

**THE IMPACTS OF INFRASTRUCTURE COSTS TO INVESTMENT  
CAPITAL ATTRACTION OF ENTERPRISES IN INDUSTRIAL  
PARKS: RESEARCH IN THAI NGUYEN PROVINCE**

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**Abstract**

This paper is designed to analyze the impact of infrastructure cost to investment capital attraction of enterprises in industrial parks in Thai Nguyen province. The results show that there is a relative difference in the assessment of enterprises on the cost of using infrastructure between the group of enterprises in the industrial zone and non-industrial enterprises. Besides, the author also analyzes the situation of attracting investment capital in industrial zones in Thai Nguyen province - Achievements and Limitations. On that basis, the author proposes some suggestions to improve the activities of attracting investment capital of enterprises into industrial zones.

*Keywords:* cost of using infrastructure, industrial zone, Thai Nguyen province

**1. Introduction**

The industrial park model has been established and developed strongly in developed countries. Currently, Vietnam has been building and developing this model with the objective of attracting investment capital, developing production and business. Enterprises contribute to promote the socio-economic development of the localities in particular and the country in general.

Along with that trend of the country, Thai Nguyen province has advocated the construction of industrial zones to attract investment capital and socio-economic development of the province. Six established industrial parks

with 117 projects are also good signs with industrial zones in Thai Nguyen province.

However, investment projects in industrial zones in Thai Nguyen province are from small and medium scale enterprises, the ratio of implemented capital with registered capital is still relatively low. Investment attraction is relatively limited and not commensurate with the available potentials.

There are many factors that affect the attraction of investment in industrial zones such as labor, support policies, geographic location, infrastructure costs, etc. However, within the scope of the research, the author focuses on the impact of the cost of using infrastructure to attract investment capital of enterprises in industrial zones in Thai Nguyen province. Because the cost of infrastructure has a direct impact on the input costs of the enterprises and their investment decision, the author suggests a number of recommendations to boost investment attraction of enterprises in industrial zones in the province.

## **2. Literature review and research method**

### **2.1. Literature review**

In the world, the industrial park model is formed as an effective channel for attracting investment capital, contributing to the socio-economic development of any countries. Issues related to industrial zones have received the attention of researchers as well as policy makers. A number of studies have been conducted to assess the impact of industrial zones on the country's socio-economic development, such as Damborský et al. (2013), Benacek, V (1999), Blomstrom et al. (1998), Kim et al. (1997). These studies have shown both the direct and indirect impact of foreign direct investment of enterprises in industrial parks to socio-economic development. At the same time, the studies also provide policy suggestions to promote the attraction of foreign direct investment in industrial parks in particular as well as in those countries in general.

Other studies around the world focus on how to develop industrial parks in the direction of green industries such as Popescu et al. (2008), Lambert et al. (2002).

Some researches have been carried out in Vietnam in different directions. Some of which have been carried out in the direction of attracting investment capital for infrastructure development in industrial zones such as Vu Dai Thang (2012) Ngoc Hoa (2012), Tran Van Hau (2011), etc. These studies analyze the current situation and propose some solutions for the development of industrial parks, export processing zones and economic zones. The research methodologically used in these studies is the descriptive statistics and SWOT matrix application that identifies the strengths, weaknesses, opportunities, and challenges of attracting investment capital for development of the industrial zones. Some studies focus on the location of workers in industrial zones. Though the authors have identified the importance of the source of labor, they have not yet made a consideration of the impact of labor in attracting investment in industrial zones such as research by Thanh Tung.

However, attracting investment capital in industrial zones not only attracts investment capital for development of infrastructure in industrial park but also attracts investment capital for development of production, business and service activities there. How does the use of infrastructure affect the attractiveness of business capital? This study was designed to answer that question.

## **2.2. Research Methods**

Secondary data for the study was collected from the annual review report of the management board of industrial zones in Thai Nguyen province. A descriptive and comparative statistical method was used to analyze the volatility of investment in industrial zones in Thai Nguyen.

In addition, in order to analyze the impact of the cost of using infrastructure to attract investment into industrial zones, the author used survey data from 100 enterprises in the industrial zone and 100 enterprises outside the industrial zone to have an objective view on the impact of infrastructure costs

to attract investment capital of enterprises into industrial zones. The t test is used to analyze differences in perceptions of enterprise groups inside and outside industrial parks

### **3. The situation of attracting investment capital of enterprises in industrial zones in Thai Nguyen province**

Up to 2015, IZs in the province have attracted 117 projects (45 FDI projects and 72 domestic projects) with the total registered capital of 3,979 billion USD and nearly VND 11,000 billion and one representative office in Yen Binh Industrial Park was established. By the end of 2015, there have been 44 enterprises in operation, reaching export turnover of about 10 billion USD. The target of domestic sales is 6,000 billion VND creating jobs for 30,000 laborers with an average income of about 5.5 million VND per person per month and the tax budget for the country is estimated at 200 billion VND.

**Table 1: Results of investment attraction and production business of Enterprises in industrial zones in Thai Nguyen province**

Number	Names of industrial zones	Registered capital (billion VND)	Implemented investment capital (billion VND)	The proportion of implemented capital / registered (%)
1	Industrial zone Song Cong 1	6.376,00	2.020,8	31,74
2	Industrial zone Nam Pho Yen	819,67	310,00	37,83
3	Industrial zone Diem Thuy	11.998,00	7.017,00	58,48
4	Industrial zone Tay Pho Yen (Industrial	141.595,00	94.725,00	66,75

	zoneYenBinh)			
5	Industrial zoneSongCong 2	Undergoing procedures and submitting the approval of the infrastructure project		
6	Industrial zoneQuyetThang	Campaigning and attracting investment		
<b>Total</b>		<b>160.780</b>	<b>104.073</b>	<b>64,73</b>

(Source: Management Board of industrial zones of Thai Nguyen province)

In addition to the results of the number of projects, registered capital investment in industrial zones of Thai Nguyen province, there are limitations in attracting capital inflows and the rate of filling industrial parks is relatively low (less than 50%). The proportion of registered capital on implemented capital is low, on average about 50%, in which Tay Yen Industrial Park achieved the highest rate (66.75%) and in other industrial zones is relatively low at just over 30% such as Song Cong I Industrial Zone, Nam Pho Yen. In addition, enterprises investing in industrial parks in Thai Nguyen province are mostly small and medium enterprises with relatively low investment capital.

Each planned industrial zone has priority industries. For examples, Song Cong 1 Industrial Park prioritizes electricity and electronics; Automotive assembly and assembly industry; Software industry; Mechanics, metallurgy; Garment industry and other industries with advanced level. Yen Binh Industrial Park prioritizes the development of hi-tech industries such as assembly of automobiles, mechanics, electronics, food processing, construction material production, etc.; or Diem Thuy Industrial Zone is a concentrated industrial zone with priority industries such as automobile parts, automobile assembly, electronics, food processing, medical equipment, textiles and light industry.

**Table 2: Investment attraction in industrial zones by investment sector**

Number	Investment sectors					
	Industrial		Services		Mechanic	
	Billion VND	Million USD	Billion VND	Million USD	Billion VND	Million USD

Industrial zone Song Cong 1	4737,008	28,91	22,234	0	954,723	12,5
Industrial zone Song Cong 2	0	0	0	0	0	0
Industrial zone Nam Phố Yên	819,667	16,466	0	0	0	0
Industrial zone Yên Bình	2820	6413,600	80,000	0	0	0
Industrial zone Diêm Thụy	462,874	381,44	0	10,000	0	7,56
Industrial zone Quyết Thắng	0	0	0	0	0	0

(Source: Thai Nguyen Industrial Zone Authority)

By the end of 2015, the industrial zones in Thai Nguyen province focus on attracting investment capital to develop production and business mainly in the field of industry, which is the advantage of Thai Nguyen compared with in other localities. The focus of attracting investment capital in this area is reasonable with the specific conditions of the locality at present. In addition, the advantage of natural resources and natural conditions is also an advantage that Thai Nguyen province has taken when Thai Nguyen is the gateway to the capital, which has been invested on the transport infrastructure system. This is also a good thing for the locals to attract domestic and foreign investment.

#### **4. Influence of infrastructure cost to attract investment capital of enterprises in industrial zones: Research in Thai Nguyen province**

Based on the results of the survey of 100 enterprises inside the industrial zone and 100 enterprises outside the industrial zone, the author uses the difference tests to examine the differences in the enterprise's assessment of the cost of infrastructure among units inside and outside the industrial zone:

**Table 3: Testing the difference in infrastructure cost among investors in industrial parks and investors outside industrial parks**

		Independent Samples Test								
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
CPHT1	Equal variances assumed	16.977	.000	-5.070	198	.000	-.660	.130	-.917	-.403
	Equal variances not assumed			-5.070	168.804	.000	-.660	.130	-.917	-.403
CPHT2	Equal variances assumed	.321	.572	-.427	198	.670	-.070	.164	-.393	.253
	Equal variances not assumed			-.427	197.597	.670	-.070	.164	-.393	.253
CPHT3	Equal variances assumed	13.088	.000	-4.353	198	.000	-.510	.117	-.741	-.279
	Equal variances not assumed			-4.353	195.407	.000	-.510	.117	-.741	-.279
CPHT4	Equal variances assumed	22.645	.000	-5.313	198	.000	-.850	.160	-1.166	-.534
	Equal variances not assumed			-5.313	173.628	.000	-.850	.160	-1.166	-.534

*(Source: Author's calculation results based on survey data)*

Regarding the cost of renting land with the CPHT1 observation variable with the "low land rental" scale, the Levene's Test has a Sig value = 0.000 <0.05 which means that the variance between the two groups of industrial parks = 1 (in industrial zones) and industrial zones= 0 (Outside Industrial Zones) are different and we will use the test result T in Equal variances not assumed. We see that Sig. = 0.000 <0.05 indicates that there is a difference in the cost of land rent between the group of enterprises inside the industrial zone and the group outside the industrial zone. The Mean Difference indicates that enterprises in the industrial zone rated "low cost of land rental" with higher

scores than enterprises outside the industrial zone namely higher than 0.660 points

On cost of electricity, water and transportation with CPHT2 observation variable with the statement "Cost of electricity, water and transportation is reasonable", Levene's Test has Sig value = 0.572 > 0.05.

This means that there is not yet any difference in the variance between the two groups of industrial zones = 1 ("Enterprise inside industrial zones") and industrial zone = 0 ("Enterprises outside industrial zones"), We will use the T test results in Equal variances assumed. With coefficient Sig. = 0.670 > 0.05 indicates that there is no difference in electricity, water and transport costs between the group of enterprises inside the industrial zone and those outside the industrial zone.

On the cost of communication services with the CPHT3 observation variable with the statement "The cost of cheap communications services," the Levene's Test has a Sig value = 0.000 < 0.05 which means that the variance between the two groups industrial areas = 1 ("enterprise inside industrial zones") and industrial zones= 0 ("Enterprise outside industrial zones") is different, we will use the results of T test in Equal variances section Not assumed. We see that Sig. = 0.000 < 0.05 indicates that there is a difference in the cost of communication services between the group of enterprises inside the industrial zone and the group outside the industrial zone. Mean Difference indicates that enterprises in the industrial zone rated this cost higher than 0.510 points compared to non-industrial enterprises

Regarding the cost of waste treatment with CPHT4 observation variable with the statement "The cost of waste treatment is cheap," Levene's Test has a Sig value = 0.000 < 0.05 which means that the variance between the two groups of industrial zones = 1 ("enterprise inside industrial zones") and industrial zones= 0 ("Enterprise outside industrial zones") are different, we will use the results of T test in Equal variances not assumed. We see that Sig. = 0.000 < 0.05 indicates that there is a difference in the cost of waste treatment between the group of enterprises inside the industrial zone and the group of enterprises

outside the industrial zone. The Mean Difference indicates that firms in the industrial zone rated higher scores than those outside the industrial zone namely higher than 0.160 points.

The results show that there is a relative difference in terms of the cost of using the infrastructure between the enterprises inside and outside the industrial zone, which has a considerable influence on attracting investment capital of Enterprises in industrial zones in Thai Nguyen province when considering the factors affecting the production and business costs of enterprises.

## **5. Some recommendations**

### **5.1. The solution is to adjust the cost of using infrastructure for businesses**

Objective of the solutions: The proposed solutions are to assist enterprises in adjusting input costs for enterprises, especially those related to using infrastructure of enterprises in industrial zones.

Solution content: In addition to geographic location, the cost of infrastructure use is significant and important in determining the investment of enterprises, as these costs are recurring costs and have direct relationship to the results of production and business activities of the business. In order to attract investment capital of enterprises into industrial zones, the management boards of industrial parks and competent state management agencies should implement a number of solutions and policies to support enterprises. Such as:

First, reducing the cost of land rent during the first 3 to 5 years of the project's approval, the reduction of costs in the early stages of the project implementation will reduce the risk and the force costs to the businesses

Second, in the period after 5 years, assist the business in seeking partners, assist the business with other related expenses such as communication expenses, waste disposal costs etc. by contacting with the supply units, together with partners to support the maximum for enterprises in the industrial zone

Third, create maximum support for enterprises to minimize other costs associated with finding partners in production and business.

Business support can help reduce the distances and differences in inputs of enterprises inside and outside industrial zones. From there, it is possible to attract investment capital of enterprises into industrial parks more easily and better.

### **5.2. The solution to reform administrative procedures under the "one door, in place"**

Objectives of the solution: To help enterprises more convenient and reduce the costs associated with administrative procedures when investing in industrial parks of the province.

Content of the solution: The management board of industrial zones as well as departments in Thai Nguyen should continue to implement the mechanism of decentralization, authorization to the management board of industrial parks of the province to thoroughly implement the mechanism: "One door, in place."

It is necessary to expand the model of "Investment Gateway" so that enterprises can easily access to understand the administrative procedures as well as apply for investment license through this gateway. From there, it will contribute to minimize troublesome procedures as well as minimize time and costs for enterprises in the process of preparing investment, implementing investment activities and operating results.

### **5.3. Promoting investment promotion activities to attract investment capital into industrial parks of the province**

Objective of solution: To enhance attracting investment capital of enterprises through image promotion, introduction about the industrial parks.

Content of the solution: The management board of industrial zones, departments of the province should have a mechanism to coordinate with mass media agencies in the central as well as local, organize seminars to introduce the investment potential, investment environment, investment incentive policies of Thai Nguyen to enterprises.

It is necessary to promote investment promotion activities comprehensively, focusing on traditional partners, possibly through the

enterprises operating in the industrial zones so as to attract investment capital from other businesses. Selection of leaflets, logo printing should also be considered in order to contribute to promoting investment attraction as well as promoting Thai Nguyen province to enterprises.

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