productivity and labor incentive mechanisms creating value and increasing the company's competitiveness. Competitiveness will be influenced by effective management strategy

and organizational structure. Besides, the rivalry is critical for competitiveness because it forces businesses to develop differentiated and sustainable strengths and capabilities. Companies are pushed to constantly innovate and improve to maintain their competitive advantage.

Thirdly, Demand Conditions: the availability of sophisticated demand conditions from local customers drives businesses to expand, encourage innovation, and bring high-quality products to market in order to maintain their market position and increase their competitiveness.

Fourthly, The support of related industries and organizations, as well as the support of the local community and the state, are required for the development and success of businesses and countries. Companies frequently rely on alliances and partnerships with other businesses in order to add value to their customers and increase their competitiveness. For example, if a real estate business requires raw materials for construction, it will seek out mutually beneficial relationships with domestic businesses rather than searching the international market.

1.5 How Important are Clusters as an FDI Driver?

While Porter's approach was widely accepted, it also caused some disagreements, particularly among international business experts. According to Dunning (1993), Porter fails to take into account the "globalization of economic activity." FDI impacts national competitiveness due to the fact that FDI has the potential to influence factor conditions including related support industries, demand conditions, strategy, structure, and rivalry; it is expected to introduce new resources and technology (Dunning, 1993).

As noted by Birkinshaw (2000), the research on clusters was initially focused on local enterprises, but as a result of globalization, clusters are increasingly dominated by international firms, with large levels of foreign participation. Numerous studies show that FDI has a significant impact on competitiveness. It is typically considered as a source of modern technology including expertise in products, processing, and distribution, as well as management and marketing abilities (Blomström and Kokko, 1998). And it can create positive spillovers, the majority of the research suggests that the FDI cluster be beneficial to industrial competitiveness and advantage, resulting in technology spillovers for

domestic companies. The establishment of some international companies will attract talented employees working in the cluster. Additionally, Clusters will take full advantage of advanced technologies, tacit knowledge, and the diffusion of information. And these will make companies within-cluster become more competitive (Porter, 1998).

According to Porter (1998), Clusters and foreign investments are mutually independent concepts. Particularly, Clusters can attract FDIs by giving them access to resources, technologies, and markets. Multinational enterprises generate externalities in clusters by offering clusters access to assets, skills, and technology (Birkinshaw and Sölvell, 2000). FDI plays an important role in the evolution of clusters as well as the contribution to cluster creation.

Porter also suggested, “cluster development can be seeded and reinforced by inbound FDI”.

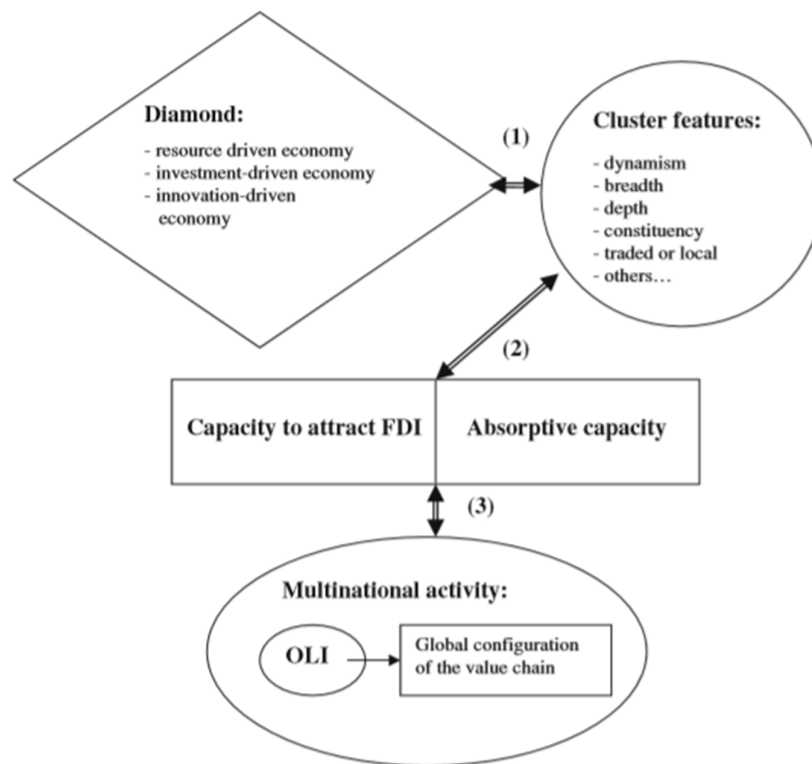


Figure: A General Conceptual Framework

Source: FDI Effects on National Competitiveness: A Cluster Approach

CHAPTER 2: A BROAD ANALYSIS ON CLUSTER GEOGRAPHY IN ASIA

By the late 1960s, Asia was the world's poorest continent, despite its large population. Its social indicators of development were among the worst in the world. Since then, Asia's economic progress and people's living standards have changed dramatically. By 2016, it recorded for 30 percent of global income, 40 percent of global manufacturing, and more than one-third of global trade, while its per capita income was moving closer to the global average (Gunnar Myrdal).

2.1 Industrial Clusters in China

In 1978, China's reform and open-door policy began with the 11th Central Committee of the Chinese Communist Party (CCPCC) adopting a new economic growth strategy. The Open Door policy was implemented by the national government. In 1979, The Party Central Committee determined that the provinces of Guangdong and Fujian would take the initiative in expanding up to the world, implementing "special policies and flexible measures." (Yeung, Lee, and Kee 2009). The rise in special economic zones (SEZs) and industrial clusters has been a key driver of China's rapid growth. These special economic zones (SEZs) will attract foreign investments and modern technology. In 1980, Shenzhen, Zhuhai, and Shantou in Guangdong and Xiamen in Fujian have been recognized as special economic zones (SEZs). These four zones were encouraged to adopt realistic and open economic policies that would serve as a test platform, once successful, would be implemented more generally across the country. And as China had recently expanded its markets to international commerce and investment, the SEZs had an almost immediate positive influence on the economy. The four zones represented 59.8% of overall FDI in China in 1981. In 1985, the four SEZs still accounted for 20% of China's total FDI (Wong 1987).

The rise in special economic zones (SEZs) has become a key driver of China's rapid growth. SEZs serve as a significant platform for attracting FDI and hosting new and high-technology businesses in China. The Chinese Government also consider the significant role of national innovation to the economy of China, so they have developed Science and Technology Industrial Parks (STIPs) and High-Tech Zones (HTZs). There

Province	City	Industrial Cluster
Zhejiang	Pingyang, Wenzhou	PP woven plastic packaging
	Xiaoshan, Hangzhou	Steel
	Yuyao, Ningbo	Mold
	Wenling, Taizhou	Plastic shoes
	Shaoxing	Textile
	Cixi, Ningbo	Household electronic appliances
Jiangsu	Yixing, Wuxi	Electric wires and cables
	Kunshan, Suzhou	IT
	Danyang, Zhenjiang	Eyewear
	Jiangyan, Taizhou	Energy equipment
Guangdong	Zhongshan	Machinery and electronics
	Guzhen, Zhongshan	Lighting
	Huadu, Guangzhou	Automobile
	Chenghai, Shantou	Toys
	Shenzhen	Electronic products
Shandong	Jiaonan, Qingdao	Textile machinery
	Penglai, Yantai	Wine
	Zhangqiu, Jinan	Transport equipment
	Liaocheng	Steel pipe

Table: Some Industrial Clusters in China

There are some factors that led to the formation of clusters in China are:

- The open-door policy
- The accumulated business and production capacity dating back to ancient dynasties
- Transmission of tacit knowledge from generation to generation
- Infrastructure/geographical advantages
- Facilitation, investment, and assistance from the government
- Natural and human resources, as well as a large, low-cost, but well-educated labor force

2.2 Industrial Clusters in Taiwan

Taiwan is a group of islands situated in East Asia, having borders with the People's Republic of China (PRC) to the northwest, Japan to the northeast, and the Philippines to the south. At the end of the 20th century, Taiwan is known to the world for its remarkable

economic development with the name "Asia's Little Dragon". These great economic achievements certainly have their historical foundation.

Many economic researchers in the late 1940s and early '50s expressed deep concern about the economic situation in Taiwan in terms of unfavorable population density, the scarcity of natural resources, a capital shortage, and an unpopular administration. But those assumptions were not correct. During the 1960s, The Taiwanese economy experienced significant growth. In order to achieve high economic growth, the Taiwanese government has concentrated on the development of industrial clusters around the island, especially in the Western Delta, creating momentum for the process of industrialization and modernization of Taiwan's economy. According to the research of Ranis (1992), Fei (1979), Ranis (1979), and Kuo (1983), the high economic growth rate is based on government policies. In the 1950s, the government implemented a number of major policies to promote exports, domestic investment, and industrialization. Particularly, Taiwan pursued an "import-substitution program" to create a base for the processing and manufacturing industry, self-produce basic consumer goods such as textiles and garments, and food processing, encourage private enterprises to import raw materials, semi-finished products, and machinery in order to increase the value-added content and promote the development of the SMEs. During the period 1961-1970, Taiwan continued to pursue an "export-oriented" strategy. This is the period of exporting labor-intensive industrial products, Japan's direct investment plays an important role in Taiwan's light industries such as textiles, and plastics. At the same time, increase production to replace imported goods for capital-intensive industries, creating conditions for the development of heavy industries such as steel production, chemicals, ... In the period 1971 – 1980, Taiwan continued to promote export-oriented industries. Investment by private and foreign companies has led to the formation of larger export industries, stronger business groups, and the development of SMEs. The period from 1980 to now: is the period of modernization and participation in the global production chain. The Taiwanese government has emphasized the development of advanced industries, capital-intensive and technology-intensive industries such as electronics, personal computers, IT, robotics, biotechnology.

In 1989, the SMEA, MOEA, started allocating resources to local industries. In order to retain the country's competitiveness in the global market, the government has promoted clustering as a critical strategy.

In order to respond to international competition, “reduction of tariffs and construction of export processing zones (EPZs) is encouraged”. Firms that invest in these zones benefit from preferred government policies and benefits such as modern infrastructure and easier access to utility services. For instance, in Kaohsiung in 1965, the first Export Processing Zone (EPZ) was constructed.

The increasing labor-intensive industrial zones attract people from rural to cities, especially Taipei and Kaohsiung. But then several types of industrial parks, including high-tech industrial parks, smart industrial parks, and capital-intensive industrial parks, have been established.

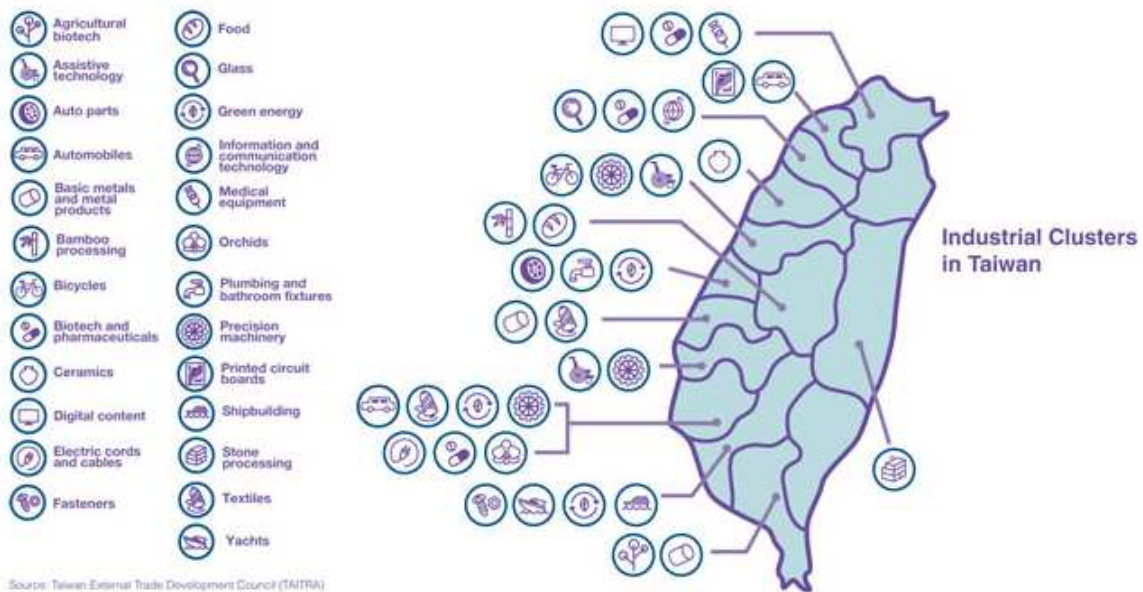


Figure: Industrial Cluster Distribution in Taiwan

Source: Taiwan External Trade Development Council (TAITRA)

From the figure, Taiwan's clusters tend to be concentrated in the western half of the island because the transportation infrastructure is more developed and easy to access. For instance, Taiwan's transportation system is excellent. High-Speed Rail travels from

the north to the south within only 90 minutes. And it takes an average of just 53 hours to ship goods from Kaohsiung port to the five major ports within the region such as Hongkong, Shanghai, Manila, Singapore, and Tokyo. Thanks to its geographical location, Taiwan not only acts as an important connection between America, Europe, and Japan to the emerging markets of the Asia Pacific region, but it is also an attractive place for multinational companies to put their Asia-Pacific headquarters.

Taiwan's industrial clusters are categorized into 3 groups: electronics and technology in the north, machinery in the central, and petrochemical products and heavy industries in the south.

Region	Industrial Cluster	Sector
Northern	Nankang Software Park	ICT and Smart Machinery
	Hsinchu Science Park & Yilan Science Park	ICT
	Jhunan Science Park	Biotechnology and ICT
	Longtan Science Park	Green Energy
	Tongluo Science Park	Green Energy, ICT, and Smart Machinery
	Nankang Biotech Plaza	Biotechnology
Central	Taichung Science Park	ICT and Precision Machinery
	Chung Hsing Park & Huawei Science Park	ICT
Southern	Tainan Science Park	ICT, Green Energy, and Smart Machinery
	Kaohsiung Science Park	Medical Equipment and Smart Machinery

Table: Industrial Clusters in Taiwan

Source: www.clustercollaboration.eu

When considering how Taiwan can support clusters it is useful to take into account the establishment of Hsinchu Science and Industrial Park (HSIP)

In 1980, Hsinchu Science and Industrial Park (HSIP) were established in order to attract foreign investment. The establishment of Hsinchu Science and Industrial Park (HSIP) is based on taking inspiration from Silicon Valley in the U.S. The park was built adjacent to two of Taiwan's major technical universities, National Chiao Tung and Tsinghua. Due to the extensive connections with universities, HSIP employs a highly skilled and motivated workforce including 45,000 master's degree holders and 3,900 doctoral degree holders. Semiconductor Industry is the largest industry in HSIP, accounting for nearly 75% of sales and driving Taiwan's export-led economy (S J Lee. Grace T R Lin, 2016). The achievement of HSIP is based on the following factors: (1) good infrastructure, (2) Encouragement of R&D and innovation, (3) university-industry cooperation, (4) Human capital with a high level of competency, and creative culture. The success of HSIP resulted in the so-called "Taiwan Economic Miracle". At the end of the 20th century, Taiwan is known to the world for its remarkable economic development with the name "Asia's Little Dragon"

Due to continuous upgrades among closely-knit groups of individual firms, Taiwan's industry clusters have remained robust over the last decades. It has been shown that Taiwanese clusters are the primary driver of economic growth and international competitiveness in Taiwan and its various regions.

2.3 Industrial Clusters in South Korea

SouthKorea began the process of industrialization and economic development in the early 1960s. Korea is a country with a lack of natural resources, but thanks to its dynamic and export-oriented economic policy, Korea has become one of the leading developed economies in Asia. To achieve the above results, great contributions come from policies on industrial cluster development, focusing on research, innovation, and application of science and technology, building an effective interactive network between enterprises and training organizations.

In Korea, a number of promising industries have been selected and supported over the years to develop into industrial clusters that play a key role in boosting exports,

creating jobs, and developing the regional economies (KICOX, 2010). The active participation of training organizations such as universities and research institutes helps industrial clusters promote innovative research activities. In addition, The Korean Government plays an important role in supporting and coordinating clusters to develop and achieve economic goals in each region.

From the 1960s through the 1980s, there were three distinct phases of industrial policy that defined the period of high industrialization. During the 1960s, the main policy was the promotion of labor-intensive export industries. In the 1970s, the government adopted a selected industrial policy. In the 1980s, the government shifted its focus to high-tech industries (Jong-il Kim, 2015). The following are some of the most crucial aspects of Korea's industrial development policy:

- Development of Export Industrial Park in the 1960s: industrial policies focused on developing light industry, with a focus on the garment industry in The Guro Industrial Park and The Ulsan Industrial Park

- The Growth-Pole Development Strategy of the 1970s: industrial policies focused on developing heavy industry and chemicals, focusing on iron and steel industry in Pohang, machinery (Changwon), electronics (Gumi), petrochemicals (Ulsan).

- Balanced Development Policy in the 1980s: industrial policies concentrated on technology industries, with a focus on the production of materials and components in Barwon Sihwa and Namdong.

- Innovating Industrial Clusters in the 1990s and 2000s: industrial policies focused on the information technology industry in Seoul Digital, Suwon, and Ulsan.

During the 2000s, the most critical policy considerations were the reduction of regional and sectoral inequalities, as well as the promotion of industrial innovation.

The most well-known and developed industrial cities in Korea are in the southeast. Busan Port is one of the 9 busiest seaports in the world. Ulsan - the place with the highest per capita income in Korea and is considered the "capital" of Hyundai.

A chaebol is a large family-owned company in Korea considered as the engine of the Korean economy such as Samsung, Hyundai, and LG Group. Moreover, half of the

country's exports are accounted for by these corporations. And they contribute to the inflow of the vast majority of South Korea's foreign capital. The government's collaboration with chaebols has played a key role in South Korea's economic growth and incredible successes. The chaebols have quickly developed into global enterprises.

2.4 Industrial Clusters in Malaysia

Malaysia's economy has grown significantly since independence in 1957. Malaysia is now classified as an upper-middle-income country, with its GDP per capita rising from \$300 in 1962 to \$10,430 in 2013. From 1957 to 1969, The implementation of an export-oriented industrial development policy, including the establishment of Free Trade Zones, in conjunction with efforts to attract FDI, has promoted the manufacturing sectors, such as electrical and electronics (E&E) as well as textiles. In 1985, Malaysia achieved remarkable success in absorbing FDI in establishing itself as the world's largest electronics exporter, particularly between 1970 and 2013, net FDI inflows surged from \$ 94 million to \$11,582 million.

Promoting industrial clusters has become a fundamental aspect of Malaysia's industrial policy. By understanding the need for upgrading skills, R&D, and S&T for productivity growth, the government developed Industrial Master Plan 1 (IMP1, 1986-1995), Industrial Master Plan 2 (IMP2, 1996-2005), and Industrial Master Plan 3 (IMP3, 2006-2020). These policies are mainly focusing on manufacturing and service industry development.

IMP1 (1986-1995) established the basis for manufacturing to become the economy's major sector. Its key goals were to increase production, use natural resources efficiently, and promote indigenous technological capabilities. IMP2 (1996–2005) consisted of two components: manufacturing plus and cluster-based industrial development. IMP3 (2006-2020) was tasked with the objective of achieving global competitiveness in an era of global integration. It will identify subsectors inside each cluster for further focused targeting.

The key policies for cluster development in Malaysia:

According to Kuchiki's methodology, Malaysia has already entered the quality development phase and is transitioning from the agglomeration phase to the innovation phase. Since the first Free Trade Zone opened in 1972, Malaysia has built good infrastructure and made administrative procedures easier in the zones and then across the country.

Since the 1970s, Malaysia has benefited from enormous inward FDI by multinational corporations. The Malaysian Investment Development Authority (MIDA) was created in 1967 to attract FDI. MIDA provides a one-stop service to foreign investors for manufacturing licenses, tax advantages, duty exemptions on raw materials and components, and duty exemptions on agricultural machinery and equipment, among other services.

Malaysia has established many research and technology development institutions. For instance, the Malaysian Institute of Microelectronic Systems (MIMOS) was established in 1985. MIMOS provides necessary manufacturing, testing, and packaging facilities for local enterprises. MIMOS supported local firms' skill development. Besides, The Malaysian Technology Development Corporation (MTDC) was created in 1992 to promote industrial upgrading. MTDC has offered early-stage finance to promising high-tech start-up enterprises.

Infrastructure development for innovation: In the late 1990s, the government created R&D infrastructure. In 1996, the government opened the first Hi-Tech Park, the Kulim Hi-Tech Park (KHTP), in the Penang area, as part of the substantial infrastructure.

Improvement of incentives and institutions for innovation: Since 1996, the government has increased the number of fiscal and financial incentives to improve indigenous enterprises' R&D capacity and partnerships with research institutes. Several new grants were established between 1996 and 2000 to encourage more scholars to do market-driven research.

High-skilled human resource development: Malaysia's government has made an attempt to boost the supply of qualified workers by increasing capacity in educational and training institutions.

CHAPTER 3: VIETNAM INDUSTRIAL CLUSTERS

3.1 Historical Context

3.1.1 Subsidy Phase (1976-1985)

This is the period of the “Subsidy Economy” (1975-1986). Since 1975, Vietnam's economy has been faced with numerous challenges, including production constraints, supply-and-demand imbalances, distribution inefficiencies, inflation rising, and governmental corruption.

Since its reunification in 1976, Vietnam has adopted the socialist development model that has been imposed on the entire country. During this time, the government-controlled the economy primarily by enforcing a set of norms that applied to the entire system, and an inefficient model of administrative subsidies. Salaries were not determined by job efficiency, but by the quantity and quality of work produced. As a result, this strategy was unable to reward skilled laborers who worked effectively.

Economic growth during this period was low and inefficient with 80% of the people living in rural areas and 70% of the labor force dependent on agriculture. The average GDP per year in the period 1977-1985 increased by 4.65%, of which: agriculture and forestry increased by 4.49%/year; industry by 5.54%/year and construction by 2.18%/year.

The population increased by 5 million from 1975 to 1979, although food consumption increased very slightly (1976: 13,493,000 tons; 1979: 13,984,000 tons). Inflation reached triple digits by 1979 (1976: 128 percent, 1981: 313 percent). The economy's supply was insufficient to meet the demand for food.

The Government advocates quickly eradicating illiteracy as a top priority task. By early 1978, illiteracy had been virtually eliminated in all southern provinces and cities. In 1977, the country had just 260 high schools, around 117,000 students, and 7,800 teachers. By 1985, there were 314 professional secondary schools, with 128,000 students and 11,400 teachers.

Indicators	1976-1980	1981-1985
Population	2.24	2.19
General Social Production	1.4	7.3
National Income	0.4	6.4
Total Industrial Production Value	0.6	9.5
Total Agricultural Production Value	1.9	5.9
State's Fund on Capital Construction	5.6	9.5
Total Export Value	11.0	15.5
Total Import Value	6.4	7.2

Table: Average growth rate of some economic targets

Source: Department of Statistic, *Việt Nam – Facts and Figures 1945-1980*

The table above illustrates the average growth rate of several Vietnamese economic targets from 1976 to 1980 and 1981 to 1985 including Population, General Social Production, National Income, Total Industrial Production Value, Total Agricultural Production Value, State's Fund on Capital Construction, Total Export Value, Total Import Value.

3.1.2 1986-2000 (Doi Moi)

The period 1986–2000 is called the transition period of the Vietnamese economy, from a centrally planned economy to a market economy. Vietnam began Doi Moi (Renovation) and adopted an open-door policy.

During the period 1986-1990, Vietnam concentrated on the 'Three Major Economic Programs' in the Fourth Five Year Plan which included the production of foodstuff, consumer goods, and export goods. Regarding the open door policy, one of the initial reform priorities was the foreign investment and trade system. In 1987, a new International Investment Law was adopted, which produced a very advantageous environment for foreign investors. As a result, inflows of FDI from countries in East Asia, particularly, soared in the 1990s. Most of the leading foreign investors in Vietnam are from Singapore, Taiwan, Hong Kong, and South Korea.

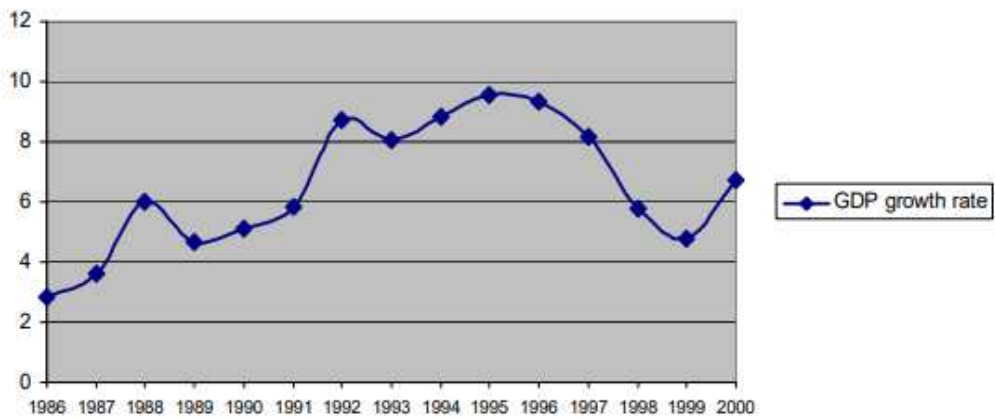


Figure: Growth in the period 1986-2000 (%)

Source: GSO (2000, 2001)

Figure shows that the Vietnamese economy grew rapidly. More precisely, the GDP growth rate in 1986 was 2.84 percent, but by 1995, the economy had improved significantly, with a GDP growth rate of 9.54 percent. However, the Asian crisis had a significant impact on the economy from the middle of 1997 until the end of 1999. The economy had become more steady with a GDP growth rate of 6.75 percent in 2000.

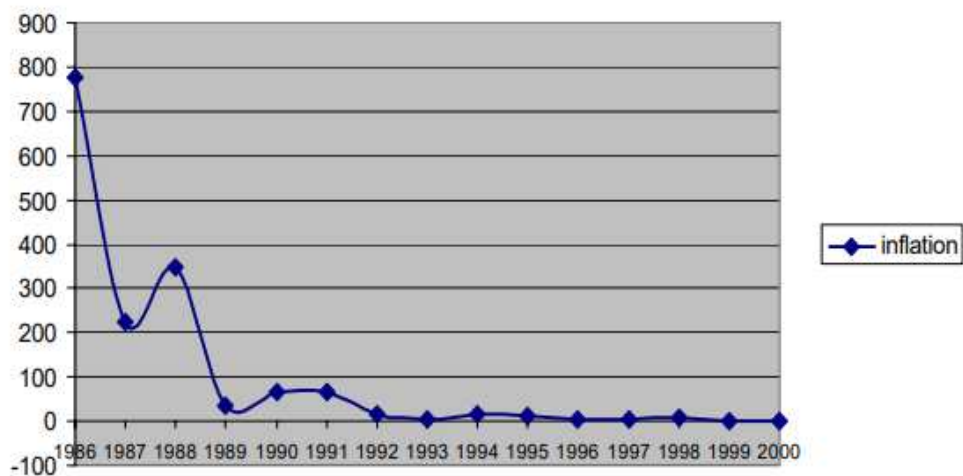


Figure: Inflation in the period 1986-2000 (%)

Source: GSO (2000, 2001)

The rate of inflation has decreased (see Figure). For example, the rate of inflation in 1986 was 774.7 %, 4.5 % in 1996, and -0.6% in 2000, respectively.

In summary, after 15 years of economic transition, Vietnam has achieved a number of promising outcomes, including rapid economic development and financial stability. However, the country is still confronted with a number of significant obstacles.

3.1.3 2001-2010

Stepping into the implementation of the 2001-2010 socio-economic development strategy, The Vietnamese economy was hit hard by the 1997 regional financial and monetary crisis, as well as the worldwide financial and economic crises that began in 2008. However, The country has made significant progress, emerging from underdevelopment and joining the group of developing countries with a medium-income level. The economic structure has changed in a favorable direction. Regulation of the socialist-oriented market economy has been continuously improved.

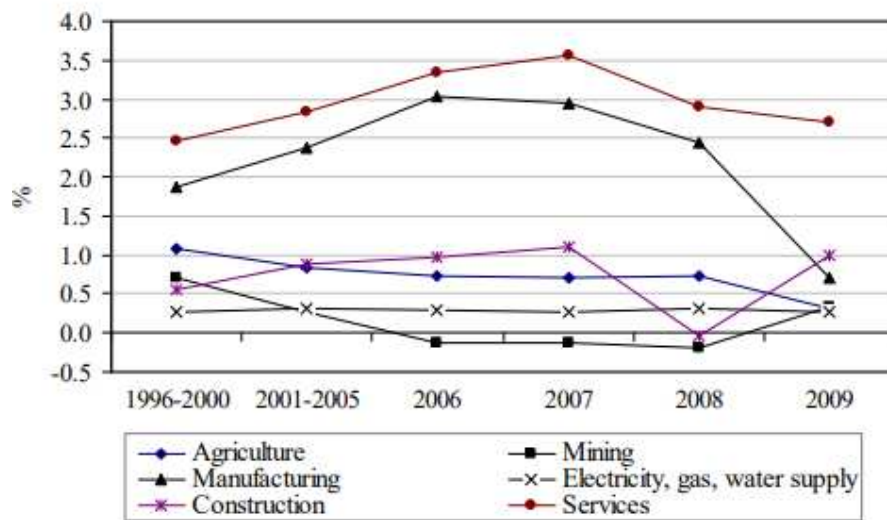


Figure: Contribution to GDP Growth Rates by Sector, 1996-2009

Source: Phạm Văn Hà (2010)

Figure depicts the degree of contribution to GDP growth of the economy by main sub-sectors from 1996 to 2009. It is clear that for more than a decade, the services and processing industries (manufacturing) have played an important role in economic growth. The manufacturing industry's 2009 contribution was considerably reduced as a result of the crisis.

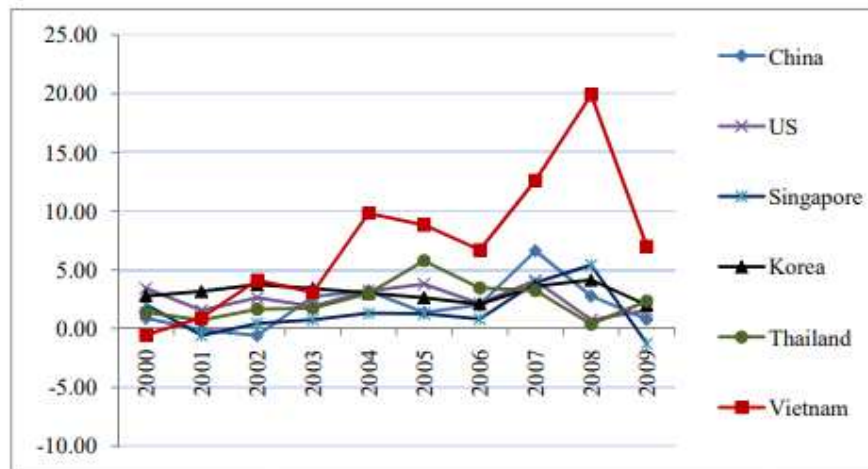


Figure: Inflation Rates in Vietnam and some selected countries, 2000-2009

Source: Nguyen Thi Thu Hang et al. (2010)

According to the figure, Vietnam's inflation rate has been higher, more volatile, and more persistent since 2004 compared to other countries. Inflation in Vietnam reached its greatest level and was most volatile in the year 2008, compared to the previous ten years.

In November 2006, Vietnam became a member of the World Trade Organization (WTO), the country was able to extend an unexpected period of deep integration, increase the volume of international trade and investment transactions, and improve the level of capital inflows (including indirect direct investment).

In general, The average growth rate per year reached 7.26% compared to the period 1991-2000, this is a very important success. The quality of people's lives has increased greatly; religious freedom has been respected; gender equality has improved, and democracy has expanded.

3.1.4 2010-Present

According to the report of 10 years of implementing the Socio-Economic Development Strategy, 2011-2020, GDP growth is around 5.9% per year despite being significantly impacted by the COVID-19 pandemic in 2020, making it become one of the world's and the region's fastest-growing economies.

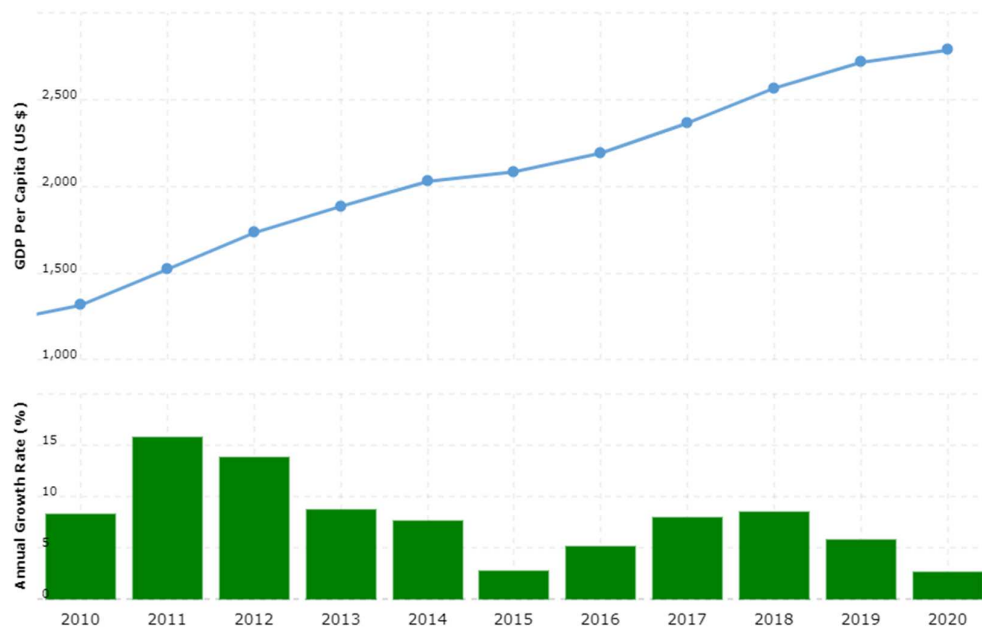


Figure: Vietnam Annual Growth Rate (%) and GDP per Capita (US \$) from 2010 to 2020

Source: World Bank

Figure shows that the yearly average growth rate from 2011 to 2015 was 5.9 percent, whereas the growth rate from 2016 to 2019 was 6.8 percent, and it is expected to rise to between 2% and 3% by 2020. GDP per capita rose steadily from 1,331 USD in 2010 to 2,750 USD in 2020.

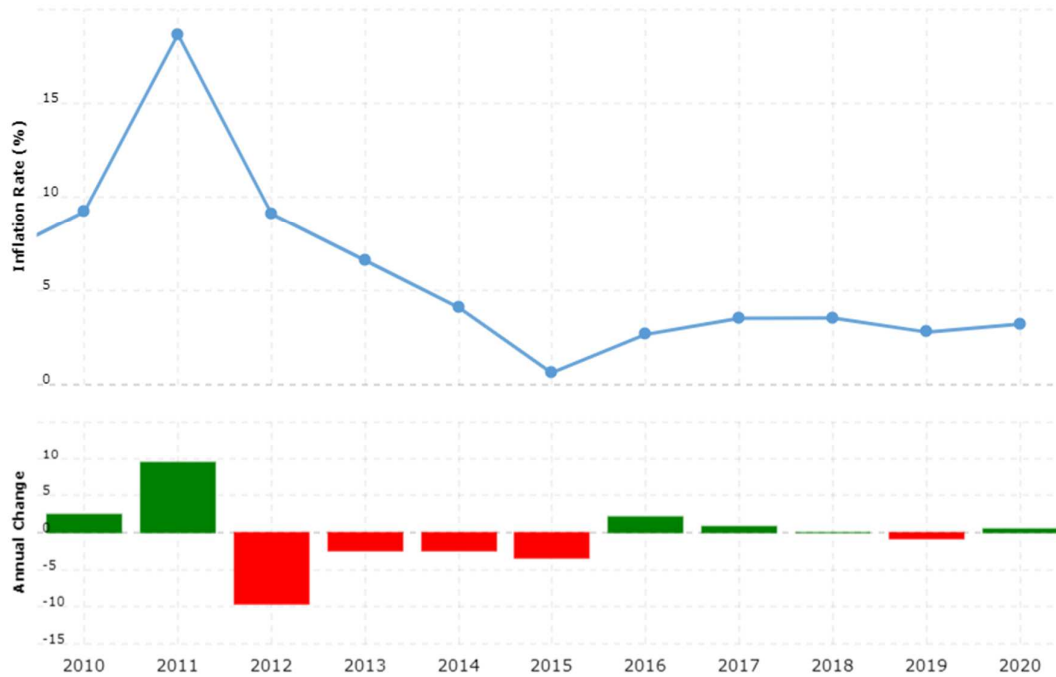


Figure: Vietnam Inflation Rate 2010-2020

Source: World Bank

Figure indicates that the inflation rate in 2011 was 18.58 percent, becoming the highest in the 2010-2020 period and the second-highest (after 2008) in the 2000-2020 period. Inflation generally fell between 2011 and 2015 as a result of the synchronized implementation of tight fiscal and monetary policies aimed at encouraging production, raising exports, and managing the trade deficit. In 2015, the rate fell to a historic low of 0.63%. In the period from 2016 to 2020, Vietnam's inflation rate has always been kept stable at 4%.

The total value of products imported and exported increased by 3.6 times between 2010 and 2020, from 157.1 billion USD to roughly 544 billion USD. By 2020, exports will have risen from 72.2 billion USD in 2010 to over 282 billion USD, representing an average annual growth rate of 14%. This will be a significant driver of future economic growth.

3.2 Political Context

Vietnam is a socialist country governed by the Communist Party of Vietnam. The Party holds a national congress once every five years in order to set the country's long-term goals and objectives.

The National Assembly of the Socialist Republic of Vietnam is the national legislature of the Socialist Republic of Vietnam. The assembly appoints the President and the Prime Minister. The President, the country's Head of State will be in charge of domestic and foreign affairs. The Prime Minister is the Head of Government which is the highest organ of state administration of the Socialist Republic of Vietnam, It implements and manages political, economic, cultural, social, national defense, security, and foreign relations of the state. The General Secretary of the Central Committee of the Communist Party of Vietnam is the highest representative within the Communist Party of Vietnam, and the current general secretary is Nguyen Phu Trong.

The Constitution of the Socialist Republic of Vietnam is Vietnam's current constitution, which was adopted by the 13th National Assembly on November 28, 2013. It is the Vietnamese government's fourth constitution since the country's political reunification in 1976. The 2013 Constitution is Vietnam's highest legal document, formalizing the Communist Party of Vietnam's core principles in economic and political legislation, socialist objectives, and people's freedom rights.

3.3 Macroeconomic Framework

Political and economic reforms (Doi Moi) initiated in 1986 have shifted Vietnam from one of the world's poorest countries to a middle-income economy in less than a quarter-century. From 2002 to 2018, the GDP per capita increased by 2.7 times, reaching more than USD 2,700 in 2019. This was followed by a substantial decrease in poverty, with over 45 million people escaping poverty.

Due to extensive international economic integration, Vietnam's economy was heavily affected by the COVID-19 pandemic, but it also demonstrated remarkable resilience. In 2020, the GDP increased by 2.9 percent. The GDP in the third quarter of 2021 increased by only 1.42% over the same period last year. According to the General

Statistics Office Report, in the first nine months of 2021, the agriculture, forestry, and fishery sector grew by 1.04%, while the industrial sector and construction decreased by 5.02%, and the service sector decreased by 9.28% over the same period last year. The service sector is seriously affected by the Covid-19 pandemic.

Industrial production in the third quarter of 2021 was confronted with numerous challenges due to the ongoing Covid-19 pandemic. Particularly in areas with major industrial zones, when social distance had to be implemented for an extended period of time causing the interruption of the supply chain as well as the increasing production cost. Starting in June 2021, the price of raw materials including agricultural raw materials and input materials for industrial production, increased by 38.25% compared to the same period last year. The ongoing Covid-19 outbreak has caused numerous businesses to incur losses. Generally, in the first nine months of 2021, 85.5 thousand new businesses were registered, representing a decrease of 13.6 percent when compared to the same period in 2020.

3.4 Vietnamese Industrial Clusters Overview

Industrial clusters have positively influenced Vietnam's growth and development by attracting FDIs, increasing export turnover, expanding international markets, changing export structure, and creating jobs. The development of clusters has influenced other aspects of the economy, such as economic restructuring, industrialization, modernization, and bringing Vietnam closer to the global production value chain.

By the end of 2020, Vietnam has 381 industrial parks and export processing zones, with a total planning area of 114,000 hectares, of which 90,800 hectares have been used. Currently, only 331 industrial and export processing zones have been constructed, accounting for roughly 87 percent of the total. The average occupancy rate of industrial zones in operation is around 75%, with Linh Trung III export processing zone (Tay Ninh province) and Linh Trung II export processing zone (HCMC) both having 100% occupancy rates. Over the years, industrial and export processing zones have attracted 9,381 FDI projects worth 191.6 billion USD.

According to the National Land Use Planning Report, industrial zones will be divided into 6 regions:

The Northern Midlands and Mountains region, in particular, has established 30 industrial zones with a total land area of 7,000 hectares, of which 5,200 hectares has been allocated, representing an increase of 2,720 hectares since 2010.

The Red River Delta has established 94 industrial zones covering 26,000 hectares, of which 19,950 hectares have been allocated and used, an increase of 4,920 hectares since 2010.

North Central Region and Central Coast region has constructed 68 industrial zones with a total size of 22,000 hectares, of which 17,100 hectares have been allocated, a rise of 7,240 hectares compared to 2010.

The Central Highlands has set up 10 industrial zones with an area of 2,000 hectares. The area that has been allocated and used is 1,550 hectares, which is 290 more than in 2010.

The Southeast region has more than 100 industrial zones have been set up, with an area of 44,000 hectares. Of this, 34,240 hectares of land have been allocated and used, an increase of 50 hectares from 2010.

The Mekong Delta region contains 60 industrial zones totaling 13,000 hectares, of which 12,760 hectares have been allocated and used, an increase of 3,580 hectares since 2010.

On the other hand, the concentration of clusters in some regions and along national highways has put significant pressure on technical and social infrastructure in the area surrounding the industrial cluster. And in terms of economy, ecology, and society, clusters have not developed in a sustainable and balanced manner.

3.5 Locations of Industrial clusters in Vietnam

Vietnamese clusters are concentrated mainly in some provinces in Southeast, the Red River Delta, and the Central Coast such as Hanoi, Hai Phong, Bac Ninh, Da Nang, Quang Nam, Dong Nai, Binh Duong, and Ho Chi Minh City. They were established in provinces and cities, mainly concentrated in key economic regions in order to promote

the advantages of the region's geographic location as well as its potential for economic development.

These clusters have extremely favorable conditions for traffic and good infrastructure as they are regions located in key economic regions (North, Central, and South).

The Southeast has raw materials for agricultural products (coffee, pepper...), petroleum, and gas. Located near the rich raw material area in the Central Highlands.

The Red River Delta is a raw material for food, near the Northern Midlands is a region rich in minerals, agricultural products, and aquatic products.

The Central Coast is rich in aquatic and mineral resources.

These are regions with favorable geographical position, contiguous to the sea, having a large deep-water seaport system, close to international maritime routes, and the largest concentration of transport hubs in the country such as Hanoi and Ho Chi Minh City.

3.6 Vietnam's Industrial Policy

After more than 30 years of renovation, Vietnam has achieved important successes in the process of socio-economic development and is moving towards the goal of becoming a modern industrialized country associated with a knowledge economy... Industrial zones play an important role in the national socio-economic development strategy because they help evolve in harmony with the national urban-rural system, ensure sustainable development. The development of Industrial Parks (IPs) and Economic Zones (Ezs) have actively contributed to improving the business investment environment and encouraging the renewal of administrative procedures.

Industrial Parks (IPs), Economic Zones (EZs) models, in which Economic Zones including Export Processing Zones (EPZs), Coastal Economic Zones (CEZs), and Border-Gate Economic Zones were formed and developed in accordance with the renovation line established by the sixth National Party Congress in 1986 in order to

implement the policy of developing a multi-sector, open-door commodity economy and attracting resources from many economic sectors to develop the country.

In the period of 1991 - 2000, the EPZs, IZs, and EZs models were piloted and eventually replicated, with the initial legal corridor being Decree 322/HDBT in 1991 and Decree 36/CP in 1997. In 1995, Tan Thuan EPZ was first established, the whole country had 12 EPZs, with the majority of them located in Ho Chi Minh City and Hanoi; by 2000, the country had 65 EPZs and IZs. The Prime Minister established the Mong Cai SEZs in 1996, and in 1998, preferential policies for the Moc Bai and Lao Bao SEZs were approved. By 2000, the whole country had 8 SEZs with preferential policies being piloted.

In the 2001-2010 period, the government is strongly developing industrial Park (IPs), creating more Economic Zones (EZs), and implementing the Special Economic Zone (SEZs) model: During this period, Vietnam set out a strategy of industrialization and modernization in line with the socialist orientation. The legal corridor on industrial, economic, and economic zones was formed by Decree 29/2008/ND-CP, Decree 52/2008/QD-TTG, Decree 33/2009/QD-TTG, and Decree 100/2009/QD-TTG. In 2003, the Government opened the first EZ in Chu Lai; By 2008, we had 14 EZs.

From 2011 to the present, Industrial Zones (IPs) and Economic Zones (EZs) will be further developed in order to attract quality investment: The objectives of this plan are to achieve effective and sustainable long-term growth. In conjunction with progress, social justice, environmental preservation, and the protection of natural resources and the environment, effective industrial zones and economic zones with a focus on high technology and innovation are required to be developed at a higher level, be more sustainable, and be more in-depth. The legal framework for the development of industrial and economic zones at this time is concentrated on Decree 164/2013/ND-CP, Decree 114/2015/ND-CP, and particularly Decree 82/2018/ND-CP.

In recent years, industrial zones and economic zones have attracted a large amount of investment capital, supplementing important resources for development investment and contributing to economic growth. They have also helped to accelerate the process of industrialization and modernization, promote sectoral and regional linkages, ... Besides, have also contributed to the acceleration of productivity growth in the sector, the improvement of export value, and the enhancement of the economy's competitiveness.

In order to enhance the competitiveness of industrial parks, the "one-stop-shop, on-site" mechanism is implemented by Decree No. 36/CP issued April 24, 1997. Under this mechanism, investors only have to go to one place, the Management Board of Provincial Industrial Parks, when they require assistance with procedures such as granting and amending investment licenses, granting and renewing work permits, supplying labor, resolving labor disputes, and other procedures that are directly related to their activities. By implementing this mechanism, there are some initial results achieved. For instance, Dong Nai industrial zones, with administrative reform implemented under the "one-stop-shop, on-site" management system being one of the most essential aspects. By the end of 2016, Dong Nai industrial zones had attracted 600 projects from domestic investors as well as investors from 26 countries and territories around the world, resulting in total registered capital of more than 7.1 billion USD, with enterprises with 100 percent foreign capital accounting for 83 percent of total registered capital in the zone.

In order to continue to improve the attractiveness of the business investment environment of IZs and EZs in Vietnam, the Ministry of Planning and Investment The private sector has been and continues to carry out tasks and solutions for the development of IZs and EZs, in which some key tasks have been identified in the coming time: (1) perfecting the management model and providing investment incentives of industrial zones and economic zones; (2) developing models of industrial zones and economic zones with higher planning quality, management level, and technical infrastructure; (3) improving the linkage and cooperation between industrial zones and economic zones.

3.7 Main Industrial Clusters in Vietnam

3.7.1 Nam Dinh Vu Industrial Zone (Northern)

Nam Dinh Vu Industrial Park which is one of the country's development-oriented coastal economic zones (Ezs) is located in the heart of the Dinh Vu - Cat Hai Economic, Hai Phong province. Nam Dinh Vu Industrial is a specially designed industrial park associated with the seaport system - the logistics chain in Northern Vietnam.

Nam Dinh Vu Industrial Park promotes and attracts investment in the following industries:

- Electrical, electronic components, computer components

- Supporting industry, industrial machinery, and equipment, spare parts
- Logistics, warehouse business,
- Producing plastic products, packaging

Nam Dinh Vu Industrial Park is considered as the most attractive area attracting many investors including domestic and foreign investors for the following factors:

The first is about its golden location: With the advantage of enjoying the benefits from Hai Phong's port system, this is also the only industrial park in Vietnam that has an internal seaport - Nam Dinh Vu Port. Hai Phong is an old port city located in the heart of the North Coast region, with easy access to both domestic and international trade. It is identified as the main gate connecting Vietnam with the world.

The second is the infrastructure. Nam Dinh Vu Industrial Park, which has been identified as a significant area for attracting investment in Hai Phong in general and northern Vietnam in particular, has completed the construction of a synchronous infrastructure to be handed over to clients, allow investors to deploy operations, production and business activities with optimum comfort. The domestic and international transport infrastructure connections facilitate goods delivery, minimize costs and logistics concerns.

The third is Nam Dinh Vu Industrial Park offers low rental unit and service prices, as well as flexible and attractive incentive plans to fulfill the different needs of investors.

Aside from its favorable geographical location, the labor force is also an advantage of the port city. As of 2019, Hai Phong has 1.2 million employees, of which 75% are trained. Particularly, Hai Phong is the hub of the northern coastal area, with a total population of over 20 million people. With 4 major universities and over 60 colleges and vocational institutions, it can be affirmed that Hai Phong has high-quality human resources, that match high-tech requirements. It will meet the needs of investment enterprises in Nam Dinh Vu industrial park.

As a model of an industrial park combining seaport services, Nam Dinh Vu Industrial Park fully plans areas such as warehouses, logistics, customs services, post offices, and office areas to serve the short-term and long-term needs of investors as well as partners.

Since the US-China trade war broke out in 2018, the US and some developed Western countries have made efforts to promote the process of moving part of the supply chain out of China. As a result, ASEAN (including Vietnam), due to its proximity to the Chinese market, has received large FDI inflows in recent years. Vietnam is considered the most attractive destination in ASEAN due to its international seaport system, developed industrial park infrastructure, and stable policies.

Especially in the context that the epidemic is still complicated in the world, aviation and road transport face many difficulties, and sea transport is the optimal transportation channel. Countries in ASEAN that have the advantage of seaports will have more advantages in attracting investment.

This partly explains the growth of FDI inflows to Vietnam in general and to Hai Phong in particular in the first nine months of 2021, despite the impact of the fourth outbreak.

3.7.2 Hoa Khanh Industrial Zone (Central)

Hoa Khanh Industrial Park was established in 1998 in Da Nang City which has a fairly accessible transportation condition: 13 kilometers from Da Nang City, 20km from Da Nang airport, 20km from Tien Sa port. With its location in the central district of Da Nang city, Hoa Khanh Industrial Park also takes advantage of the city's available service infrastructure. Da Nang is currently the largest financial center of the Central Highlands region, with 57 banks. In addition, Da Nang is also considered one of the three largest postal centers with all types of modern and convenient services. Hoa Khanh Industrial Park has a modern and synchronous infrastructure to fulfill the production and business needs of its enterprises.

In recent years, It has played an important role in the industrial development of the city and the location that attracts the majority of investment projects, particularly from Japanese investors. There are 23 Japanese companies in this industrial park accounting for over half of all FDI projects. It is also creating jobs and increasing incomes for workers.

Some industries that attract FDIs:

Mechanical engineering

Electrical equipment

Chemicals

Manufacture of spare parts for cars and motorbikes

There are many investors not only domestic but also foreign companies choose to invest in Hoa Khanh Industrial Park. Aside from the state's policy of encouraging investment in industrial parks, more domestic and foreign companies choose to invest due to the parks' convenience. a one-stop brings. This has enabled investors to promptly resolve issues relating to materials and goods import and export, customs, taxes, and workforce recruiting. At the end of June 2013, there were 190 investment projects in the Hoa Khanh Industrial Park, 47 of which were FDI projects.

3.7.3 Vietnam – Singapore Industrial Zone (Southern)

VSIP is located in Binh Duong Province, 17km north of Ho Chi Minh City. The city's developed infrastructure, professional services, and social facilities are easily accessible. VSIP is also close to Tan Son Nhat International Airport and important seaports.

Vietnam-Singapore Industrial Parks (VSIP) was founded in 1996 to promote bilateral commerce and investment between the two countries. Electronics, automobile components, consumer goods, and medicines are among the most popular industries for VSIP investment.

VSIP has completed 10 projects totaling 10,000 hectares. VSIP provides production infrastructure to 840 clients in over 30 countries and territories, generating over 250,000 direct jobs. This shift in focus has resulted in the creation of sustainable environments for working, living, learning, and playing. There are 7 main economic zones across Vietnam: Binh Duong, Hai Duong, Haiphong, Bac Ninh, Nghe An, Quang Ngai. VSIP I in Thuan An District is presently one of Vietnam's premier industrial parks. Among these, VSIP I in Thuan An District is presently one of Vietnam's premier industrial parks.

Aside from ongoing growth, VSIP hosts several community events. Every year, the company hosts a charity event to generate funds for local charities, foster homes, and schools. The VSIP Charity Days draw hundreds of workers from the industrial park to assemble and enjoy entertainment. Furthermore, the two countries collaborated to transform VSIP from a traditional industrial park to an integrated township and industrial park, introducing new urban solutions. The Habitat Binh Duong high-end residential project is one such example.

In the first 9 months of 2019, VSIP Industrial Park has attracted about 760 billion VND of local investment funds. VSIP IPs presently have 42 domestic investment projects with a total registered capital of around 9,842 billion VND. FDI into VSIP Industrial Park increased significantly compared to the same time in 2018.

As noted, many significant FDI projects in VSIP IPs have formally started. For example, the TATA Group (India) recently inaugurated and started up the Tata Coffee Vietnam Co., Ltd instant coffee plant project. The project, built on 80,000 m² at VSIP II Industrial Park, cost \$65.5 million (Bac Tan Uyen District - Binh Duong). This is a 5,000 ton/year cold-dried coffee factory to provide the global market with new instant coffee varieties. Tetra Pak sterilized paper box plant project of Tetra Pak Group (Sweden) has just started operating in Binh Duong. This factory makes aseptic paper packaging for the domestic market and exports to ASEAN and Oceania.

VSIP I - Binh Duong Industrial Park is now one of Vietnam's premier industrial parks. VSIP I has attracted 231 projects with a total investment capital of around 3.2 billion USD. VSIP I also created 95,000 jobs and helped Binh Duong industrialize, modernize, and urbanize. Following the success of VSIP I Industrial Park, VSIP introduced VSIP II Industrial Park - Binh Duong in 2006. VSIP II Industrial Park has now completed infrastructure construction, attracting almost 340 industrial projects worth nearly \$5 billion USD. To meet the growing demand for land lease and to attract further FDI inflows, VSIP's management unit constructed VSIP III - Binh Duong in Bac Tan Uyen District, Binh Duong, in 2018.

Binh Duong has created a brand in attracting FDI, becoming the country's most dynamic socio-economic growth province. VSIP I and VSIP II Industrial Parks In Binh

Duong have made significant contributions to the socio-economic development of Binh Duong..

CHAPTER 4: COVID-19 PANDEMIC: OPPORTUNITIES AND CHALLENGES FOR VIETNAMESE INDUSTRIAL CLUSTERS

4.1 COVID-19 Pandemic

4.1.1 Covid-19 Pandemic in Vietnam

COVID-19 is a disease caused by a virus called SARS-CoV-2. The pandemic of COVID-19 started in China, a neighboring country to Vietnam. Due to the two countries' close proximity and the high volume of travel and trade that occurs between them on a regular basis, Vietnam cannot avoid the spread of infectious diseases.

Among the nations that have been affected by the COVID-19 pandemic, Vietnam has been effective in preventing the spread of the virus since the beginning, with no deaths reported for several months. However, the most recent wave of the COVID-19 pandemic (the fourth wave) has been doing damage to Vietnam.

In Vietnam, there have been four waves of the COVID-19 outbreak, with transmission rates increasing each time.

Wave	Time	Number of Cases	
		Sum	Death
1	23 January – 24 July 2020	415	0
2	25 July 2020 – 27 January 2021	1,136	35
3	28 January – 26 April 2021	1,301	0
4	27 April 2021 – ongoing	2,000,000 +	35,000+

Figure: Coronavirus pandemic waves in Vietnam

Source: Ministry of Health of Vietnam

The first wave of the COVID-19 disease outbreak began in Vietnam on January 23, 2020, and lasted for 85 days, resulting in 100 community cases with no death reported.

The second COVID-19 wave (129 days, from July 25 to December 1, 2020) began in Da Nang. A substantial number of community instances resulted in 35 deaths of elderly or have comorbidities. But the pandemic was controlled.

The third wave of the COVID-19 (which lasted 57 days, from January 28 to March 25, 2021, and had 910 community cases) occurred in Hai Duong, with the new British variation. Despite a large number of infected individuals, the majority of them are young and in good health. As a result, only a small number of severe cases have been observed, and no deaths have been reported.

The fourth wave of the COVID-19 pandemic (which occurred between April 27, 2021, and the present) has completely affected the situation with the Delta variant. This wave was determined to be the most sophisticated and dangerous, with the greatest amount of deaths. As of September 12, 2021, there had been 6,01,349 cases and 15,018 deaths in Vietnam. However, The pandemic situation has been improving in Ho Chi Minh City, Binh Duong, Dong Nai, and Long An provinces, with a significant reduction in infection and mortality.

4.1.2 Vietnam's Response to the COVID-19 Outbreak

Vietnam was one of the first countries impacted by the virus. Given the massive volume of daily population movement between China and Vietnam, it was believed that there was considerable danger of this undiscovered disease being imported into Vietnam. A week after the first COVID-19 case was discovered in Vietnam, the Prime Minister declared war on the virus and ordered the implementation of comprehensive COVID-19 response measures. In response to COVID-19, the Vietnamese government established the National Steering Committee (NSC), chaired by Deputy Prime Minister Vu Duc Dam. This demonstrates that the administration considered the COVID-19 outbreak to be a national emergency. The country acted quickly to control the COVID-19 outbreak. Vietnam has implemented a variety of prevention and control measures from the beginning of the pandemic, despite its limited economic and technological advancement. Numerous official websites, local newspapers, and expert studies provide information regarding the COVID-19 epidemic and control methods in Vietnam.

Besides, The Government has urged the health sector to immediately work with other sectors to develop a variety of options to ensure that there is sufficient vaccine supply for the population.

Additionally, Recognizing the pandemic's severe influence on production and commercial activities, the government quickly provided numerous procedures, policies, and measures to assist enterprises, individuals, and employees. For instance, the “1 Road 2 Destinations (1R2D)” and ‘3 On-Site” policies. The Social Committee said that current present supportive policies are crucial, it is also necessary to gradually ease distancing restrictions, allowing enterprises to reopen.

Moreover, Confronted with the complex evolution of the COVID-19 pandemic, the government has mandated some plans and strategies to ensure social security, order, and safety. In the context of the epidemic, some types of crimes and social evils (such as theft, car racing, traffic accidents, etc.) have decreased significantly.

4.1.3 How Covid-19 Impacts Vietnam’s Economy

In Vietnam, the COVID-19 pandemic is still very complicated and unpredictable. In particular, the fourth pandemic outbreak, which began on April 27, 2021, has impacted all sectors of socio-economic life, production, and business activities and spread to most provinces and big cities such as Ho Chi Minh City, Hanoi, Bac Giang, Bac Ninh, Binh Duong, Dong Nai... these are industrial production centers, always a high contribution to the overall export turnover of the country... Due to the enormous number of infections, many firms have had to suspend production.

According to the General Statistics Office (GSO), in the first six months of 2021, Vietnam's GDP growth rate only reached 5.64%, lower than the set target. Although it has improved significantly over the same period in 2020 (1.82%), this increase came despite the pandemic's fourth wave affecting industrial parks in northern regions, Hanoi and Ho Chi Minh City. However, it has not yet recovered the growth rate as in the same period in 2018 and 2019 (7.05% and 6.77%).

The business situation faced many difficulties. The number of newly established businesses increased by 0.8 percent in the first seven months of 2021, which is low compared to the average growth rate of 8.1% in the 2016-2020 period; the number of businesses that temporarily suspended operations, but not stopped operations, grew by 25.5 percent in the same period.

The strong development of Covid-19 along with the implementation of social distancing measures have led to disruptions of supply chains and operations to the production of enterprises in the industrial clusters. In Vietnam, the extended fourth wave of COVID-19 had a significant impact on the country's labor market. According to the GSO's population and labor statistics department, in the third quarter of this year, more than 1.8 million people of working age were classified as underemployed. There is a significant crisis in the labor market, with a number of negative records being set, millions of employees losing their jobs, and their salaries being cut in half. It is currently more difficult than ever before for workers to locate employment opportunities.

4.2 Opportunities and Challenges for Vietnam Industrial Clusters

The impacts of the COVID-19 pandemic over the past 2 years have slowed down the operations of businesses in the industrial park; disrupting supply chains, labor chains... It is necessary to recognize and re-evaluate the suitability and effectiveness of current industrial park models. According to the Ministry of Planning and Investment report, the implementation of social distancing to prevent COVID-19 has resulted in the blockade of factories and restrictions on the movement of workers in industrial zones. Since then, global supply chains have been interrupted, and many orders have had to be relocated to other regions in the supply chain. Although this is only a temporary solution, if this situation is prolonged, it is likely that investors will shift production to other countries and affect the psychology of new investors. In order to improve operational efficiency and develop industrial parks, the Government keep reviewing and updating policies and guidelines. The law requires synchronized industrial park and urban area development planning the law ensures synchronous integration of industrial parks.

4.2.1 Challenges

a The challenges in attracting high-quality FDI

The COVID-19 pandemic is having some unfavorable impacts on the foreign direct investment industry, especially the ability to attract high-quality foreign investment. The opportunity to attract investment in industrial parks, economic zones,

high-tech parks, and clusters in Vietnam continues to be postponed. The fourth outbreak, in particular, has had a direct impact on major industrial areas throughout the country, including Ho Chi Minh City, Bac Giang, Bac Ninh, Dong Nai, Binh Duong, and other cities in Vietnam. These are the places where many FDI enterprises are concentrated, causing businesses to be severely affected, disrupting production supply chains.

Previously, many Japanese and German enterprises... had policies to withdraw investments from China and eventually relocate to Vietnam and other countries, in which Vietnam is the top priority, now there is an increase in the percentage of them do not withdraw from China. Furthermore, a portion of the order has been transferred back to China, while a portion has been maintained in Vietnam but has the option of being shipped to other countries. Vietnam is losing out on business opportunities. At the end of 2020, when Vietnam had very good anti-epidemic results, it is considered in the group of 5 countries that benefited, but according to Nikkei assessment, Vietnam's anti-epidemic effectiveness has greatly affected the country which influences the investment decisions of foreign investors.

Vietnam's industrial structure is still fragile, despite the fact that it is more sophisticated than it was previously; its processing and assembly characteristics are still significant, requiring the country to import a large number of intermediate products and accessories, particularly from China and Korea. There is currently a new wave of partially shifting production facilities from China's "world factory" to ASEAN and India Due to the US-China trade war and the Covid-19 outbreak. Vietnam should actively welcome FDI in order to limit imports of supporting industry items, reducing dependence on China and Korea. By looking at the structure of investment countries in Vietnam, investment in Vietnam has been mainly Korea, Hong Kong, China, Singapore, Thailand... Only Japan stands out among advanced nations, although it hasn't fully realized its potential.

Typically, the planning of industrial zones across the country is still contradictory and overlapping; even the implementation and adjustment of the approved local plans have not taken advantage of the potential of the locality. The model of industrial zones mainly develops in the direction of multi-industry and multi-field, without paying attention to high-tech industrial production, supporting industries, especially FDI projects. The quality and effectiveness of attracting FDI projects into industrial zones have not yet met the requirements of in-depth development, in terms of the structure of

industries with high added value and modern technology. FDI projects in industrial zones and economic zones that have attracted attention in recent years primarily focusing on industries that have not yet generated significant added value; consumed a lot of resources and labor; contained potential risk of environmental pollution; had a low level of technological content.

b Supply chain Disruption

Enterprises in the clusters primarily belong to production industries following the supply chain model, such as electronics, computers, textiles, and so on (which are key export industries in Vietnam, creating many jobs). They are negatively affected by: global supply chain is interrupted, resulting in a lack of input supply and output market, cancel orders, and if the outbreak lasts for a long period of time, it may lose the market because customers change the supply chain. Many large-scale enterprises with thousands of workers have had to suspend production, some large FDI corporations with satellite factories in the supply chain in Vietnam are considering finding alternative suppliers from other manufacturing facilities such as Apple, Intel, etc.

Since the fourth epidemic in late April 2021, Vietnam's economy has really faced difficulties and the growth rate has been significantly affected. The ongoing social distancing measures including restrictions on mobility, particularly the implementation of Directives 15 and 16 was inconsistent from central to local levels, and between areas, resulting in disrupted supply chains (both domestic and international). Many companies in industrial clusters can only store raw materials for 1-2 months, and without prompt assistance programs, many small and medium-sized businesses risk shutting down and going bankrupt. For instance, the electronics sector has long been scattered along the global production chain, with major concentrations in China's Shenzhen, Zhejiang, Guangzhou, and Wuhan provinces. Therefore, the country's prolonged factory shutdown made the supply of raw materials become more difficult.

Besides, the implementation of the "three places" and "one road - two destinations" models in some industrial clusters have also created significant issues for businesses, resulting in significant increases in expenses and hazards associated with disease control. Notably, supply chains are all facing labor shortages. Particularly labor-intensive industries include the processing and manufacturing industry, the textile and

garment industry, the leather and footwear industry, and others. As a result, businesses in these industries are not eligible to comply with the "three places" and "one road - two destinations" regulations.

Moreover, in terms of production and business activities, the Management Board of Industrial Parks stated: due to the prolonged impact of the COVID-19 epidemic, enterprises in the industrial parks experienced significant difficulties in export markets such as a lack of orders resulting from a decrease in global demand, an increasing of shipping costs and time, a lack of customs and warehouse services, a lack of vehicles and two-way carriers from industrial zones and seaports, as well as a lack of private and public services.

c Infrastructure, housing, and social facilities are not synchronized for employees working in some industrial zones, causing difficulties in epidemic and disease control

One issue mentioned is that housing and social facilities are not coordinated for employees working in certain industrial zones, posing difficulties in disease control. Additionally, insufficient guidance on disease prevention and control, its effectiveness, or rigid application in some localities has resulted in serious disruptions to supply chains, production, consumption, and exports. Therefore, there is a primary consideration about a technical infrastructure while constructing industrial, economic, and export processing zones, not to social infrastructure. Workers' housing must be considered as a technological infrastructure of industrial zones, economic zones, and industrial zones.

Industrial zones are primarily motivated to establish land funds and to attract firms to organize manufacturing as "ready-made" factories. Furthermore, as more and more industrial zones are established, as well as the rapid development in the number of people employed in these areas, the industrial park's social infrastructure has not really met the needs of workers. During the nearly two-year COVID-19 outbreak, it has become more and more obvious that the material and spiritual life of employees is one of the factors that determine the quality of the labor source and affect economic efficiency. In order for employees to make long-term contributions to organizations within the industrial clusters, there must be attention, to fostering human resources and spiritual life, welfare, ensuring safe and sustainable jobs for employees. On the contrary, employees must work with effective labor productivity, work with a positive attitude to contribute to profitable

production and business. This is a close relationship between the employee and the business.

d Enterprises are also experiencing challenges with working capital

Enterprises in industrial parks have to bear costs associated with epidemic prevention and control, such as testing costs, investment costs to meet the requirements for disease safety control, and costs associated with maintaining production activities on the premises of the enterprise. In addition, the price of input materials continues to grow, market demand remains weak, the firm is not yet profitable. As a result, the cash inflow is severely limited, causing the enterprise to have problems covering the costs of maintaining production and business operations; enterprises confront difficulties when taking steps to both battles the epidemic and conduct business.

Cash flow was severely constrained, causing the organization to struggle to fund the costs of maintaining production and business operations. Businesses need sufficient working capital to cover insurance, taxes, and raw material expenses... Because businesses are unable to collect debts, they are unable to pay the principal and interest on bank loans and outstanding loans, banks restrict loan terms for those who lack the ability to mature.

e Labor Force

In order to resist the pandemic, many businesses in the clusters have to decrease production and suspend employee contracts. This makes it extremely difficult to recruit a workforce for firms in production after the epidemic for industrial parks, particularly for occupations needing skilled labor such as electronics, mechanics, and textiles. garment... FDI businesses continue to confront barriers to entry, as well as to extending and issuing of work permits for foreign professionals.

Currently, although enterprises have gradually restored production and recruited workers to work, there are still businesses that have temporarily suspended operations due to a lack of orders and production materials.

Industrial parks are developing strongly along with the continuous expansion in the number of businesses, causing the demand for quantity and quality of human resources to increase rapidly. However, the management of human resource quality is still limited.

The quality of Vietnam's labor force is not high compared to many developed countries in the region. The training of human resources to meet the requirements of the fourth industrial revolution has not been implemented much. The network of vocational education institutions is still inadequate in terms of professions, training levels, small scale, etc. Meanwhile, the areas that corporations tend to move into our country are information technology and high technology, supporting industries, electronic equipment, e-commerce, logistics, consumer goods, and retail.

Vietnam's industrial zones are revealing weaknesses in human resource management, directly affecting the size, morale, and productivity of workers. Because of the laxity in management, industrial zones in Vietnam have been paying a high price in the context of the fierce development of the Covid-19 epidemic.

4.2.2 Opportunities

According to the Ministry of Planning and Investment, despite the challenges posed by the COVID-19 outbreak, economic zones and industrial parks will still attract many direct investment projects and domestic investment projects. FDI capital in the first 6 months of 2021 increased by 6.8% over the same period in 2020, according to the General Statistics Office. This is demonstrating the confidence of foreign investors in the country's economic situation in the medium and long term.

As of June 20, 2021, the total amount of newly registered and paid-in capital by foreign investors had reached US\$15.2 billion. In terms of newly registered capital, there are 804 newly licensed projects with registered capital of about \$9.55 billion USD, representing a 43.3 percent decrease in the number of projects and a 13.2 percent increase in the registered capital compared to the same period last year. Similar to 2020, Asian countries accounted for the largest share of foreign direct investment (FDI) into Vietnam. Singapore topped the list, accounting for approximately 36.9% of total investment capital, a 3.6 percent year-on-year rise. Japan ranked second with 16% and South Korea placed third with almost 13.4%, a year-on-year gain of 43.6 percent. China, Hong Kong, Taiwan, and other countries were ranked lower than the rest of the countries on the list. In terms of FDI projects, South Korea ranked first, followed by Japan, Singapore, Taiwan, and Hong Kong.

According to Korean economic specialists in Vietnam, the Vietnamese economy has a high degree of openness, stable development, and participation in a significant number of free trade agreements. Despite the global economic impact of the Covid-19 outbreak, Korean investment in Vietnam Industrial Park continues to expand rapidly, and is forecasted that Korean enterprises will continue to invest heavily in Vietnam. Trade between Vietnam and Korea has reached an all-time high. For Vietnam, Korea is the third exporter and second importer after the United States and China. The total trade turnover between the two countries as of the second quarter of 2021 is about 67.5 billion USD. Despite the complicated scenario caused by the Covid-19 epidemic, it can be observed that the volume of trade between Vietnam and South Korea is expanding dramatically. In October 2021, Korea surpassed Japan, ranked second with a total investment capital of 4.15 billion USD, accounting for 17.5% of total investment capital, an increase of 21.3 percent over the same time in 2020.

Vietnam has positive export growth in the first 8 months of 2021 despite the complicated developments of the Covid-19 pandemic. Vietnam export values reached \$213.52 billion in the first eight months of 2021, representing a 21.8 percent raise over the same period in 2020, or \$38.15 billion more than in the same period in the previous year. The primary causes for increased exports could be the fact that countries all over the world are aggressively executing vaccination programs, encouraging consumer demand, and gradually reopening their borders has increased demand for Vietnam's major export products such as textiles and leather, among other things. Shoes, furnishings, and electronic devices. And the successful implementation of free trade agreements (FTAs) has led to the acceleration of export growth. By taking advantage of market opening incentives provided by newly signed free trade agreements such as EVFTA, UKVFTA, CPTPP.

Conclusion

The study provides a rich summary of information about the development of Vietnam's industrial cluster, as well as the challenges that the clusters have faced in the post-Covid-19. Besides, the study will conclude with the resume of cluster policy which will help Vietnam's economy to get beyond the middle-income trap.

Over the last 30 years, Vietnam's industrial zones (IZs) and economic zones (EZs) have constantly developed. These areas have become important parts of the country's economy. Even in the current trend of shifting investment capital flows, Viet Nam's cluster policy is an important industrial mixed policy that aims to create jobs, attract FDI, and promote exports. The important economic mechanisms implemented under this policy are more favorable corporate income tax, and land rent; better infrastructure; and administrative management simplification.

The government regulation of industrial, export processing, and economic zones in various fields: planning, investment, building, land use and environmental protection; labor; and trade ... Meanwhile, it clearly demonstrates the policy of strengthening decentralization and authorization for the Management Board of Industrial Parks and Economic Zones; standardize and improve the management model of IZs, EZs based on the premise of "one-stop place".

To provide a framework for future development, it is necessary to ensure sustainable growth in the number and size of industrial zones and economic zones while adhering to the principle of promoting local strengths and creating favorable conditions for the economic development of regions and clusters in the short term. Focusing on building eco-friendly, specialized, and high-tech industrial zones in the delta region to foster industries with high added value, high technology, and value chain linkages. Simultaneously, encouraging the development of small and medium-sized industrial zones in rural and mountainous areas in order to develop processing and labor-intensive industries. Currently, various models such as service urban industrial zones, supporting industries, and the ecological industrial park model zones have emerged. These models will improve industrial zone competitiveness by diversifying sectors and investment fields, reducing production and business costs, and maximizing resource efficiency.

Due to the heavy impact from the complicated developments of the COVID-19 epidemic, the production and business situation of industrial parks and economic zones decreased compared to 2020. Specifically, total revenue production and business of this sector in 2021 will reach approximately 182 billion USD (a decrease of 27 percent when compared to 2020); export turnover reached approximately 132 billion USD, accounting for 59 percent of the total export turnover of the country (a decrease of 11 percent when compared to 2020)

In recent years, FDI inflows into Vietnam have been increasing. However, in the face of complicated developments of the Covid-19 epidemic in the past 2 years, investors want to build industrial parks in the direction of the goal of establishing a sustainable ecosystem. Vietnam's industrial park system is an attractive destination for thousands of firms, from 122 countries and territories around the world. The Covid-19 outbreak has demonstrated that global investment flows have shifted after the pandemic, creating competition among developing countries. This is setting new requirements for the future development of the industrial park. Regarding the new trend of industrial parks, the needs must be clearly defined. There should be a careful study about the needs that industrial parks will be served. The trend of the industrial cluster that investors are interested in is about the eco-industrial parks so that they can join free trade agreements and export products to markets where people require green certification. Industrial zones need to approach new trends to increase competitiveness, towards the sustainable development of industrial zones.

The Covid-19 pandemic and the trend of factory relocation are putting pressure on industrial park infrastructure suppliers. A more comprehensive and multi-functional approach to industrial zone transformation is required instead of the current approach of establishing a land fund, building infrastructure, and enticing investors to rent land. From the perspective of the investor, Vietnam requires the construction of a multi-story industrial park. By now, traditional industrial zones typically include exclusively industries and no residential areas. As a result, the development trend in industrial parks includes urban infrastructure, such as residences, hospitals, and schools, among other things, so that people can live in the industrial park. If service-industrial parks and housing are developed simultaneously, then implementing three on-site measures as they are today

will increase efficiency in satisfying conditions for the avoidance of the Covid-19 outbreak.

To industrialize the country, it is necessary to attract a sufficient amount of high-quality investment, and to attract this investment, it is necessary to resolve a number of issues, the most critical of which is training sufficient skilled people resources. Experts emphasized, there must be an investment in human resource development and improvement of labor quality, solving all obstacles for development. Accordingly, businesses need to focus on improving the quality of labor in the direction of digital transformation, find a way to combine "school" with "factory" In order to improve the quality of human resources in industrial zones, it is necessary to continue to develop human resource management and development plans in accordance with the objectives of attracting investment, planning the development of industrial zones, and achieving a reasonable balance between supply and demand for labor; raising awareness about the quality of human resources in industrial zones; completing the planning of vocational training institutions associated with industrial zones.

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