

The Impact of the Factors Affecting High Quality Human Resources Development of Nam Dinh Province in the Context of 4th Industrial Revolution

Co Huy Le^{1*}¹Lecturer of Hanoi University of Home AffairDOI: [10.36348/sjhss.2022.v07i06.001](https://doi.org/10.36348/sjhss.2022.v07i06.001)

| Received: 31.04.2022 | Accepted: 30.05.2022 | Published: 14.06.2022

*Corresponding author: Co Huy Le
Lecturer of Hanoi University of Home Affair

Abstract

In the Decision approving the socio-economic development plan of Nam Dinh province for the period of 2021-2025 and the master plan for human resource development of Nam Dinh province for the period of 2021-2025, with orientation to 2030, it has been identified: For growing and developing of stable and sustainable economics, ensuring high quality human resources for the private sector as well as ensuring the development of the province's cadres and civil servants to carry out political tasks in the public sector in the 4th industrial revolution, the state management of the development of the province's cadres and civil servants needs to be properly invested. The article presents the basic contents of the impact of the factors affecting high quality human resources development of Nam Dinh province in the context of 4th industrial revolution to know The influencing factors and the degree of their impact on the development of high-quality human resources in Nam Dinh province in the context of the 4th industrial revolution. This is an important basis for managers to take appropriate management measures on developing high quality human resources to meet the goals of modern and industrial-oriented socio-economic development.

Keywords: human resources development, Nam Dinh Province, growing, globalization.

Copyright © 2022 The Author(s): This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CC BY-NC 4.0) which permits unrestricted use, distribution, and reproduction in any medium for non-commercial use provided the original author and source are credited.

1. INTRODUCTION

Globalization and economic integration have been bringing countries and localities many opportunities as well as challenges in the competition to attract, use and exchange renewable energy. In Vietnam, the Party and State have always firmly adhered to the concept of "considering people as the subject, the main resource and the goal of development". In the context of the current industrial revolution 4.0 (Industry 4.0), developing and improving human resources is a breakthrough strategy that contributes to promoting the application of science and technology in production, shifting the appropriate labor structure, more adapting to the economic structure, transforming the growth model, ensuring fast, effective and sustainable local socio-economic development.

Nam Dinh is a province located in the center of the South Red River Delta, with a natural area of 1,669.2 km², a population of about 2,000,000 people, 90 km from Hanoi city center, quite convenient for economic development. With the available premises, Nam Dinh province is taking full advantage of the achievements of the industrial revolution 4.0,

promoting further development for the local socio-economic development in the direction of modern industry. However, besides opportunities, Nam Dinh is facing challenges in terms of both lack and weakness of highly qualified human resources in the context of the current 4th industrial revolution. Therefore, Nam Dinh province needs to well organize the state management of high-level human resource development, first of all, to find and measure the influence of factors on human resource development. Nam Dinh province is high in quantity, improved in quality, with a structure suitable for socio-economic development in the direction of modern industry. In fact, there are many different factors affecting the development of highly qualified human resources in Nam Dinh province, including both micro and macro factors that have an influence. With the research approach to state management on human resource development of Nam Dinh province, the influencing factors considered are macro factors. In this content, the authors study the influence of macro factors on the development of highly qualified human resources in the province, including: State management of central high-level human resource development; education - training factor; economic factors; Labor

force; Science and technology; Culture, society... to build a linear regression function to determine the degree of influence of quantitative factors on the development of highly qualified human resources in Nam Dinh province.

2. THEORETICAL BASIS AND PROPOSED RESEARCH MODEL

2.1. Theoretical basis for studying the influence of factors on the development of highly qualified human resources in the context of the 4th industrial revolution

The 4th industrial revolution - also known as industry 4.0 broke out in the 21st century. According to Gartner, the industrial revolution 4.0 comes from the concept of "Industrie 4.0" in a German government report in 2013. Industry 4.0 connects embedded systems and smart production facilities (application of artificial intelligence and big data) to create digital convergence between industrial production, business, and management in the process of socio-economic development.

In order to be able to apply artificial intelligence in production to contribute to the successful implementation of the 4th industrial revolution, people, especially resettlement, high quality must be considered as an important foundational factor and a driving force. Stimulate rapid and sustainable socio-economic development to ensure the production process of this 4th industrial revolution. In terms of macro management, resettlement human resources in the context of Industry 4.0 are workers with college or higher qualifications, skilled skills, creative capabilities, adaptive capacity and competences perform well, have positive professional qualities in the working conditions of the domestic industry, bringing high productivity, quality and efficiency.

In the context of the 4th industrial revolution with many changes, such highly qualified human resources must always be considered in a dynamic state, which means that it is necessary to continuously develop high-qualified human resources in order to increase the number of employees. scale of highly qualified human resources; high quality human resources (professional and technical qualifications, skills, capacities, health, professional qualities); structure of highly qualified human resources (by industry, by economic sector, by region); potential supply - demand of existing high-skilled human resources, the ability to attract highly qualified human resources from the outside to meet the requirements of high-qualified human resources associated with the 4th industrial revolution.

Developing highly qualified human resources in the context of the 4th industrial revolution at the provincial level has many factors affecting both positive

and negative. With the research approach which is the macroeconomic management of human resource development at the provincial level, the authors choose to analyze the factors that affect the macro-level to the development of high-level human resources in the province. The context of the 4th industrial revolution at the provincial level is below:

a. Education - training factors affecting the development of high-level human resources at the provincial level (H1): Education - training is a tool that directly affects the development of high-level human resources on a large scale. Especially the positive impact on the quality of highly qualified human resources (professional and technical qualifications, capacity, skills and state legislation as well as highly qualified human resources). A locality with a good education and training system will improve the efficiency of developing highly qualified human resources for industries, economic sectors and regions in the context of the 4th industrial revolution and vice versa. Thus, education and training and improving the quality of highly qualified human resources are closely related. Education and training is an important factor in improving quality, ensuring structure and contributing to increasing the scale of provincial-level highly qualified human resources in the context of the 4th industrial revolution.

b. Labor force factors affecting the development of highly qualified human resources at the provincial level (H2): The size of the labor force includes employees of full working age and older who are working in the province. the economy and also the workers who are unemployed and they are ready to enter the labor market when they are recruited. The increase in the size and proportion of the workforce with college degrees or higher contributes to the increase in the quantity, quality and structure of provincial-level human resources in the context of the 4th industrial revolution. If the locality has an abundant, high-quality and well-qualified labor force, the development of highly qualified human resources is simpler and easier. On the contrary, if the labor force is limited, it will be more difficult, expensive and less effective to develop highly qualified human resources on the spot and through training, attraction and recruitment.

c. Economic factors affecting the development of highly qualified human resources at the provincial level (H3): There is a close relationship between economic development and the index of highly qualified human resource development. Localities with a high economic development index often have high requirements on the size and quality of highly qualified human resources that need to be attracted and recruited to promptly meet the needs of highly qualified human resources to serve. Provincial production in the context

of the 4th industrial revolution. In the context of the 4th industrial revolution, the economic environment, investment environment, etc. are always changing rapidly, requiring highly qualified human resources at the provincial level to have enough and always update knowledge and skills. and new capacity to promptly adapt to changes in the economic and social environment. Thus, along with economic development, it will promote the development of highly qualified human resources in terms of scale and quality, ensuring an appropriate structure, compatible with modern industrial production conditions.

d. Factors of science and technology affecting the development of human resources at the provincial level (H4): Science and technology level is a factor that directly affects the development of high-level human resources of each province. In production, the level of science and technology sets requirements that need to be met in terms of quantity, quality and structure of highly qualified human resources suitable to that level of science and technology. That is, for any technology, it is necessary to have highly qualified human resources with relevant technical qualifications, skills, capabilities and state legislation to operate and effectively apply machinery and technology in production. When science and technology becomes a direct productive force, a factor affecting the labor productivity of highly qualified human resources, highly qualified human resources become even more important in the application of science and technology, creating new knowledge in the process of modern industrial production.

e. Factors of central state management affecting the development of human resources at the provincial level (H5): The factors of state management of human resource development at the central level include strategies, regulations, and procedures. Human resource development plans, plans and policies, especially highly qualified human resources, have a relationship with the development of high-level human resources at the provincial level. This relationship will create positive effects in order to increase the scale, improve the qualifications and quality and ensure the appropriateness of the province’s highly qualified human resources when the state management of human resources development is carried out. Central level human resources are fully and promptly built and deployed. On the contrary, if this factor is not implemented effectively and timely, it will hinder the development of high-level human resources in the province in the context of the 4th industrial revolution.

f. Factor of the manufacturing industry affecting the development of human resources with high qualifications at the provincial level (H6): The manufacturing industry and the manufacturing sector are factors that directly affect the development of highly qualified human resources of each local. Each manufacturing industry, each production fields needs a certain number of qualified workers to meet production requirements and meet the scientific and technological requirements of each locality in each context and condition. Certain economic and technical.

2.2. Proposed research model

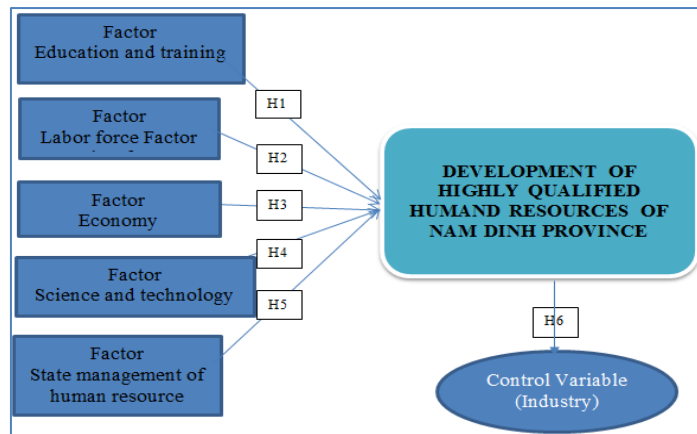


Fig-1: Proposed research model

Research hypothesis: From the theoretical basis of high-level human resource development, the results of qualitative research and factor analysis (EFA) above show that there are 6 factors of macro nature that have an impact on qualified human resources. Nam Dinh province with the research hypotheses of independent variables from X1 to X6 have a positive relationship to the dependent variable of developing highly qualified human resources of Nam Dinh

province to serve as a basis for analysis the quantitative model, test the research hypotheses below.

3. RESEARCH METHODS AND DATA COLLECTION

3.1. Research methods

The article is made on the basis of closely combining both qualitative and quantitative research methods in the research process with the desire not only

to describe the theoretical picture of the impact of state management on development of highly qualified human resources to socio-economic development in the context of the 4th industrial revolution, but also to quantify this impact through reliable statistics of Nam Dinh province.

3.2. Collect data

To carry out this study, the author has collected primary and secondary data sources as follows: Collecting secondary documents: Through the collection of data and information at the Provincial Party Committee, Office of the Provincial People's Committee, departments, departments, branches, a number of universities, colleges, hospitals and other agencies. Enterprises, offices of the People's Committees of districts, functional departments of the People's Committees of districts in Nam Dinh province.

3.3. Collect primary documents

With the total highly qualified human resources of the province, there are 179,337 people. The expected confidence level when survey is 91.5%, error 8.5%: Look up the normal distribution table with the confidence of 91.5%, get the variable value: $Z=2.58$. Ratio of random sample with probability $p = q = 0.5$. The sample size determined by the above formula, we need to survey with 300 votes.

Select 60 units with 300 samples, the number of samples must represent 3 economic sectors: Agriculture, forestry and fishery; Industry - construction; service industry - trade; at the same time, the sample number must represent 3 economic sectors: the state economic sector, the private economic sector and the foreign-invested economic sector with the survey units selected to achieve the objective research purpose.

4. RESEARCH RESULTS

4.1. Overview of highly qualified human resources of Nam Dinh province

Nam Dinh is a province located in the Red River Delta of Vietnam, with an area of 1,669.2 km². In 2021, the province has 1,889,730 people, is a province with a young population structure but still lacks highly qualified human resources, untrained human resources are still many, and the labor structure is not reasonable to meet the demand of human resources in the context of 4th industrial revolution. The situation of young, healthy human resources, with college degrees or higher, tends to move strongly to big cities to work, causing a high brain drain outside the province. To ensure the human resource requirements for the province's socio-economic development in the context of the current 4th industrial revolution, Nam Dinh province currently has highly qualified human resources for economic sectors and cities. Economic part, economic areas of the province are as follows:

Table-1: Human resources of Nam Dinh province in the period of 2017 - 2021

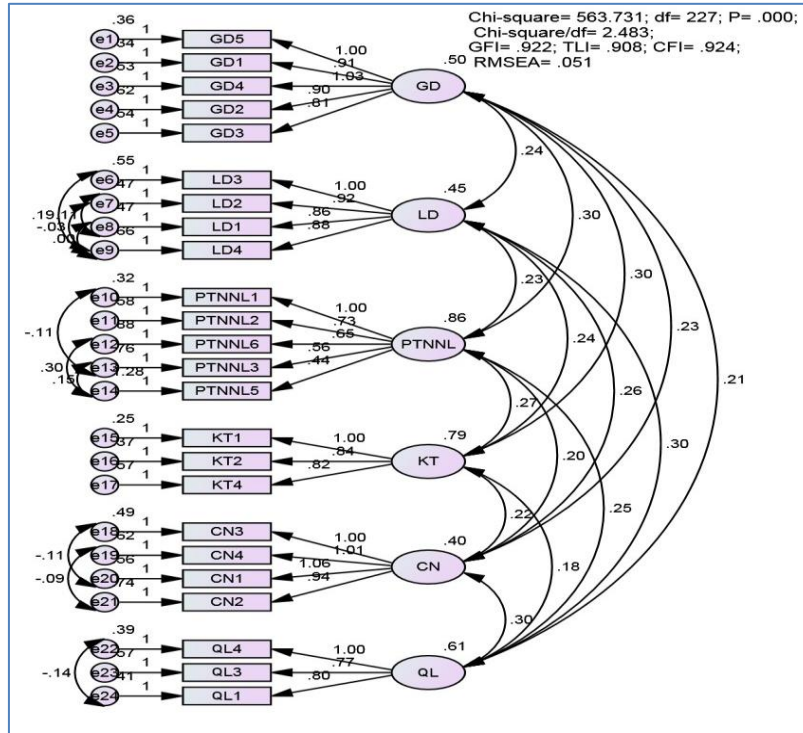
No	Targets	2017	2018	2019	2020	2021
1	Total Labor Force	1.068.622	1.084.587	1.101.035	1.115.996	1.132.893
2	Total working human resources	1.043.611	1.061.812	1.084.363	1.099.516	1.024.027
3	Total trained human resources	150.071	163.731	198.764	205.939	207.775
*	<i>Rate of trained human resources</i>	<i>14,38%</i>	<i>15,42%</i>	<i>18,33%</i>	<i>18,73%</i>	<i>20,29%</i>
4	Total of high qualified human resource	101.947	114.532	126.399	147.869	179.337
*	<i>Ratio of resettled human resources/total labor force</i>	<i>9,54%</i>	<i>10,56%</i>	<i>11,48%</i>	<i>13,25%</i>	<i>14,83%</i>
5	Highly qualified human resources by the industry					
*	Agriculture, Forestry and Fisheries Industry	27.760	30.214	31.410	36.198	43.256
	<i>%/ total highly qualified human resources</i>	<i>27,23%</i>	<i>26,38%</i>	<i>24,85%</i>	<i>24,48%</i>	<i>24,12%</i>
*	Construction industry	31.410	37.738	45.402	55.170	68.345
	<i>%/ total highly qualified human resources</i>	<i>30,81%</i>	<i>32,95%</i>	<i>35,92%</i>	<i>37,31%</i>	<i>38,11%</i>
*	Commercial service industry	42.777	46.580	49.586	56.501	67.736
	<i>%/ total highly qualified human resources</i>	<i>41,96%</i>	<i>40,67%</i>	<i>39,23%</i>	<i>38,21%</i>	<i>37,77%</i>
6	Highly qualified human resources by economic sectors					
*	State economic sector	31.826	32.632	29.261	35.548	44.745
	<i>%/ total highly qualified human resources</i>	<i>31,22%</i>	<i>28,49%</i>	<i>23,15%</i>	<i>24,04%</i>	<i>24,95%</i>
*	Private sector	41.951	47.943	54.010	63.880	79.267
	<i>%/ total highly qualified human resources</i>	<i>41,15%</i>	<i>41,86%</i>	<i>42,73%</i>	<i>43,20%</i>	<i>44,20%</i>
*	Economic sectors with foreign investment	28.170	33.957	43.127	48.442	55.325
	<i>%/ total highly qualified human resources</i>	<i>27,63%</i>	<i>29,65%</i>	<i>34,12%</i>	<i>32,76%</i>	<i>30,85%</i>
7	Highly qualified human resources by region					
*	Rural areas	66.082	73.587	79.846	92.832	113.162
	<i>%/ total highly qualified human resources</i>	<i>64,82%</i>	<i>64,25%</i>	<i>63,17%</i>	<i>62,78%</i>	<i>63,10%</i>
*	Urban areas	35.865	40.945	46.553	55.037	66.175
	<i>%/ total highly qualified human resources</i>	<i>35,18%</i>	<i>35,75%</i>	<i>36,83%</i>	<i>37,22%</i>	<i>36,90%</i>
8	Percentage of highly qualified human resources in each region					
*	<i>% of total urban labor force</i>	<i>16,92%</i>	<i>17,93%</i>	<i>21,43%</i>	<i>22,84%</i>	<i>25,42%</i>
*	<i>% of total rural labor force</i>	<i>6,54%</i>	<i>6,86%</i>	<i>7,93%</i>	<i>8,40%</i>	<i>8,94%</i>

[Source: Results of the author's statistics and calculations]

4.2. Quantitative research results

Step 1: Test the scale, exploratory factor analysis EFA, confirmatory factor analysis CFA of the model with 6 factors including 24 observed variables. These factors create groups of scales and are included in the CFA analysis to consider the fit of the model to

the data. The evaluation criteria include: unidirectionality, convergent value, discriminant value and theoretical correlation value. The criteria from 1 to 3 are evaluated in the critical scale model, while the theoretical relevance value is evaluated in the theoretical model.

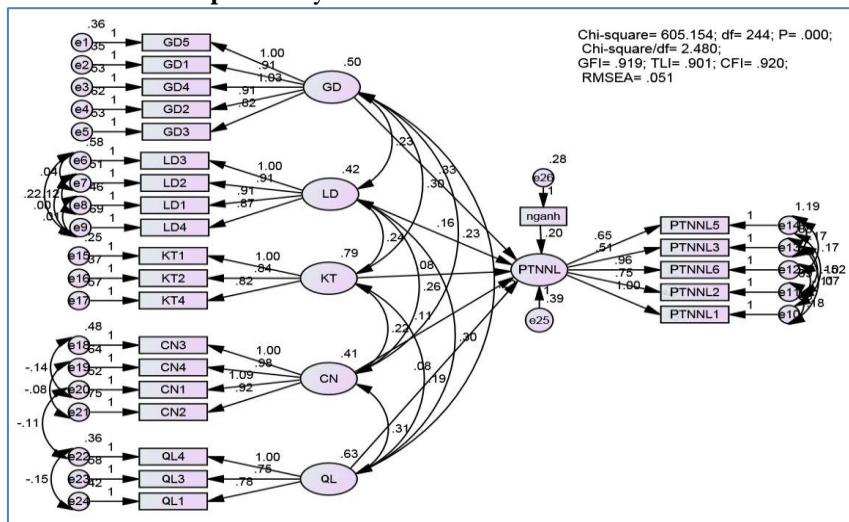


[Source: Analysis results from SPSS 21]

The results of the CFA confirmatory factor analysis of the scale model are presented in the figure above. This model has 227 degrees of freedom. The figure above shows the value of the Chi-squared index = 563,731 with p=000. Other indicators: Chi-squared/df

= 2.483, GFI = 0.922, TLI = 0.908, CFI = 0.924 are all higher than 0.9, RMSEA = 0.051 < 0.08. This can infer that the model is considered suitable for the market data because it ensures unidirectionality, convergent validity and discriminant validity.

Step 2: Analyze the linear structural model SEM



[Source: Analysis results from SPSS 21]

The results of running the SEM model of the model with industry as the control variable are presented in the figure. This model has 244 degrees of freedom. The figure above shows the value of the Chi-squared index = 605,154 with a p=000 value. Other

indicators: Chi-squared/df = 2.480, GFI = 0.919, TLI= 0.901, CFI=0.920 all higher than 0.9 (Bentler & Bonett, 1980), RMSEA = 0.051 < 0.08 (Steiger, 1990). Thus, this research model achieves compatibility with market data.

Table-2: Estimation results and hypothesis testing results Regression Weights: (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P	Label
PTNNL	<---	GD	.428	.177	4.251	***	
PTNNL	<---	LD	.363	.112	3.673	***	
PTNNL	<---	KT	.252	.152	3.535	***	
PTNNL	<---	CN	.210	.107	2.034	***	
PTNNL	<---	QL	.185	.075	1.576	***	
PTNNL	<---	nganh	.127	.062	1.101	.006	

The results of SEM analysis show that 6 factors in the model all have an impact on the development of highly qualified human resources in the context of the 4th industrial revolution of Nam Dinh province, including education, training, and force. Labor, economics, science and technology, state management of human resource development at central and sectoral levels. All 6 factors have a significance level of 10% due to the P-value < 0.1. The above regression weights all have positive signs, showing that the above factors have a positive influence on the development of highly qualified human resources in the context of the 4th industrial revolution of Nam Dinh province.

We can see that all 5 initial hypotheses are accepted, the factors of education, training, labor force, economy, science and technology, state management of human resource development at the central level. and adding a factor considered as a control variable "Industry" also has a positive and positive impact on the development of highly qualified human resources of Nam Dinh province in the context of the 4th industrial revolution with the results Quantitative research has the following linear regression equation:

$$PTNNL = 0,428.GD + 0,363.LD + 0,252.KT + 0,210.CN + 0,185.QL + 0,127.nganh$$

Thus, through the results of quantitative research, it shows that the development of highly qualified human resources in Nam Dinh province in the process of industrialization and modernization is influenced by the following factors: contributed 0.428 points; the labor force factor of Nam Dinh province contributed 0.363 points, the economic factor contributed 0.252 points; science and technology factor contributed 0.210 points; The state management factor in human resource development at the central level contributed 0.185 points and finally the sector factor contributed 0.127 points to the development of highly qualified human resources in Nam Dinh province in the context of the 4th industrial revolution.

Thus, the theoretical model tested in Figure 1 is the official and only model used and explains the factors affecting the development of highly qualified human resources in Nam Dinh province in the context of the 4th revolution.

5. CONCLUSION

On June 28, 2018, the People's Committee of Nam Dinh province issued the Plan No. 71/KH-UBND to implement the Action Plan No. 25-Ctr/TU, on May 29, 2018 of the Provincial Party Committee to implement the Resolution No. 23-NQ/TW of the Central Committee on orientations for building national industrial development policies to 2030, with a vision to 2045. Accordingly, the set targets are: Strive to 2030; Nam Dinh province has basically completed the goal of industrialization and modernization associated with the 4th industrial revolution, being in the group of well-developed provinces of the Red River Delta. By 2045, Nam Dinh province will become a modern industrialized province. To ensure the successful implementation of those goals, the state management of the development of highly qualified human resources is extremely important, in which the determination must start from identifying the main factors affecting the development of human resources. Develop highly qualified human resources of Nam Dinh province to meet and ensure compatibility with the development of industries in Nam Dinh province towards the successful implementation of the 4th industrial revolution in Nam Dinh province.

REFERENCES

1. Communist Party of Vietnam. (2011). Resolution of the 11th Party Central Committee Conference, National Political Publishing House, Hanoi.
2. Communist Party of Vietnam, Documents of the 6th, VII, VIII, X, XI, XII, XIII National Congresses, Office of the Party Central Committee, Hanoi.
3. Nam Dinh Provincial People's Committee. (2021). Resolution on socio-economic development tasks of Nam Dinh province in the period of 2021 - 2025, Nam Dinh.

4. Nam Dinh Provincial People's Committee, Decision approving the planning of human resource development in Nam Dinh province for the period of 2021-2025 of the People's Committee of Nam Dinh province, 2021.
5. Nam Dinh Provincial People's Committee, Socio-economic development strategy of Nam Dinh province in the period of 2021-2025, Nam Dinh.