

**FACTORS AFFECTING INVESTMENT ATTRACTION IN ECONOMIC
ZONES AND INDUSTRIAL PARKS - EXPERIMENTAL RESEARCH IN THE
NORTH CENTRAL REGION OF VIETNAM**

*FATORES QUE AFETAM A ATRAÇÃO DE INVESTIMENTOS EM ZONAS
ECONÔMICAS E PARQUES INDUSTRIAIS - PESQUISA EXPERIMENTAL NA
REGIÃO CENTRO-NORTE DO VIETNÃ*

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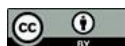
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Abstract

This study aims to identify factors affecting investment attraction in economic zones and industrial parks in the North Central region of Vietnam. Applying the exploratory factor analysis (EFA) method based on data collected from 286 enterprises, the study has identified 8 main factors affecting investment decisions, including: (1) Investment industry advantages, (2) Infrastructure, (3) Human resources, (4) Input costs, (5) Quality of public services, (6) Regional linkages, (7) Investment policies, and (8) Integration of production and international trade. The study results show that these factors are closely related to the investment decisions of enterprises and provide a scientific basis for policymakers to develop more effective policies to attract investment for the region, it also provides valuable information for businesses that plan to invest in the area.

Keywords: Vietnam Investment Attraction. Economic Zones. Industrial Parks. Impact Factors. Vietnam's Enterprises.

Resumo

Este estudo visa identificar os fatores que afetam a atração de investimentos em zonas econômicas e parques industriais na região Centro-Norte do Vietnã. Aplicando o método de análise fatorial exploratória (AFE) com base em dados coletados de 286 empresas, o estudo identificou 8 fatores principais que influenciam as decisões de investimento, incluindo: (1) Vantagens do setor de investimento, (2) Infraestrutura, (3) Recursos humanos, (4) Custos de insumos, (5) Qualidade dos serviços públicos, (6) Conexões regionais, (7) Políticas de investimento e (8) Integração da produção e do comércio internacional. Os resultados do estudo mostram que esses fatores estão intimamente relacionados às decisões de investimento das empresas e fornecem uma base científica para que os formuladores de políticas desenvolvam políticas mais eficazes para atrair investimentos para a região, além de fornecer informações valiosas para empresas que planejam investir na área.

Palavras-chave: Atração de Investimentos no Vietnã; Zonas Econômicas; Parques Industriais; Fatores de Impacto; Empresas do Vietnã.

1 INTRODUCTION

In the context of globalization and international economic integration, attracting investment in economic zones and industrial parks has become one of the top priorities of countries, especially developing countries. Economic zones and industrial parks play a role as economic growth engines, where modern production and service resources are concentrated, contributing to the development of industrialization and modernization of the country. Investment, not only limited to foreign direct investment (FDI) but also includes domestic investment, is used to make the most of resources to promote economic

growth, create jobs, develop infrastructure, and improve the quality of life. Particularly, the attraction of FDI to economic zones and industrial parks also means enhancing export turnover, creating an important driving force for economic growth, technology transfer, job creation, participation in global value chains, and improving the country's competitiveness.

Vietnam, with its advantages in terms of geographical location, abundant labor force and open-door policy, has achieved significant achievements in attracting investment. However, the distribution of investment is still uneven, as the case of the Central region, including the North Central Region, still has a lot of potential that has not been fully exploited. The North Central Region, with its advantages in natural resources, diverse landscapes, and abundant human resources, is expected to become one of the dynamic economic centers of the country. However, the reality shows that attracting investment in economic zones and industrial parks in the North Central region still has many limitations. According to statistics, the rate of FDI attraction to the North Central region compared to other regions such as the South and the North is still quite insignificant. Investment projects focus mainly on several conventional industries, there are not many high-tech projects with high added value. So, what are the main factors that affect investors' investment decisions? To improve competitiveness and attract more high-quality investment projects, what do economic zones and industrial parks in the North Central region need to do? This poses an urgent requirement to further study the factors affecting investment decisions of both domestic and foreign investors in this area, thereby providing a scientific basis for planning policies and strategies to attract investment, etc. thereby developing the socio-economic of the region, contributing to the overall development of the country's economy.

2 LITERATURE REVIEW

The concept of economic zones and industrial parks has been defined by researchers and policymakers from many different angles. According to (Porter, 1990a), an industrial park is a collection of interrelated enterprises, operating together in a certain geographical area, taking advantage of the advantages of infrastructure, resources, and cooperation to enhance competitiveness. (Dunning, 1977a) again emphasized the multinational factor in the formation of industrial parks, when foreign enterprises invested

in these areas to take advantage of geographical location, cheap labor, and preferential government policies. (Krugman, 1991a) added the concept of geographical concentration advantage, arguing that the concentration of enterprises in an area will create spillover effects, promoting the development of related industries. (Marshall, 1920) also emphasized the importance of factors outside the enterprise such as infrastructure, human resources, markets, and cooperative relationships in the formation and development of industrial clusters.

Economic zones and industrial parks play an extremely important role in the industrialization, modernization, and international economic integration of a country. According to (Kuznets, 1973) and (Chenery, 1960), the development of industrial parks is an indispensable stage in the transition from an agricultural economy to an industrial economy. (Porter, 1990b) emphasized that industrial parks create a healthy competitive environment that enables enterprises to continuously innovate and improve their competitiveness. Industrial parks contribute to GDP growth, job creation, income increase for people and the state budget. According to a study by (The World Bank, 2010), countries with a high rate of investment in industrial parks tend to have faster economic growth rates. Preferential policies, modern infrastructure and favorable business environment of industrial parks attract domestic and foreign investors, contributing to economic restructuring. (Dunning, 1977b) emphasized the role of factors such as geographical location, cheap labor, and preferential governmental policies in attracting foreign direct investment in industrial parks. Industrial parks are places where enterprises with modern technology are concentrated, creating conditions for technology transfer, and improving the production capacity of domestic enterprises. (Cohen & Levinthal, 1989) studied the process of learning and absorbing technology by enterprises in industrial clusters. Industrial parks and economic zones play an extremely important role in the industrialization, modernization, and international economic integration of a country.

More specifically, industrial parks and economic zones contribute to economic growth, investment attraction, technology transfer and development of high-quality human resources. The concentration of businesses in one area creates spillover effects, promotes the development of supporting industries and improves the competitiveness of the economy. (Cohen & Levinthal, 1989) studied the process of technology learning and

uptake by firms in industrial clusters, showing that placing firms' side by side facilitated knowledge sharing and innovation.

In addition, industrial parks also play an important role in the development of human resources. The great recruitment demand of enterprises in industrial parks promotes the training and improving of the quality of local human resources which meet the increasing requirements of the labor market. The (The World Bank, 2010) has shown that countries with a high rate of investment in industrial parks tend to have a higher proportion of skilled workers.

Investors when choosing investment locations often choose economic zones and industrial parks as their investment locations, which can be explained through various theories, including investment attraction, regional economic concentration, industrial positioning, location advantage, and eclectic theories. According to (Kotler, 1993) (in his Investment Attraction theory), localities attract investors by offering high-quality services and improving productivity and quality. Similarly, (Akwetey, 2002) argues that a comprehensive legal framework and trade liberalization policies of a country are critical factors in attracting foreign investors to set up factories and expand export. Thus, locations with good development prospects, being open for premise leasing, and being able to offer high-quality services often chose by investor. (Krugman, 1998) in Theory of Regional Concentration Economy emphasizes the geographical clustering of economic activities. Following the tendency of geographic concentration, the industrial parks and focused economic zones provide specialized products and international trade transactions. The concentrated industry facilitates the development of local labor market and enhances the efficiency in the interaction between employers and employees... This clustering effect supports the formation and development of financial and labors markets which create favorable conditions for economic activities in general and investment ones in specific. This explains why economic zones and industrial parks targeted locations for investors in their investment decision are. (Fearon, 1909) theory of industrial positioning, basing on the basic content of spatial industrial distribution model, explains the formation of industrial parks for the sake of minimizing transportation costs and maximize profits. As (Vernon, 1966) reinforces the view of prioritizing cost over location when considering investment decisions. (Dunning, 1973) theory on location advantage, which based on the theory of supply-demand relations of factors related to the production and business process, underscores the importance of local markets, the cost and quality of local

production and institutional framework as studied factors for investors's FDI consideration. In his OLI Eclectic Theory, (Dunning, 1977b) argued that the competitive advantage of the location is different for each country, then identifies three key motivations for FDI: natural resources-seeking, market-seeking, and efficiency-seeking. These theories illustrate how factors like ownership, location, and internalization influence the investment decisions of multinational enterprises.

The economic theories offer diverse perspectives on investment decisions in economic zones and industrial parks, each highlighting distinct factors such as competitive advantage of localities, the concentration of economic activities, production costs and other factors of the production and business process. Economic zones and industrial parks are often preferred by investors due to their numerous advantages, including conducive business environment, modern infrastructure, skilled workforce, expansive consumption market, and supportive government policies.

Based on these theories, empirical studies have investigated the factors affecting investment decisions in economic zones and industrial parks. Following the cost approach, (Badri, 2014), using factor analysis, identifies key determinants of industrial location selection, including transport infrastructure, labor availability, raw materials, markets, industrial clusters, government support and management, taxation, climate, and social community factors. For offshore investment, consideration take into accounts four general factors including the political stability, global competitiveness, regulatory framework, and economic conditions. (Lin & Tzeng, 2009), in the article *Value created from technology parks (or high-tech parks)*, emphasizes the importance of technological capacity, human resources, investment environment (including industrial park infrastructure), and market development levels factors in deciding investment locations. Similarly, (Sonobe & Otsuka, 2011) highlighted the significance of shared inputs and abundant labor market in attracting investments to economic zones and industrial parks. (Frick & Rodríguez-Pose, 2023a) in their research analyzed and pointed out that the advancements of science and technology is an important factor in promoting the formation and development of such zones. Being aware of the Investment promotion as a factor affecting investors' capital in economic zones and industrial parks, (Hoang Ngoc Minh, 2017) stressed the need for comprehensive infrastructure development and effective investment promotion strategies, such as building a positive image of the economic zones, fostering relationships with partners, and providing high-quality support

services to investors. Meanwhile, (Nguyen Viet Bang, 2016) has studied factors affecting investor satisfaction including basic business infrastructure (basic infrastructure, labor, land grant, school quality), local government support (trade support, investment encouragement, etc. public services), and quality of life. Futhermore, (Frick & Rodríguez-Pose, 2023b) studies economic zones and industrial parks in developing countries in Africa, Asia, and Latin America and concludes that although are driven by market access, political stability, and low labor costs are primary drivers for foreign companies' investment decisions, tailored policies of economic zones and industrial parks will enhance investment attraction.

Thus, the Investor’s decision to invest in industrial parks and economic zones is a multifaceted process that requires comprehensive evaluation of economic, social, political, and environmental factors, as well as the role of supportive government policies. The formulation and implementation of appropriate policies, along with creating favorable conditions for production and business activities, will contribute to promoting the development of industrial parks and economic zones, contributing to the country's economic growth.

3 METHODS

Drawing from the theories of investment attraction, regional concentration economy, industrial positioning, location advantages, and eclecticism, as well as findings from previous studies, the authors identified 10 factors affecting investment attraction in industrial parks and economic zones in the North Central region. These factors includes Infrastructure, Human Resources, Investment Policies, Quality of Living and Working Environment, Quality of Public Services, Input Costs, Investment Industry Advantages, Integration of Production and International Trade, Local Brand, and Regional Linkage.

Table 1

Summary of factors affecting investment attraction in industrial parks and economic zones in the North Central region

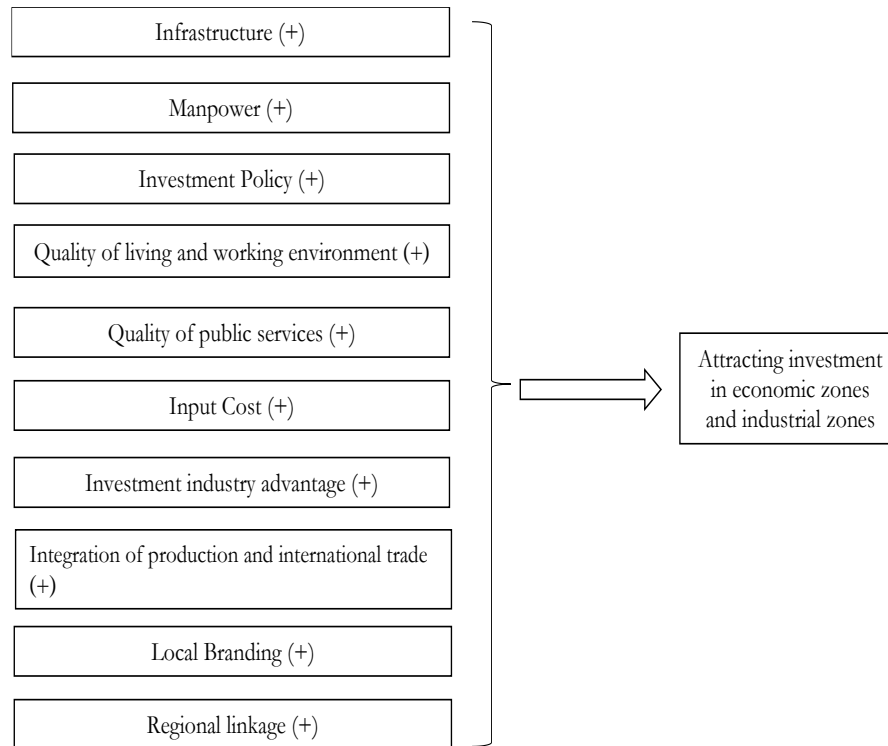
No.	Element	Ampersand	Describe	Theories and study authors mentioned
1	Infrastructure	CSHT	Infrastructure includes elements such as: transportation, irrigation system, water supply, electricity, accumulated from investments of central and local state agencies.	(Dunning, 1977b), (Kotler, 1993), (Dinh Phi Ho, 2012), (Mai

				Van Nam & Nguyen Thanh Vu, 2010), (Nguyen Viet Bang, 2016),(Nguyen, 2012)
2	Manpower	NL	Human resources must be of guaranteed quantity and quality, qualified and skilled workers suitable to the needs of investors	(Carstensen & Toubal, 2004), (Kang & Lee, 2007), (Sonobe & Otsuka, 2011), (Liu et al., 2012), (Dinh Phi Ho, 2012), (Nguyen, 2012)
3	Investment Policy	CSDT	Investment incentives such as: Exemption and reduction of corporate income tax, exemption, and reduction of land rent.	(Kipping, 1961), (Rosenfeld, 1996), (Dinh Phi Ho, 2012), (Nguyen, 2012)
4	Quality of living and working environment	MTS	The living and working environment include social infrastructure elements of the economy such as: Operating environment of enterprises, living environment of labor, health system, schools	(Lin & Tzeng, 2009), (Badri, 2014), (Dinh Phi Ho, 2012).
5	Quality of public services	DVC	The quality of public services such as simple and fast administrative procedures; investors can easily access local information and documents; trade promotion; the coordination between state management agencies is harmonious. ..	(Dunning, 1973), (Porter, 1990b), (Dinh Phi Ho, 2012); (Nguyen Viet Bang, 2016); (Hoang Ngoc Minh, 2017)
6	Cost of entry	CP	Input costs are related to the costs that investors must spend to implement projects in the economy such as: costs of renting space, labor, electricity, water, telecommunications, etc.	(Krugman, 1991b), (Dinh Phi Ho, 2012), (T. L. , & N. T. T. Le, 2013), (Nguyen Viet Bang, 2016)
7	Advantages of the investment industry	LT	That advantage is that it is close to the main raw material market for production, near the main consumption market, near partner businesses to reduce transportation costs....	(Brainard, 1997), (Krugman, 1991b), (T. G. Le, 2009).
8	Integration of production and international trade	HNQT	To expand the national market for products and services; access to raw materials and advanced technologies; improving the competitiveness of enterprises....	(Dunning, 1973), (Vernon, 1966), (Porter, 1990b).
9	Local Branding	THDP	It is a trademark used to identify local products, services, and businesses to build trust and prestige for products; improve product added value; encourage the consumption of local products....	(Kotler, 1993); (Porter, 1990b), (Dinh Phi Ho, 2012).
10	Regional linkage	LKV	It is cooperation between localities in the same economic, cultural, and social area... to develop together, is to take advantage of the comparative advantages of each locality; resource sharing; minimizing production and business costs...	(Dunning, 1973), (Vernon, 1966), (Porter, 1990b).

The authors propose the following model in the study:

Figure 1

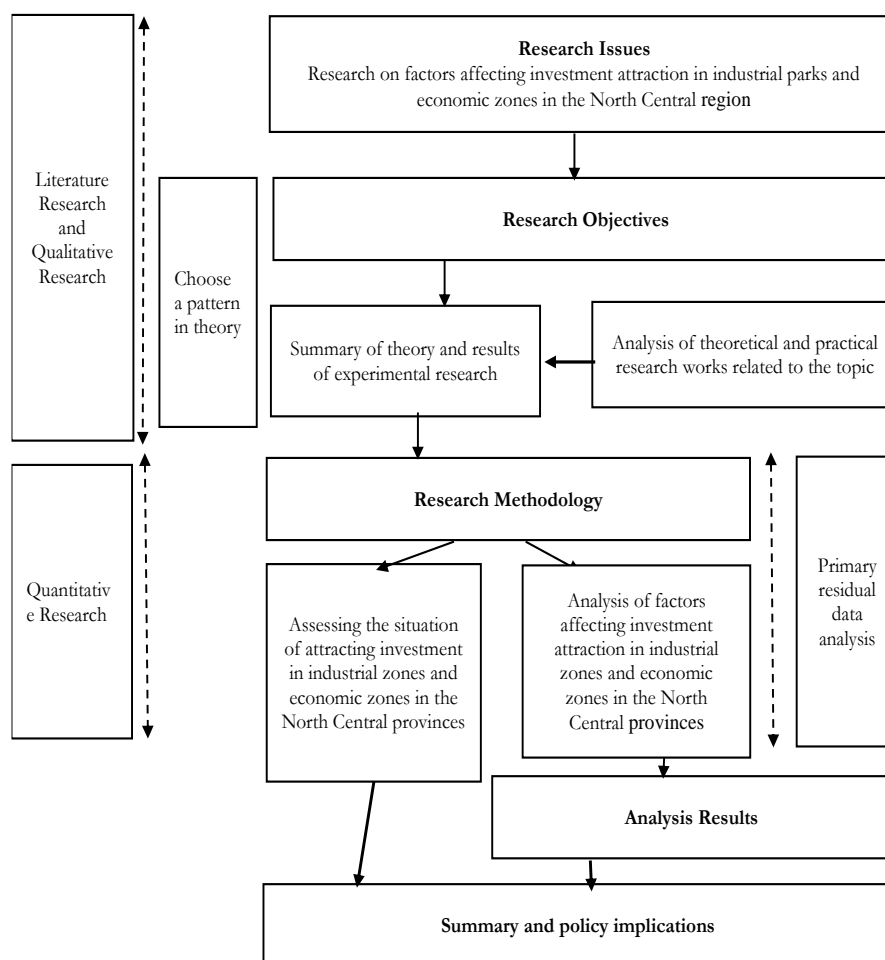
Research model on factors affecting investment attraction in industrial parks and economic zones in the North Central region



Research hypotheses of the topic:

- H1. Infrastructure positively impacts investor's decision
- H2. Human resources positively impact investors' decisions
- H3: Investment policies positively impact investors' decisions
- H4. The living and working environment positively impact the investor's decision
- H5. The quality of public services positively impacts investors' decisions
- H6. Input costs positively impact investors' decisions
- H7. The advantage of the investment industry positively impacts investor's decision
- H8. Integrating production and international trade positively impact investors' decisions
- H9. Local branding positively impacts investor decisions
- H10: Regional linkage positively impacts investor's decision.

Figure 2
Research Process



In the quantitative analysis, after synthesizing and processing the data, the study evaluated the reliability of the scale using Cronbach's Alpha coefficient to eliminate inappropriate variables and limit the noise variables during the analysis. Exploratory factor analysis EFA was applied to reduce a large set of correlated observed variables into a smaller and more interpretable set of factors. Finally, a regression model was constructed and tested for potential defects, the model's hypotheses were evaluated, and at the same time the impact of factors on investment attraction was concluded.

The linear regression equation looks like:

$$THDT = \beta_0 + \beta_1 * CSHT + \beta_2 * NL + \beta_3 * CSDT + \beta_4 * MTS + \beta_5 * DVC + \beta_6 * CP + \beta_7 * LT + \beta_8 * HNQT + \beta_9 * THDP + \beta_{10} * LKV \quad (1)$$

Since the research model includes 1 dependent variable and 10 independent variables, the authors applied Multiple Regression Analysis (MRA) to analyze the influence of factors. The supporting software is SPSS 27.

4 FINDINGS

4.1 Background of the study

The North Central region consists of 6 provinces of Thanh Hoa, Nghe An, Ha Tinh, Quang Binh, Quang Tri, and Thua Thien - Hue with a natural area: of 51,458.8 km², which is a bridge between the Northern Key Economic Regions and the Central and Southern regions. The area has a land border length of approximately 1,251.84km and a coastline length of about 632.04km, which plays a very important role in socio-economic development and national security and defense marine economic activities. The geographical location of the North Central region offers many advantages for the formation of economic zones and industrial parks. The narrowing continental shell and the deep inlets into the mainland form deep-water bays that are ideal for the construction of seaports and waterway transportation, facilitating the development of inter-regional connections and enhancing the effectiveness of economic zones and industrial parks of the North Central region. Therefore, most of the region's economic zones and industrial parks are located near the sea, where there are deep-water ports, which are convenient for the import and export of raw materials and goods. However, besides the obvious advantages, the geographical location also poses challenges in the development of economic zones and industrial parks in the North Central region, especially in the organization of industrial territories by sector when this region has a narrow horizontal shape, extending in a north-south direction, it is very easy to be divided with natural and socio-economic conditions many difficulties and limitations.

Aware of that, over the past time, the provinces in the North Central region have made efforts to build and develop economies and industrial parks. Currently, this region hosts 39 industrial parks, and 8 economies distributed across 6 provinces as follows:

Table 2

Number of industrial parks and economic zones in the North Central region (as of 31/12/2023)

Province	Number of Industrial Parks	Number of economic zones
Thanh Hoa	8	1
Nghe An	9	1
Ha Tinh	5	2
Quang Binh	8	2
Quang Tri	4	1
Thua Thien Hue	5	1

With such many industrial and economic parks (an average of 6.5 industrial parks and 1.3 economic zones in each locality), along with the potential and favorable conditions, the North Central region can completely develop the economy of industrial parks and economic zones, thereby developing the industry and socio-economy. However, the performance of these economies and industrial parks remains limited, with the low occupancy rate as well as minimal contributions to local budget, even some industrial parks are still in the state of suspension while others have been invested but are not yet operational. The occupancy rate and number of investors in industrial parks and economic zones in the North Central region are as follows:

Table 3

Number of investors and occupancy rate of economic zones and industrial parks in the North Central region (as of 31/12/2023)

Province	Number of Investors	Occupancy Rate (%)
Thanh Hoa	178	43,8
Nghe An	306	48,9
Ha Tinh	97	35,6
Quang Binh	64	27,2
Quang Tri	59	28,5
Thua Thien Hue	73	39,9

Thus, the situation regarding investment attraction and the occupancy rate of industrial parks and economic zones in the North Central provinces shows considerable variation. Nghe An has stands out as an attractive destination with the largest number of investors and a high occupancy rate, reflecting the effectiveness of the province's investment attraction policies. Thanh Hoa also achieved positive outcomes with a good

occupancy rate. However, provinces such as Quang Binh, Quang Tri, and Ha Tinh still have a lot of room for improvement, as their occupancy rate remain relatively low. This indicates the need for comprehensive solutions to improve infrastructure infrastructure, human resources, and investment environment to attract more investors and unlock the region’s full potential.

4.2 Research results

Descriptive statistics

The results of the descriptive statistical analysis for the variables on the mean, standard deviation, minimum value, and smallest value show that the dataset consists of 286 observations, with no missing data. The mean value from 3.51 to 4.41 shows that the responses are clustered in the around “Agree” category. A standard deviation value of < 1 proves that the responses are very concentrated.

Evaluate the reliability of the scale using the Cronbach's Alpha coefficient

The reliability analysis of the scale using Cronbach's Alpha coefficient to eliminate non-conforming variables was performed with 11 total variables of the model, including 1 dependent variable and 10 independent variables. Summarizing the results of running Cronbach's Alpha with variables CSHT6, NL6, MTS5, and MTS7 with Corrected Item-Total Correlation less than 0.3, so it should be disqualified.

EFA Discovery Factor Analysis

The EFA analysis yielded the following results:

For independent variables

<i>KMO and Bartlett's Test</i>		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.874
Bartlett's Test of Sphericity	Approx. Chi-Square	7316.557
	df	1035
	Mr.	.000

KMO result = 0.874 > 0.5, with Sig. (Bartlett's Test) = 0.000 < 0.05, so the EFA discovery factor analysis is appropriate. There are 10 factors quoted with the eigenvalue criterion greater than 1, with a total cumulative variance of 68.818.

The study uses a load coefficient threshold of 0.5 to select the quality observation variables. Due to the CSHT5 variable, CSHT1 has a load factor of less than 0.5, so it is

disqualified. Run again 2 times after eliminating CSDT5 and CSHT1 we have the following results:

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.871
Bartlett's Test of Sphericity	Approx. Chi-Square	6707.520
	df	946
	Mr.	.000

The results have $KMO = 0.871 > 0.5$, so the factor analysis is appropriate. Sig. (Bartlett's Test) = $0.000 < 0.05$ demonstrates that the observed variables involved in the EFA analysis are correlated. There are 10 factors extracted based on the eigenvalue criterion of $1,404 > 1$, so these 10 factors best summarize the information of the 44 observed variables included in the EFA. The total variance of these factors is $69.086\% > 50\%$, thus, the 10 factors extracted explain 69.086% of the data variation of 44 observed variables involved in EFA.

After the variable is eliminated, the EFA rerun has the factor loading coefficient of the observed variables in the rotation matrix greater than 0.5, so these observed variables are all meaningful to contribute to the model.

For dependent variables (THDT):

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.819
Bartlett's Test of Sphericity	Approx. Chi-Square	469.454
	df	6
	Mr.	.000

The KMO coefficient = $0.819 > 0.5$, so the factor analysis is appropriate. Sig. (Bartlett's Test) = $0.000 < 0.05$ proves that the observed variables involved in the EFA analysis are correlated.

Total Variance Explained

Component	Total	Initial Eigenvalues		Extraction Sums of Squared Loadings		
		% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.763	69.082	69.082	2.763	69.082	69.082
2	.477	11.927	81.009			
3	.383	9.585	90.594			
4	.376	9.406	100.000			

Extraction Method: Principal Component Analysis.

The results of the rotation matrix show that there is 1 factor extracted from the observed variables included in the EFA analysis. The interpreted citation variance is 69.082 % at eigenvalue of $2.763 > 1$.

Component Matrix

	Component 1
THDT2	.845
THDT3	.844
THDT1	.821
THDT4	.813

Extraction Method: Principal Component Analysis.
 a. 1 components extracted.

The load coefficients of the observed variables are all greater than 0.5, so these observed variables are significant contributors to the model.

Correlation analysis

Pearson correlation analysis between independent variables and dependent variables showed that all Pearson correlation sig values between independent variables and dependent variables were less than 0.05. Thus, independent variables are linearly correlated with dependent variables.

Checking the conformity of the model by Anova inspection gives the following results:

Linear Regression Analysis

		ANOVA				
Model		Sum of Squares	df	Mean Square	F	Mr.
1	Regression	45.839	10	4.584	62.260	.000b
	Residual	20.247	275	.074		
	Total	66.086	285			

- a. Dependent Variable: F_THDT
- b. Predictors: (Constant), F_LKV, F_CSHT, F_DVC, F_CP, F_CSDT, F_HNQT, F_NL, F_THDP, F_MTS, F_LT

The test sig $F = 0.000 < 0.05$, so the regression model makes sense.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.833a	.694	.682	.27134	1.874

a. Predictors: (Constant), F_LKV, F_CSHT, F_DVC, F_CP, F_CSDT, F_HNQT, F_NL, F_THDP, F_MTS, F_LT

b. Dependent Variable: F_THDT

R squared is 0.682 = 68.2%. Thus, the independent variables introduced into the regression run affect 68.2% of the change of the dependent variable.

The Durbin-Watson value is 1.874, which ranges from 1.5 to 2.5, so the regression results do not have first-order autocorrelation phenomena.

Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients Beta	t	M r.	Collinearity Statistics	
	B	Std. Error				Tolerance	BRIGHT
(Constant)	-.020	.192		-.104	.917		
F_CSHT	.150	.031	.181	4.810	.000	.783	1.277
F_NL	.123	.026	.178	4.782	.000	.809	1.237
F_CSDT	.133	.034	.151	3.864	.000	.727	1.376
F_MTS	.040	.034	.046	1.166	.245	.706	1.416
F_DVC	.106	.024	.162	4.329	.000	.794	1.259
F_CP	.119	.027	.176	4.417	.000	.698	1.433
F_LT	.169	.025	.271	6.652	.000	.671	1.490
F_HNQT	.089	.030	.116	3.010	.003	.756	1.322
F_THDP	.019	.027	.028	.720	.472	.712	1.404
F_LKV	.099	.024	.152	4.138	.000	.829	1.206

a. Dependent Variable: F_THDT

The regression results show that the variable F_MTS, F_THDP has no significance in the model because the sig tests t greater than 0.05. The remaining variables all have an impact on the dependent variable because the sig tests that the t of each independent variable is less than 0.05.

The VIF coefficients of the independent variables are all less than 5, so no multicollinear occurs.

Regression Equation:

$$F_{THDT} = -0.02 + 0.15 * F_{CSHT} + 0.123 * F_{NL} + 0.133 * F_{CSDT} + 0.106 * F_{DVC} + 0.119 * F_{CP} + 0.169 * F_{LT} + 0.089 * F_{HNQT} + 0.099 * F_{LKV} + \epsilon \tag{2}$$

Testing the variable residual variance by the Pearman test, the results show that all the sig values of the correlation between ABSZRE (absolute value of the remainder) and the independent variables are greater than 0.05, so the residual variance is uniform, there is no variable residual variance present. Thus, the regression model is appropriate and has no defects.

5 DISCUSSION

Based on the results of regression analysis, the hypotheses H1, H2, H3, H5, H6, H7, H8, H10 are accepted, and the H4, H9 hypotheses are rejected.

After the accreditation process, the research results are summarized as follows:

Table 4

Summary of research results

Variable name	Expected Impact Mark	Tested Impact Mark
THDT		
CST	+	+
NL	+	+
CSDT	+	+
MTS	+	No impact
DVC	+	+
CP	+	+
LT	+	+
HNQT	+	+
THDP	+	No impact
LKV	+	+

Thus, the actual findings differ somewhat from the initial expectations when each factor is considered individually. The results of the study indicate that 8 factors significantly impact the investment attraction in economic zones and industrial parks in the North Central region, ranked in terms of their positive impact from strongest to weakest as follows: (1) Advantages of the investment industry, (2) Infrastructure, (3) Human resources, (4) Input costs, (5) Quality of public services, (6) Regional linkages, (7) Investment policies, (8) Integration of production and international trade. Conversely, factors of quality of living and working environment, and local brands were found to have no statistically significant impact on investment attraction in these zones and parks.

Firstly, the investment industry advantage (LT) has a positive impact on attracting investment in economic zones and industrial parks in the North Central region. The analysis results show that the investment industry advantage factor is the factor that has the strongest impact on attracting investment to these areas. This finding aligns with previous studies, including those by (Brainard, 1997); (T. G. Le, 2009); (Krugman, 1991b). According to (T. G. Le, 2009), regions with strong investment industry advantages enable enterprises to access inputs, technological information, and human resources more efficiently. (Brainard, 1997) emphasizes that this factor plays an important role in helping investors reduce transportation cost of raw materials and goods, while facilitating access to broader markets for consumption. The favorable geographical location for the investment industry will stimulate business clustering, allowing them to effectively exploit the shared resources and intermediary inputs (Krugman, 1991b). Businesses invest in areas that offer industry-specific advantages, such as proximity to key raw material market, consumption market, partner businesses to reduce transportation costs, increase linkage, or compete with main competitors to maintain market presence and market share. Numerous studies have shown that the advantage of the investment industry is one of the factors affecting investors' choice of location. The North Central region benefits from favorable natural conditions for developing industries such as agriculture (e.g., short-term industrial crop, aquaculture, large-scale cattle breeding), mining and processing, food processing, building materials, light industry, especially energy production (hydropower, renewable energy: wind, solar); and services such as tourism, transportation, warehousing, logistics... This is also an advantage that contributes to the attraction of investment projects that align with the region's current industrial and sectoral development structure.

Secondly, Infrastructure is positively impacting the investment attraction in economic zones and industrial parks in the North Central region. The findings of this study are consistent with those of (Dunning, 1977b); (Kotler, 1993); (Dinh Phi Ho, 2012); (Mai Van Nam & Nguyen Thanh Vu, 2010); (Nguyen, 2012). When investing in industrial parks and economic zones, investors will consider the efficient execution of production and business activities, the shortened project implementation time and the reduced costs relating to transportation and communication for all stages for the overall target of investment efficiency. A locality with robust infrastructure— comprising road network, ports, airports, and communication system- enables businesses to invest in

transportation, build modern technical production systems, optimize production costs, reduce product costs, and bring higher efficiency. Economic zones and industrial parks with modern and synchronous infrastructure are more likely to attract investors. Statistical data indicate that the infrastructure in the North Central region is increasingly integrated in terms of traffic networks, water supply and drainage systems, and electricity grids. The region hosts nearly 100 urban areas, with National Highway 1A passing through 28 of them across 5 provinces in the North Central region; There are 2 airports in operation (Vinh Airport and Dong Hoi Airport) and Quang Tri airport undergoing investment preparation; Additionally, there are many seaports that can provide favorable conditions for domestic and international connectivity such as Nghi Son Economic Zone deep-water seaport (Thanh Hoa), Cua Lo deep-water seaport (Nghe An), Son Duong - Vung Ang port (Ha Tinh), My Thuy seaport (Quang Tri). Border gates connecting Vietnam and Laos, including Nam Can (Nghe An), Cau Treo (Ha Tinh), Cha Lo (Quang Binh), Lao Bao (Quang Tri)... form critical link in the expanding Mekong Sub-regional Economic Corridors... and create favorable condition to attract FDI into the region's economic zones and industrial parks.

Thirdly, Human Resources (NL) has a positive impact on attracting investment in economic zones and industrial parks in the North Central region. The findings align with the research of (Carstensen & Toubal, 2004), (Kang & Lee, 2007); (Sonobe & Otsuka, 2011); (Liu et al., 2012); (Nguyen Viet Bang, 2016); (Dinh Phi Ho, 2012). These studies affirm that human resources have a positive impact on attracting investment in economic zones and industrial parks. Human resources are considered one of the important factors in the investment environment, especially in attracting FDI enterprises. When implementing investment projects, the need for local human resources is inevitable. To maximize capital returns, investors often prioritize country/region with the input of the cheaper factor. Labor costs are often considered an important factor, especially in manufacturing industry. The survey results indicate that abundant human resources have met the number of inputs for economic zones and industrial parks in the North Central region. Up to now, in the North Central region, the number of employees working in the FDI sector is over 600 thousand direct employees and about 750-800 thousand indirect employees, which has a strong impact on the labor restructuring in the direction of industrialization and OS.

Fourthly, Input Costs (CP) have a positive impact on attracting investment in economic zones and industrial parks in the North Central region. The research results are consistent with those of (Fearon, 1909), (Vernon, 1966), and (Krugman, 1991b). (Menghinello et al., 2010) argue that multinational companies are often drawn by the lower labor costs of the host country. Similarly, (Dinh Phi Ho, 2012), (T. L. , & N. T. T. Le, 2013); and (Nguyen Viet Bang, 2016) believe that competitive input costs are crucial determinant of foreign investment attraction. Competitive input costs are a fundamental factor directly related to the investment efficiency of an enterprise. Low input costs enable businesses to enhance their competitiveness or achieve higher profits. A competitive cost in addition to a reasonable price must always be accompanied by the assurance of product and services quality. The provincial People's Committees in the North Central region have introduced several specific measures to attract investment and support the development of enterprises in the province. These measures include reduction in advertising costs on the province's mass media for projects in the field of investment boosting; lower fee for proposals for direct investment projects; and reduced cost for EIA reports for direct investment projects in the province's investment promotion fields. These initiatives aim at minimizing costs and creating favorable conditions for investors who want to invest in economic zones and industrial parks in the North Central region.

Fifthly, factors related to the quality of public services (DVC) have a positive impact on attracting investment in economic zones and industrial parks in the North Central region. The research results align with those of (Dinh Phi Ho, 2012); (Nguyen Viet Bang, 2016); (Hoang Ngoc Minh, 2017). High-quality public services enable investors to comply with state policies, reduce time and cost for administrative procedures associated with investment and production business activities, as well as benefit from the State's support in areas where businesses may face limitation independently. To enhance investment appeal, industrial parks and economic zones have to superior public services, such as expedited customs procedures; support for import and export information and advertising; intellectual property protection; and trade promotion. The North Central region has made notable strides in improving the quality of administrative services to adapt to the demands of a developing countries. Administrative reform has been vigorously pursued, particularly through the effective implementation of the "one-stop-shop" mechanism for settling administrative procedures. This approach is in alignment with the principles of "4 increases, 2 decreases, and 3 zeros" and the goal of building a

"service -oriented administrative framework"; the total number of administrative procedures under the authority of the Project Management Board, including those for which online public service registration procedures have been fully or partially implemented, as well as procedures with reduced processing times compared to the standard regulations.

Sixthly, regional linkage (LKV) has a positive impact on attracting investment in economic zones and industrial parks in the North Central region. This hypothesis follows the studies of (Dunning, 1973), (Vernon, 1966), and (Porter, 1990b). Strengthened regional linkages significantly enhance investment attraction in economic zones and industrial parks by expanding markets, fostering supporting industries, mobilizing resources for infrastructure, and promoting innovation and investment. North Central provinces have advanced regional integration through joint infrastructure projects such as North-South expressways, upgraded coastal roads, and expanded seaports and airports, improving connectivity and trade flows. Industrial clusters, such as textile, garment, and seafood processing hubs in Ha Tinh, Quang Binh, and Quang Tri, are examples of effective regional collaboration. Efforts also extend to human resource development, with partnerships between enterprises and vocational centers to train skilled workers. Universities and startup hubs offer entrepreneurship training and support for young innovators. These linkages have expanded domestic market potential, improved infrastructure and workforce quality, and cultivated a more competitive investment environment across the North Central region.

Seventhly, the Investment Policy (CSDT) has a positive impact on attracting investment in economic zones and industrial parks in the North Central region. International studies, such as those by (Rosenfeld, 1996) and (Kipping, 1961) have also discovered the positive impact of policies on investment cooperation. Most studies in Vietnam, including research by (Dinh Phi Ho, 2012), (Nguyen, 2012); (Nguyen Phuc Nguyen, 2013) have affirmed the positive impact of investment policies on investment attraction into economic zones and industrial parks. Investment policies play a vital role in shaping a conducive environment for economic zones and industrial parks, directly contributing to economic growth, job creation, and increased output. These policies also help mitigate negative social and economic impacts, promote equity, and enhance social stability. By reducing investment costs, enhancing quality, and strengthening regional competitiveness, investment policies stimulate capital inflows and expand investment

scale. To attract more FDI to the North Central region, the central government has issued various supportive policies, notably the 15th Politburo's Resolution on socio-economic development and national security in the North Central and Central Coastal regions toward 2030. This resolution calls for reviewing and refining regional planning to fully leverage local strengths, promote inter-provincial coordination, and ensure cohesive regional development. Overall, the North Central region has increasingly received policy attention from the Government, as reflected in the growing number of legal and strategic directives issued in recent years.

Eighthly, Production and International Trade Integration (HNQT) has a positive impact on attracting investment in economic zones and industrial parks in the North Central region. This hypothesis is consistent to the studies of (Dunning, 1973), (Vernon, 1966), and (Porter, 1990b). For foreign investors, language proficiency remains a relevant factor influencing investment decisions. Additionally, streamlining administrative procedures and enhancing support from public agencies in import–export activities help reduce costs, save time, and improve operational efficiency. Improved collaboration between customs authorities and enterprises facilitates smoother clearance for both exports and imported inputs for domestic production. As a strategic sub-region within Vietnam, the North Central region plays a pivotal role in linking the Central and Northern economic zones. Local governments have partnered with the Ministry of Industry and Trade to implement national trade promotion programs, boosting regional and international trade connectivity. These initiatives have provided platforms for enterprises to promote brands and products effectively. At the 2023 regional trade connection conference, eight distributors and exporters signed Memoranda of Understanding with 40 local suppliers, marking a significant step in regional integration. Such developments demonstrate the region's increasing integration of production and trade activities, thereby enhancing its appeal to investors.

Ninthly, the impact of the quality of living and working environment (MTS) on attracting investment in economic zones and industrial parks in the North Central region is not statistically significant. This result differs from the initial expectations. The findings of this study do not align with previous research by (Lin & Tzeng, 2009), (Badri, 2014), and (Dinh Phi Ho, 2012), all of whom suggest that the quality of living and working environment has a positive impact on attracting investment in economic zones and industrial parks. The reason for this discrepancy could be that, when making investment

decisions in economic zones and industrial parks, investors prioritize other factors, such as infrastructure, industry advantages, and investment policies, over the quality of living and working environment... Moreover, the quality of living and working environment in the provinces in the North Central region is comparable to that of other regions, so as a results, investors do not place much emphasis on these factors when deciding where to invest.

Tenthly, the impact of local branding (THDP) on attracting investment in economic zones and industrial parks in the North Central region is not statistically significant. This result deviates from initial research expectation and differ from the findings of studies by (Kotler, 1993); (Porter, 1990b), and (Dinh Phi Ho, 2012). The reason for this discrepancy is that the local branding of the provinces in the North Central region falls within the average range, neither excelling nor underperforming (as indicated by the PCI-provincial competitiveness assessment index rankings for the period 2021 – 2023), consequently, local branding does not create a significant competitive advantage nor a disadvantage. Therefore, investors also do not place much emphasis on local branding factors when considering whether to invest in the region's economic zones and industrial parks.

The research results suggest that, in order to attract investment into economic zones and industrial parks in the North Central region, greater attention should be given to factors such as: leveraging industry advantages, enhancing infrastructure quality, developing high-quality human resources, improving the business environment, while continuing to create attractive incentive policies to help businesses reduce costs, improve the quality of public services, promote regional linkages and improve productivity and international trade capabilities for businesses.

6 CONCLUSION

Identifying key factors influencing investment attraction offers policymakers and managers a solid basis for refining strategies to boost competitiveness. In economic zones and industrial parks, the eight most influential factors, in descending order, include: (1) sectoral advantages, (2) infrastructure, (3) human capital, (4) input costs, (5) public service quality, (6) regional connectivity, (7) investment policies, and (8) integration with

global production and trade networks. Factors like living conditions and local branding appear to have minimal influence in the North Central region.

To enhance investment attraction in this region, several strategic directions are proposed. First, leverage sectoral strengths by developing industrial clusters and value chains in high-potential sectors such as high-tech agriculture, agro-processing, tourism, and renewable energy. Second, prioritize infrastructure upgrades, especially in transportation, energy, and telecommunications, including the expansion of highways, seaports, airports, and flight routes. Third, improve human resource quality by aligning vocational training with market demands through partnerships between businesses and educational institutions. Fourth, lower input costs to foster a competitive business environment, this may involve reducing energy and land costs and supporting transport enterprises. Fifth, streamline public services by cutting administrative procedures and adopting digital solutions. Sixth, strengthen regional linkages across tourism, agriculture, and industry while building common regional brands to enhance market competitiveness. Seventh, offer attractive and stable investment incentives, including tax breaks and land access. Finally, promote international trade integration by leveraging free trade agreements, supporting export-oriented firms, and organizing trade promotion events.

This study contributes by objectively identifying and ranking the eight most critical investment drivers, enabling localities to tailor strategies to their specific contexts. However, it mainly focuses on economic and infrastructure dimensions, overlooking non-economic factors such as culture and social dynamics. Moreover, the study lacks a temporal analysis of evolving factors. Future research should explore environmental concerns, sustainable development, and macroeconomic linkages to provide a more comprehensive policy foundation for long-term investment and sustainable growth in economic zones and industrial parks, particularly in Vietnam's North Central region.

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Authors' Contribution

All authors contributed equally to the development of this article.

Data availability

All datasets relevant to this study's findings are fully available within the article.

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