

MINISTRY OF EDUCATION AND TRAINING
HANOI UNIVERSITY OF MINING AND GEOLOGY

VU DUC MINH

**STUDY ON SOLUTIONS TO IMPROVE
QUALITY TRAINING AT VOCATIONAL
TRAINING INSTITUTIONS IN QUANG NINH
PROVINCE**

Major: Economic Management

Code: 9.310110

SUMMARY OF DISSERTATION IN ECONOMICS

HA NOI - 2022

**The dissertation is completed at the Faculty of Economics and
Business Administration, Hanoi University of Mining and
Geology**

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The dissertation was successfully defended at the Hanoi University of Mining and Geology doctoral committee at, date.....2022

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INTRODUCTION

1. The necessity of the research

Vocational training is one of the important tasks to generate human resources which are capable of adapting to the rapid changes in the labor market, meeting the requirements of international integration and contributing to the sustainable development of the country. The quality of training is a top concern and a goal that all vocational training institutions direct to. Improving the training quality is generally the most crucial mission in the management practices of vocational training institutions and training institutions at large. This is because the quality of graduates plays a decisive role in meeting the labor needs of the employer, and thereby contributing to improving the training institution's reputation.

In terms of theory, in recent years, Vietnamese national and international scholars have increasingly interested in the topic of vocational training quality. Relevant research has systematized theoretical issues of quality, training quality including those in vocational training and educational institutions at large, such as definition, evaluation criteria for training quality, training quality components and training quality management models. However, through a literature review, the author has recognized that (i) The studies on quality assessment criteria were normally based on the perspectives of training institutions and the quality assurance system of the state management agencies rather than the viewpoint of the user of training outputs; (ii) There has been no research developing a system of criteria for assessing the vocational training quality and measuring them independently from the perspective of users, including both employers and self-employed graduates, of vocational training outputs in Quang Ninh province; and (iii) Scientific-based research on evaluating the impact of factors affecting the training quality of public vocational training institutions under specific circumstances of Quang Ninh province and Vietnam at large is lacking.

In terms of practice, the Vietnamese system of vocational training institutions has recently developed throughout the country, partly meeting the needs of learners and employers. The Vocational Training Development Strategy for the period 2011 - 2020 clearly states: "By 2020, vocational training shall meet the requirements of the labor market in terms of quantity, quality, vocational structure and training level; the training quality of several occupations shall reach relevant levels in the developed countries in the ASEAN region and in the world, forming skilled workforce and contributing to improving the national competitiveness" [5]. In contrast to a dynamic and rapidly changing labor market related to economic development and international integration, the innovation of the vocational training institutions in Vietnam is limited. Therefore, the system has not yet kept up with the requirements on human resource quality in the labor market.

The country's extensive international economic integration process associated with the continuous development of science and technology, especially the industrial revolution 4.0, requires a qualified workforce to diversely satisfy the increasing demand of domestic and foreign businesses.

Quang Ninh is one of the provinces with the leading economic growth rate in Vietnam and is a considerable investment attraction both domestically and internationally. In the four years 2017 - 2020, Quang Ninh has ranked first in the country on the Provincial Competitiveness Index (PCI). Specifically, the Provincial Labor Training Index in 2020 was 8.41, standing first nationally in the labor training index [23].

However, the provincial vocational training currently does not meet the growing quality requirements in promoting industrialization, modernization, industry 4.0 and economic integration. This is mainly driven by an inadequate enrollment structure which is mainly of the elementary level and under three months (accounting for 88%). While those at the intermediate and college levels only account for about 12%. The structural imbalance of training occupations among provincial regions has been slowly overcome. Implementing high-quality vocational training activities, such as key vocational development, high-quality vocational institutions, and piloting the regional and international vocational training under the transfer program are slow. In addition, training curricula and textbooks contain a number of formal contents that have not been regularly updated and developed according to the stipulations of the labor market. The vocational training in several institutions is still of low quality and effectiveness and not strongly linked to the human resource needs of specific industries. The relationship between institutions and businesses is generally weak. The team of teachers and managers and the investment in facilities and equipment in vocational training institutions have not received proper attention.

Given the escalating requirements on the quality of human resources in the labor market, vocational training institutions in Quang Ninh have to constantly enhance the training quality to provide a qualified workforce to the market and successfully implement the province's socio-economic development strategy from 2021 to 2025 and after 2025.

The above-mentioned analysis has led to the author's selection on a research topic of "*Analysis on solutions improving the training quality of vocational training institutions in Quang Ninh province*" for his doctoral dissertation. This topic is urgent and of scientific and practical significance.

2. Research objectives

The dissertation's objective is to propose scientific-based and feasible

solutions to improve the training quality of vocational training institutions with the view of satisfying the increasing demand for qualified labor in Quang Ninh province

3. Research subject and scope

3.1. Research subject

The research subject of this dissertation was the training quality of vocational training institutions.

3.2. Research scope

- Scope of content and spatial extent: The thesis studied the training quality of vocational training institutions in Quang Ninh province. The central focus was on public vocational training institutions including vocational colleges, vocational secondary schools and vocational education centers with three training levels of elementary, intermediate and vocational colleges. This was because these were vocational training institutions with the largest number of students recently in the province, and belonging to the vocational institution system according to the regulations of the General Department of Vocational Training of Vietnam.

- The quality of training was analyzed from the viewpoint of training output users (including employers and self-employed graduates who create jobs for themselves or improve their professional qualifications) (hereafter employers).

- Scope of time:

+ Secondary data on the quality of vocational training was collected in the period from 2015 - 2020.

+ Primary data was gathered through a questionnaire survey in 2020

+ Solutions were proposed for the period 2021 - 2025 and orientated for the next period.

4. Research missions of the dissertation

To achieve the research objectives and solve the above-mentioned issues, the research missions of the dissertation included:

- Reviewing national and international literature on training quality and vocational training quality of vocational training institutions to classify current research gaps as the basis for determining the content and research missions of the dissertation.

- Systematizing the theoretical basis for training quality, training quality of vocational training institutions; clarifying criteria for evaluating training quality of vocational training institutions; determining the factors affecting the training quality of vocational training institutions

- Evaluating the current status of training quality of vocational training institutions in Quang Ninh province in the period of 2015 - 2020 through qualitative and quantitative analysis, including the identification

and measurement of key factors affecting the training quality of vocational training institutions in this area.

- Proposing solutions to improve the training quality of vocational training institutions in the study area based on the assessment of quality criteria, influencing factors, drivers, and the current characteristics and development orientation of vocational training institutions in Quang Ninh province.

5. Thesis research process of the dissertation

Scientific research is a series of activities to explore the unknown aspects of knowledge on phenomena' nature and create advanced methodologies and techniques to improve the world (Nguyen Van Thang, 2014).

6. Findings and contributions of the dissertation

6.1. Findings of the dissertation

- The dissertation has reviewed the literature related to the research topic, and identified the achieved results and the current research gaps, thereby determining the dissertation's research direction and contributions;

- Selected appropriate research approaches and methodologies (including both qualitative and quantitative analysis) to clarify the nature of the research subject under specific conditions of the research scope;

- Determined the theoretical framework on the training quality of vocational training institutions. Notable was the establishment of the evaluation criteria and the identification of factors affecting the training quality of vocational training institutions from the perspectives of employers;

- Demonstrated the achievements and shortcomings in the training quality at vocational training institutions in Quang Ninh province and determined the impact level of the factors affecting the training quality of these vocational training institutions;

- Proposed five solutions to enhance the training quality of vocational training institutions in Quang Ninh province through (i) Improving training quality evaluation criteria and (ii) Impact on factors affecting the training quality.

6.2. Contributions of the dissertation regarding theoretical and practical realms

(1) The dissertation has added a number of factors to three scales of factors affecting the training quality of vocational training institutions. These factors included "Integrated curriculum with advanced and intensive practice modules", "Effectively managed curriculum quality" on the scale of "Training program"; "Number of vocational training equipment satisfying practice requirements according to the curriculum" on the scale of "Facilities"; "Well-equipped IT infrastructure institutions

for online training” on the scale of “Support services”; "Having soft capacity (thinking, adapting, transforming)" on the scale of "Trainees ".

(2) The findings of the dissertation have clarified the quality assessment criteria, added the factors affecting the training quality of vocational training institutions from the perspective of employers and indicated five factors affecting the training quality of vocational training institutions in Quang Ninh province according to the decreasing level of impact. These factors were Quality of teachers; Curriculum; Trainee support services; Trainees and Facilities of vocational training institutions.

(3) To improve the training quality of vocational training institutions in Quang Ninh province, training institutions should target their investment in three factors: teachers, curriculum, and support services for trainees. This result served as a reference for Quang Ninh province as well as Ministries and sectors having vocational training establishments in Quang Ninh province.

7. Structure of the dissertation

Apart from the introduction and conclusion, the dissertation comprises five chapters as follows:

Chapter 1. Overview of literature related to the dissertation topic

Chapter 2. Theoretical basis for training quality of vocational training institutions

Chapter 3. Research models and methodologies

Chapter 4. Current status of training quality of vocational training institutions in Quang Ninh province in the period of 2015 - 2020

Chapter 5. Solutions to improve the training quality of vocational training institutions in Quang Ninh province

CHAPTER 1. OVERVIEW OF LITERATURE RELATED TO THE DISSERTATION TOPIC

1.1. Vietnam national literature

1.1.1. Research on criteria for evaluating the training quality of educational institutions

1.1.2. Research on evaluation criteria and factors affecting the training quality of vocational training institutions

1.1.3. Research on solutions to improve the quality of vocational training

1.2. International literature

1.2.1. Research on criteria for evaluating the training quality of educational institutions

1.2.2. Research on levels, methodologies and criteria to evaluate training quality

1.2.3. Research on evaluation criteria and factors affecting the quality of vocational training

1.2.4. Research on solutions to improve the quality of vocational training

1.3. Research gaps and issues for the dissertation research topic

Through a review of literature on training quality of vocational training institutions and training quality at large, the following observations can be drawn:

Firstly, in terms of the theoretical aspects, the scholars have systematized the theoretical issues of quality, training quality and vocational training quality in educational institutions such as concepts/definitions, criteria assessment of training quality, influencing factors and training quality management manners in educational institutions.

Secondly, in terms of practical aspects, the literature has established a training quality management model which was applicable to educational institutions – this research's subject, analyzed and proposed solutions to improve the training quality of vocational training institutions and educational institutions at large.

Thirdly, through a review of literature, the Ph.D. student has found several research gaps on training quality that scholars, including have not investigated

- Theoretically:

+ Literature has mainly approached quality management activities with the evaluation criteria and influencing factors were used to measure the quality of a training institution or program, not the quality of training outputs;

+ There has been an unclear regarding the basic perspectives in the assessment of the training quality of vocational training institutions. Instead of identifying actors with specific viewpoints as a basis, evaluation normally directed all relevant actors to develop criteria improving the quality of inputs, affecting factors and outputs of the training process. This content is commonly utilized in accrediting the quality of vocational training institutions, without distinguishing between evaluation criteria and influencing factors;

+ There has not been any research to build a model evaluating the vocational training quality that is suitable for provincial public vocational training institutions;

+ Research that has demonstrated the basis, requirements, and thereby determining the evaluation criteria and indicating the influencing factors from the viewpoint of employers has been lacking;

+ No research has been conducted to measure the impact of factors affecting the vocational training quality of public vocational training institutions under the specific circumstances of Quang Ninh province and Vietnam at large.

- Practically

+ The reviewed studies were conducted from the perspective of accrediting the quality of the training institution or curriculum. Therefore, the utilized criteria set was based on the regulations of the state management agencies without distinguishing between evaluation criteria and influencing factors;

+ Research to comprehensively assess the training quality of vocational training institutions in Quang Ninh province under the current provincial development context has been lacking;

+ Research providing synchronous and thorough solutions to improve the training quality of vocational training institutions in Quang Ninh province and to meet the province's demand for high-quality human resources has been lacking.

1.4. Research questions

(1) What is vocational training quality?

(2) Which perspectives are based on to evaluate the training quality of vocational training institutions and what are the used criteria?

(3) Which factors affect the training quality of vocational training institutions in Quang Ninh province?

(4) How is the current training quality of vocational training institutions in Quang Ninh province?

(5) What are solutions to improve the training quality of vocational training institutions in Quang Ninh province?

CHAPTER 2: THEORETICAL BASIS FOR TRAINING QUALITY OF VOCATIONAL TRAINING INSTITUTIONS

2.1. Definition and characteristics of vocational training

2.1.1. Definition

According to the author, vocational teaching (training) is teaching and learning activities from enrollment, training organization and training quality assessment in order to provide the necessary knowledge, skills and attitudes or advanced professional qualifications for trainees to meet the requirements of actual work.

2.1.2. Training characteristics in vocational training institutions

2.1.2.1. Characteristics of subjects, objects and objects of training activities at vocational training institutions

2.1.2.2. Target characteristics

- Specific targets for each level of vocational training are specified as follows

+ Training at the elementary level, so that trainees have the ability to perform simple jobs of a profession;

+ Training at the intermediate level, so that trainees have the ability to perform elementary-level and some complicated jobs of a profession

(or sector); to apply technologies to their work; and to work independently and jointly;

+ Training at the college level, so that trainees have the ability to perform intermediate-level and some complicated jobs of a profession (or sector); to be creative and to apply modern technologies to their work; and to guide and supervise other counterparts in their groups.

2.1.2.3. Training level characteristics

Vocational training is divided into three levels:

- Elementary level:

The minimum amount of knowledge and skills for the elementary level is 03 (three) training modules, with a minimum learning time of 300 hours, conducted from 03 (three) months to less than 01 (one) academic year (Circular 42/2015/TT-BLDTBXH)

- Intermediate level:

According to the annual system, the duration of training at the intermediate level for the holders of a post-secondary degree or higher is from one to two academic years, depending on the training majors and occupations. According to the model of module or credit accumulation, the duration of intermediate-level training is the time to accumulate a sufficient number of modules or credits for each program (Circular 09/2017/TT-BLDTBXH).

- College level:

According to the annual system, the duration of college-level training is from two to three academic years for the holders of high school diplomas, depending on the training majors and occupations. For those who achieve intermediate diplomas in the same discipline or profession and simultaneously have high school diplomas or have studied and tested satisfactorily with a sufficient amount of basic high school knowledge, this duration is from one to two years, depending on the training majors and professions. According to the model of module or credit accumulation, the duration of college-level training for the holders of high school diplomas or those who have studied and tested satisfactorily with a sufficient amount of basic high school knowledge is the time to accumulate a sufficient number of modules or credits for each program (Circular 09/2017/TT-BLDTBXH).

2.2. Contents, categories and forms of vocational training

2.2.1. Vocational training contents

The contents of vocational training aim to systematically equipping the trainees with theoretical knowledge and practicing them with diverse practical skills and working manners. This is to support the trainees to be able to perform a certain profession.

2.2.2. Vocational training categories

2.2.3. Vocational training forms

2.3. Theoretical basis for training quality of vocational training institutions

2.3.1. Definition of quality and vocational training quality

Summarizing the above-mentioned views, the vocational training quality is considered as the quality of the training process. This is reflected through the “added value” (the superiority after the training process) of trainees such as trained amount, content and level of knowledge; and practical skills, cognitive capacity and thinking capacity as well as humanistic qualities. This additionally is demonstrated through the perfection in implementing the training objectives of the institution; through the worthiness of the investment of trainees, training institutions, the state and society; and through the satisfaction of trainees attending the program. Furthermore, the training quality of vocational training institutions is approached from three points of view containing (i) Relevant state management agencies, (ii) Training institutions themselves and (iii) Trainees. Accordingly, the quality evaluation criteria are determined and measured.

However, from the author's point of view, the employers should evaluate the quality of a product or service. The quality of training, or the quality of the graduates in the other words, is the output or the finalized products of the training process in the market. Differentiating from the above-mentioned approaches, the author analyzed the quality of vocational training institutions through the lens of training output users including (1) the employer’s perspective, reflected in the response of graduates to the work’s requirements, the number of accepted graduates for the work and the employer’s assessment on their performance; and (2) the perspective of trainees upon graduation, reflected in their ability to generate and sustain their livelihood (or start a business) by understanding market needs or improving their professional qualifications.

2.3.2. Development of criteria to evaluate the vocational training quality

a. Graduation results of trainees

Graduation results of trainees are a reflection of the training process and training quality of vocational training institutions. To measure this criterion, an applicable indicator is the proportion of graduates that is determined as the ratio between the number of graduates and the total number of trainees in the course. This indicator can be used to measure the overall quality of the entire course or for each training occupation.

The vocational training graduation rate is a direct evaluation indicator, considering the alteration of trainees during the training process. The graduation rate demonstrates the results that the trainees

have received and applied to real tasks in enterprises.

The graduation rate is assessed in terms of both knowledge, skills and attitudes of trainees during their training period at vocational institutions. However, this indicator is somehow subjective as the wants of the training institution to "show off" their high graduation rate. From the quality management aspect, therefore, careful attention should be paid to the graduation rate at the good and very good levels

b. Jobs for graduates

Jobs for graduates after vocational training indicate the training quality and are associated with the institution's output. The higher the number of graduates getting jobs, the better the quality of the institution's outputs and the more accepted by employers.

For measurement, the proportion of trainees having jobs after graduation can be used. This indicator is identified as the ratio between the number of vocational graduates who have jobs and the total number of graduates. The higher this ratio, the better the training quality of the vocational training institution. In addition, this indicator indicates the quality in organizing labor market information and introducing jobs to trainees. These activities prove useful in connecting trainees and enterprises as well as ensuring job opportunities for graduates. However, the ratio depends on the human resource needs of the enterprise. In some circumstances, labor needs in a certain sector or occupation are coupled with relevant resource shortages in the labor market or other subjective reasons. As a result, enterprises accept available graduates and provide further training to satisfy the requirement of specific work.

c. Criteria for evaluating training quality from the employer's perspective

From the enterprises' perspective, the training quality is measured through job satisfaction criteria in terms of knowledge, skills and attitudes. These are also the criteria for assessing the satisfaction level of enterprises with their vocational trained labor.

- Satisfaction level of basic knowledge through vocational training to work in enterprises: Does the knowledge of the vocational graduates reach the requirements to professionally perform the occupation of a certain sector in the society?

- Satisfaction level of occupational skills of labor including professional skills, soft skills; and the ability to listen, observe and approach the work independently and in groups.

- Attitude and quality of labor: discipline, occupational ethics, manners, adaptability, creativity, belief in work and organization...

- Proportion of graduates who immediately meet the requirements of the job.

From this perspective, the author assessed vocational training quality

through three criteria groups. The indicators of these criteria were listed in Table 2.1.

Table 2.1. Criteria for evaluating training quality from the employer's perspective

No.	Description	Indicators
1	Satisfaction level of basic knowledge about the trained profession to work at the enterprise	TC ₁
2	Satisfaction level of occupational skills of the labor	TC ₂
3	Level of adaptability to the working environment at the enterprise	TC ₃
4	Sense of responsibility at work	TC ₄
5	Ability to listen, observe and approach the work	TC ₅
6	Suitability level of working manners of the labor	TC ₆
7	Ability to work in groups	TC ₇
8	Consciousness of complying with discipline and regulations of the enterprise	TC ₈
9	Foreign language and computer skills of the labor	TC ₉

CHAPTER 3. RESEARCH MODELS AND METHODOLOGIES

3.1. Research model of factors affecting the training quality of vocational training institutions

Based on the above analysis and after eliminating duplicate factors, the research model evaluating the impact of factors on the vocational training quality was proposed as follows:

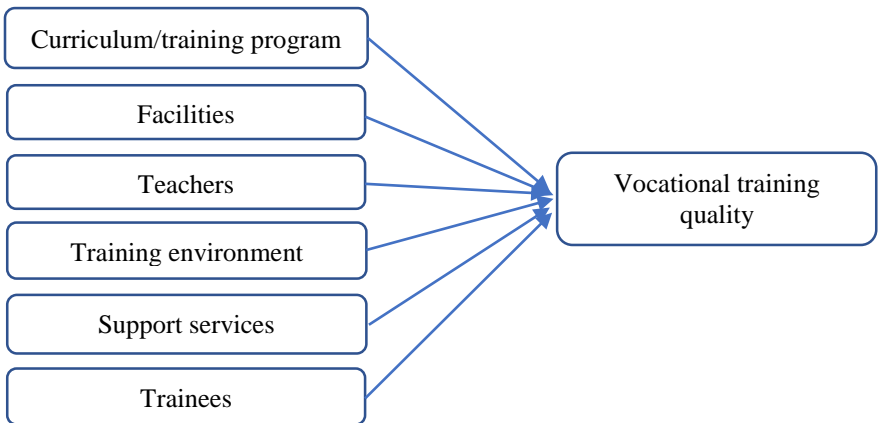


Figure 3.3. Models of factors affecting the vocational training quality

Research hypotheses:

- H₁: Training program has a positive effect on the training quality;
 H₂: Training facilities have a positive effect on the training quality;
 H₃: Team of teachers has a positive effect on the training quality;
 H₄: Training environment has a positive effect on the training quality;
 H₅: The quality of support services has a positive effect on the training quality;
 H₆: Trainees have a positive effect on the training quality.

3.2. Research methodologies

3.2.1. Qualitative research methodologies

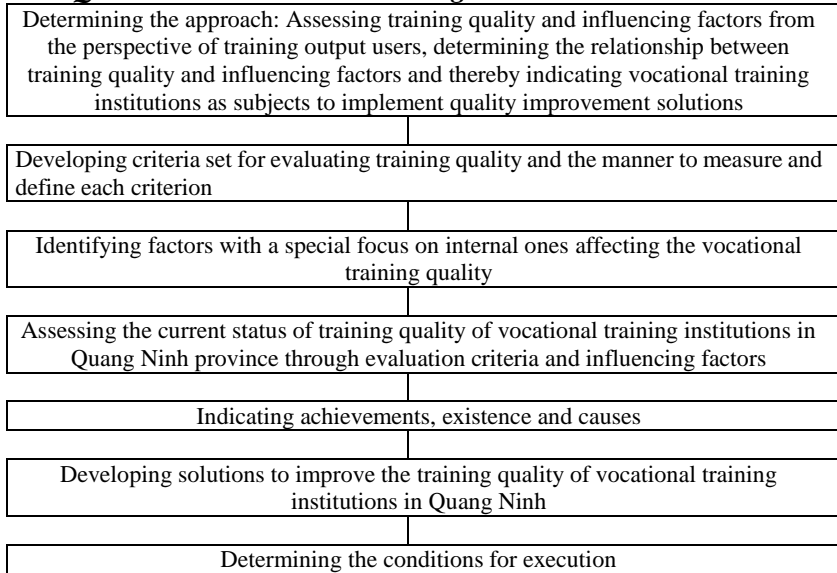


Figure 3.4. Qualitative research process

Table 3.1. Description of the qualitative interview sample

No.	Interviewees	Quantity (no. of people)
1	Training managers at the vocational training institutions	12
2	Vocational training teachers	25
3	Experts at Provincial Department of Labor - Invalids and Social Affairs	8
4	Enterprises employing vocationally trained labor	25
5	Graduates	30
6	Trainees	50
	Total of interviews	150

(Source: Summary of interview results)

A summary of the surveyed enterprises is shown in table 3.2:

Table 3.2. Summary of the number of surveyed enterprises

No.	Business sector	Number of enterprises
1	Exploiting and processing minerals	50
2	Tourism, hotel	50
3	Manufacturing	20
4	Processing and distributing electricity	5

3.2.1.3. *Qualitative research results*

The model analyzing the factors affecting the quality of vocational training of educational institutions is proposed, including six initial factors including: (1) curriculum; (2) facilities; (3) lecturers; (4) environmental study; (5) support services and (6) vocational students.

After focus group discussion with experts about the components of the research model, the scale of factors affecting the quality of vocational training of vocational training institutions in the province, the research removed the environmental study because experts stated that the components of the environmental study overlap with the lecturer factor, In addition, most vocational students study mainly at practical workshops and their study is carried out in a short time, so they pay little attention to the environmental study of the vocational training institution, but mainly focus on practicing their skills. Therefore, the research model is adjusted with five factors: **(1) curriculum; (2) facilities; (3) lecturer; (4) support services; (5) vocational students**

3.2.2. Quantitative research methods

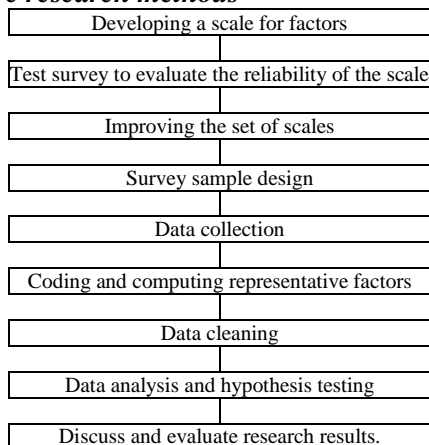


Figure 3.5. Quantitative research process

CHƯƠNG 4. CURRENT SITUATION OF TRAINING QUALITY OF VOCATIONAL TRAINING INSTITUTIONS IN QUANG NINH PROVINCE

4.1. Overview of vocational training activities in Quang Ninh province

Table 4.1. Vocational training institutions during the period from 2015 – 2020 in Quang Ninh province

Vocational training institutions	2015	2016	2017	2018	2019	2020
1. Total number of universities	1	1	1	1	2	2
- Public	1	1	1	1	2	2
- Non-public						
2. Total number of colleges	4	8	8	8	7	7
- Public	4	8	8	8	7	7
- Non-public						
3. Total number of vocational schools	2	2	2	2	1	1
- Public	1	1	1	1		
- Non-public	1	1	1	1	1	1
4. Total number of vocational training centers	6	10	13	13	13	13
- Public	3	8	10	10	13	13
- Non-public	3	2	3	3		
5. Business units and enterprises participating in vocational training	16	18	17	18	19	19

Source: Provincial Department of Labor- Invalids and Social Affairs

From 2015 - 2020, vocational training institutions in the province constantly expand in size and type. The total number of vocational training institutions in the province increased from 16 units in 2015 to 42 units in 2020, the province has 42 vocational training institutions, including two universities, seven colleges, one vocational school, 13 vocational education and continuing education centers, 19 business units and enterprises engaged in vocational training. From 2015-2020, vocational training institutions in the province provided vocational training for 206,210 students [27].

Vocational training institutions in the province currently have 141 programs divided into 7 groups of training majors, including [27]:

- (1) Operating machinery
- (2) Electricity - Repair - Mechanical
- (3) mines - Mining support
- (4) Tourism - Services
- (5) Agriculture, Forestry - Fisheries
- (6) Information technology
- (7) Others.

4.2. Analysis of vocational training quality of vocational training institutions in Quang Ninh province

Table 4.3. Graduation results and number of trainees having jobs after training

Year	Graduate result	Number of trainees having jobs after training	
		Quantity	%
2015	23.647	20.100	85,00
2016	32.889	26.533	80,67
2017	29.542	22.405	75,84
2018	28.084	22.168	78,93
2019	31.532	24.911	79,00
2020	34.509	29.857	86,52
Tổng:	180.203	145.974	81,01

Source: Provincial Department of Labor- Invalids and Social Affairs

Quality of vocational training from the perspective of employers

Table 4.5. Evaluation of vocational training quality at enterprises

Criteria	Encode	Average value	Standard deviation
Meet the requirements of trained knowledge to work	TC ₁	3,86	0,76

Criteria	Encode	Average value	Standard deviation
Meet the requirements of vocational skills to work	TC ₂	3,88	0,82
Meet the requirements of adapting to the working environment	TC ₃	3,74	0,78
Responsibility at work	TC ₄	4,19	0,76
Listening, observation, and job approach skills	TC ₅	4,25	0,68
Meet the requirements of the professional working style of workers	TC ₆	3,85	0,85
Ability to work in teams	TC ₇	3,25	0,86
Comply the discipline and rules of the enterprise	TC ₈	4,4	0,82
Foreign language and computer skills	TC ₉	3,15	0,81

(Source: Summary of the survey results)

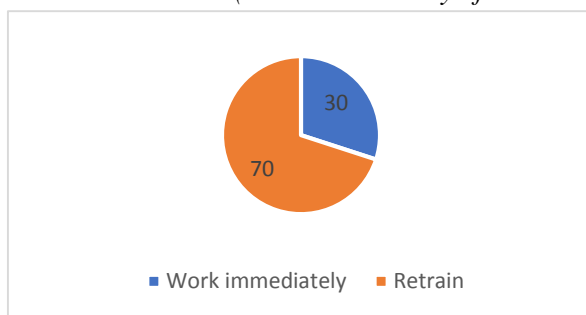


Figure 4.1. Employer's assessment of trainees in meeting job requirements

4.3. Factors affecting the quality of vocational training of vocational training institutions in Quang Ninh province

4.3.1. Testing the model of factors affecting the quality of vocational training of vocational training institutions in Quang Ninh province

4.3.1.1. Description of the study sample

A total of 300 questionnaires were distributed, and 300 questionnaires were collected. After cleaning, a total of 260 valid questionnaires were obtained with the sample structure described in Tables 4.6 and Table 4.7 as below.

Table 4.6. Sample structure of vocational education institutions

No.	Vocational education institutions	Training institutions	Questionnaires	%
1	Vocational colleges	7	100	38,5
2	Vocational schools	1	50	19,2

3	vocational training centers	13	110	42,3
	Total	21	260	100

Source: Data processing results

Table 4.7. Sample structure by vocational training level

No.	Training level	Training institutions	Questionnaires	%
1	Training at vocational colleges	7	80	30,8
2	Training at vocational schools	1	40	15,4
3	Traing at vocational primary schools	13	120	46,2
4	Training course less than three months		20	7,7
	Total	21	260	100

Source: Data processing results

4.3.1.2. Descriptive statistics

Based on the research model, the data structure includes 34 observed variables, of which 29 measure dependent factors and 5 measure independent factors. In there:

Xuất phát từ mô hình nghiên cứu, cấu trúc dữ liệu bao gồm 34 biến quan sát, trong đó có 29 biến đo lường các nhân tố phụ thuộc và 5 biến đo lường nhân tố độc lập trong mô hình, in which:

"Training program" is measured by 6 observed variables (table 3.2).

"Facilities" is measured by four observed variables (table 3.3)

"Lecturers" is measured by seven observed variables (table 3.4).

"Support services" is measured by six observed variables (table 3.5).

"Trainees" is measured by six observed variables (table 3.6).

The dependent variable "Vocational training quality" is measured by five observed variables (table 3.7).

The observed variables in the model are measured by the Likert scale ranging from "Strongly disagree (1)" to "Strongly agree (5)". The results of descriptive statistics show that most of the observed variables in the model have a fairly high mean score, the results fluctuate in the range of 2.93 ÷ 4.06.

Table 4.17. Components of the scale after factor analysis

Factors	Encode	Description
Lecturers (GV)	GV ₁	The lecturers are well qualified and have a deep understanding of the subjects they teach
	GV ₂	Teachers have good teaching methods, easy to understand

Factors	Encode	Description
	GV ₃	The lecturer prepares the lectures and practical modules carefully before going to class
	GV ₄	Teachers effectively use teaching equipment
	GV ₅	Lecturers are dedicated and thoughtful in practical lessons
	GV ₆	Lecturers have a lot of practical experience in the subject they are in charge of
	GV ₇	Lecturers are willing to share knowledge and experiences with students
Trainees (NH)	NH ₁	Have a positive learning attitude
	NH ₂	Have full awareness of the curriculum
	NH ₃	Have an understanding of the general knowledge related to the curriculum
	NH ₄	Ability to receive knowledge during training
	NH ₅	Have basic skills for professional practice
Curriculum (CT)	NH ₆	Have soft ability (thinking, adapting, transforming)
	CT ₁	Vocational the curriculum with clear objectives
	CT ₂	The ratio of teaching hours between theory and practice of the subjects in the curriculum is suitable
	CT ₃	The content of the curriculum is updated to keep up with the labor market
	CT ₄	The curriculum is specific to practical modules
	CT ₅	The training program is integrated with advanced and intensive practice modules
Support Services (HT)	CT ₆	The quality of the curriculum is effectively managed
	HT ₁	Students are consulted, and introduced to jobs after completing the course
	HT ₂	The school cooperates with the employer in organizing and instructing trainees to practice at the employer.
	HT ₃	Students are supported with accommodation at vocational institutions
	HT ₄	The administrative staff of the vocational training institution is willing to help students complete the study procedures
	HT ₅	Students are advised to pursue higher education programs
Facilities (VC)	HT ₆	The school is well equipped with IT infrastructure for online training
	VC ₁	The school is fully equipped with teaching and learning equipment
	VC ₂	Modern practice workshop, fully equipped with practical modules to keep up with reality
	VC ₃	Training equipment is suitable, arranged, safe and convenient for operation, maintenance and practical

Factors	Encode	Description
		instruction.
	VC ₄	Number of vocational training equipment meeting practice requirements according to the curriculum

4.3.1.5. Regression analysis

b. Testing the research model by regression analysis

Table 4.21. Regression model

Model	R	R Square	Adjusted R Square	Std. error of the estimate	Durbin-Watson coefficient
1	0,827a	0,683	0,675	0,42207	1,847

a. Independent variables: GV, VC, HT, NH, CT

b. Dependent variable: CLDT

Model	Sum of squares	df	Mean square	F	Sig.	
1	Regression	70,348	5	14,070	78,979	0,000b
	Residual	32,600	183	0,178		
	Total	102,948	188			

a. independent variables: GV, VC, HT, NH, CT

b. Dependent variable: CLDT

After multiple regression analyses, the ANOVA table shows that the F-statistic of the model with sig = 0.000 (less than 0.05) indicates the multiple linear regression model fits the data set and can be employed.

Adjusted R Square = 0.675 shows that the linear regression model fits the data set of 67.5%. In other words, 67.5% of the difference in the variable quality of vocational training can be explained by the difference of 5 variables: the curriculum, facilities, support services, lecturers and trainees.

Table 4.18. Regression coefficient

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics		
	B	Sai số chuẩn	Beta			Tolerance	VIF	
1	(Constant)							
	VC	0,150	0,151	0,145	0,990	0,002	0,415	1,627
	CT	0,259	0,071	0,215	3,662	0,000	0,420	2,382
	HT	0,221	0,058	0,218	3,808	0,000	0,501	1,998
	NH	0,223	0,069	0,213	3,233	0,001	0,437	2,288
	GV	0,325	0,083	0,245	3,901	0,000	0,376	2,659

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Sai số chuẩn	Beta			Tolerance	VIF
a. Dependent Variable:		CLDT					

(Source: SPSS data processing results)

The degree of influence from high to low of each variable on the quality of vocational training in Quang Ninh province is as follows:

- (1) Lecturers: $\beta = 0.245$
- (2) Support service: $\beta = 0.218$
- (3) Curriculum: $\beta = 0.215$
- (4) Trainees: $\beta = 0.213$
- (5) Facilities: $\beta = 0.143$

The degree of impact of the above variables on the quality of vocational training at vocational training institutions in Quang Ninh province is quantified through a linear regression equation as follows:

$$\text{CLDT} = 0,245 \times \text{GV} + 0,218\text{DV} + 0,215 \times \text{CT} + 0,213 \times \text{NH} + 0,143 \times \text{VC}$$

Thus, the quality of vocational training of vocational training institutions in Quang Ninh province is influenced by variables (ranked in descending order): lecturer, service, curriculum, trainees, and facilities.

4.3.2. Analysis of factors affecting the quality of vocational training of vocational training institutions in Quang Ninh province

4.3.2.1. Lecturers

Table 4.22. Survey results on the scale of vocational trainers

Encode	Scale	Medium score	Standard deviation
GV ₁	The lecturers are well qualified and have a deep understanding of the subjects they teach	4,06	0,767
GV ₂	Teachers have good teaching methods, easy to understand	3,82	0,875
GV ₃	The lecturer prepares the lectures and the practical modules carefully before going to class	3,98	0,791
GV ₄	Teachers effectively use teaching equipment	4,02	0,7
GV ₅	Lecturers are dedicated and thoughtful in practical lessons	4,15	0,781
GV ₆	Lecturers have a lot of practical experience in the subject they are in charge of	4,06	0,767
GV ₇	Lecturers are willing to share knowledge and experiences with students	4,23	0,699

Source: Survey results

4.3.2.2. Student support service

Table 4.23. Results of job creation after training period from 2015-2020

Year	Number of students employed after training	
	Quantity	%
2015	20.100	85,00
2016	26.533	80,67
2017	22.405	75,84
2018	22.168	78,93
2019	24.911	79,00
2020	29.857	86,52
Total	145.974	81,01

Source: Provincial Department of Labor- Invalids and Social Affairs

Table 4.22. Survey results on the scale of support services

Encode	Scale	Medium score	Standard deviation
HT ₁	Students are consulted, introduced to jobs after completing the course	3,65	0,876
HT ₂	The school cooperates with the employer in organizing and instruct trainees to practice at the employer.	3,72	0,897
HT ₃	Students are supported with accommodation at vocational institutions	3,69	0,987
HT ₄	The administrative staff of the vocational training institution is willing to help students complete the study procedures	3,44	0,983
HT ₅	Students are advised to pursue higher education programs	3,76	0,95
HT ₆	The school is well equipped with IT infrastructure for online training	3,68	0,86

Source: Survey results

4.3.2.3. Curriculum

Table 4.26. Survey results on curriculum

Encode	Scale	Medium score	Standard deviation
CT ₁	Vocational the curriculum with clear objectives	3,99	0,825
CT ₂	The ratio of teaching hours between theory and practice of the subjects in the curriculum is suitable	3,8	0,92
CT ₃	The content of the curriculum is updated to keep up with the labor market	3,82	0,885
CT ₄	The curriculum is specific in practical modules	3,93	0,867

Encode	Scale	Medium score	Standard deviation
CT ₅	The training program is integrated with advanced and intensive practice modules	3,85	0,851
CT ₆	The quality of the curriculum is effectively managed	3,86	0,823

Source: Survey results

4.3.2.4. Trainees

Table 4.26. Survey results on trainees

Encode	Scale	Medium score	Standard deviation
NH ₁	Have a positive learning attitude	3,95	0,867
NH ₂	Have full awareness of the curriculum	3,81	0,861
NH ₃	Have an understanding of the general knowledge related to the curriculum	3,95	0,867
NH ₄	Ability to receive knowledge during training	3,92	0,777
NH ₅	Have basic skills for professional practice	3,87	0,757
NH ₆	Have soft ability (thinking, adapting, transforming)	3,87	0,737

Source: Survey results

4.3.2.5. Facilities of vocational training institutions

Table 4.26. Survey results on facilities

Encode	Scale	Medium score	Standard deviation
VC ₁	The school is fully equipped with teaching and learning equipment	4,06	0,877
VC ₂	Modern practice workshop, fully equipped with practical modules to keep up with reality	3,51	1,021
VC ₃	Training equipment is suitable arranged, safe and convenient for operation, maintenance and practical instruction.	3,77	0,922
VC ₄	Number of vocational training equipment meeting practice requirements according to the curriculum	2,93	1,265

Source: Survey results

4.4. General analysis of vocational training quality of vocational training institutions in Quang Ninh province

4.4.1. Research results

4.4.2. Shortcomings and limitations

Besides the above performances, the quality of vocational training at vocational institutions in Quang Ninh province still has some shortcomings and limitations as follows:

Firstly, the quality of lecturers is not equal. Vocational skills of lecturers are low, it is necessary to improve both professional and teaching skills. The percentage of lecturers with labor contracts is still relatively high, most of these lecturers are from enterprises so their teaching skills are still limited. The number of lecturers with university, college and postgraduate degrees works mainly in universities and vocational colleges.

Vocational lecturers have not yet standardized vocational skills: a low percentage of lecturers who can teach integration, lecturers who teach theory have limited vocational skills, and lecturers who teach practice have limited professional knowledge. This is a big challenge for lecturers in meeting the requirements of vocational education innovation when it is required that at least 65% of lecturers in colleges and 60% of lecturers in vocational schools teach both theory and practice (integrated teaching).

The pedagogical skills of vocational lecturers basically meet the requirements. However, vocational lecturers must constantly update and improve training methods and pedagogical methods of countries with advanced vocational education systems.

The vocational lecturers' foreign language and computer skills are still relatively low, so they face difficulties in updating new technologies, applying IT and implementing digital transformation in the training. Very few vocational lecturers are trained abroad to improve their foreign languages, IT, and develop curriculum and teaching documents to meet the requirements of teaching transfer programs.

Secondly, in terms of the curriculum: the curriculum development faced many difficulties because the qualifications of the lecturers did not meet the requirements, the funding allocated for the development of the curriculum, teaching documents is low (for public schools under the Department of Education and Training). The managers' point of view is not innovative, not keeping up with the labor market's requirements.

The structure of the curriculum and training quality are not suitable. The the curriculum is mainly associated with the traditional jobs of Quang Ninh province, not yet focused on new vocational majors associated with the province's strategic orientation for sustainable development in the future.

There are no high-quality vocational curriculum associated with scientific and technological advances in the industry 4.0 and meet the demand for high-quality technical human resources for production,

business and services of the Province shortly

Third, in terms of the facilities: the new facilities only meet the basic needs of trainees, the average area for the classroom is still small. The quantity of vocational training equipment in most schools does not meet the requirements on training scale. Some vocational education and continuing education centers invested in vocational training equipment, but the effectiveness of equipment has not been used effectively.

Fourth, in terms of support activities, cooperation between the three parties: State - School - Enterprise does not focus on developing other new vocational majors other than the traditional jobs for Vietnam National Coal-Mineral Industries Holding Corporation Limited. The cooperation between vocational institutions and enterprises does not well develop, and collaborations are made by sending students to enterprises for internships. Other cooperation such as exchanging information about training, internship, exchange of resources (lecturers, equipment); training coordination, scholarships, tuition fees, student recruitment; Employee training for businesses has not been paid attention.

Training institutions have not actively promoted the brand and provided highly qualified labor for enterprises and investors to create regular communication and effective coordination in vocational training and employment.

Fifth, trainees' skills (especially practical skills) and working attitudes are still weak. Students' teamwork, work organization, problem solving, and creativity have not met the requirements of the employers. Therefore, the satisfaction of enterprises with graduates is not high. Some enterprises must carry out retraining for graduates

CHAPTER 5. SOLUTIONS TO IMPROVE THE TRAINING QUALITY AT VOCATIONAL TRAINING INSTITUTIONS IN QUANG NINH PROVINCE

5.1. National and international contexts affecting vocational training activities

5.2. Orientation to develop vocational training institutions in Quang Ninh province

5.2. Solutions to improve the quality of training at vocational training institutions in Quang Ninh province

5.2.1. Solutions to improve the quality of lecturers

5.2.2. Solution to improve support services

5.2.3. Solutions to improve the quality of the curriculum

5.2.4. Solutions for trainees

5.2.5. Solutions to improve facilities of vocational training institutions

Efficient use of facilities based on resource sharing and optimization

of the training process. Modernize facilities, training equipment up to standards to match the production technology of enterprises, consistent with the training quality; use training equipment at the enterprise; invest in developing simulation equipment for practice. Modernize service centers for students towards standards.

Implement the policy of socializing investment in facilities and equipment for vocational institutions by contributing capital or investing in equipment to provide advanced machines and equipment for trainees. Pay attention to mobilizing capital sources from outside and promote the socialization of vocational education.

Develop programs and projects to encourage and support the lecturers in vocational institutions to create innovative training equipment that meets the curriculum requirements and the enterprises' production requirements. At the same time, develop commercial products that can be mass-produced and delivered to the market. In industry 4.0, training equipment needs to be integrated with digital transformation. Promote investment in training equipment towards digitization and simulation to improve training quality; reduce investment costs, raw materials in practice, internship

CONCLUSION

Improving the quality of vocational training in general, and the quality of vocational training in particular, vocational institutions in Quang Ninh province have an important role in the province's socio-economic development in the coming period. The quality of vocational training from the point of view of employers indicates the quality of vocational institutions. Vocational institutions in Quang Ninh province, the thesis has achieved the following results:

Based on document review, primary and secondary data collection for analyzing the quality of vocational training at vocational institutions in Quang Ninh province, the research demonstrated the following results:

Firstly, in terms of theoretically, the research systematically presented the theoretical basis for the quality of training in general and the quality of vocational training of vocational training institutions in particular, such as: the concept of vocational training, criteria for assessing the quality of vocational training, factors affecting the quality of vocational training. The research analyzed the concept of vocational training quality of vocational institutions from the enterprise's point of view to specify the quality of vocational training institutions, including: (1) Enterprises assess the job adaptability of graduates based on the number of people recruited and evaluate the graduates when they participate in the work; (2) The perspective of learners after graduation, and students can create

their own livelihood (start a business) by understanding market needs or improving their skills.

Secondly, the research developed a set of criteria to evaluate the quality of vocational training based on the perspective of the vocational institution and employers. These are the criteria used to evaluate the quality of vocational training institutions in Quang Ninh province.

Thirdly, the research identified the factors affecting the quality of vocational training of vocational institutions in Quang Ninh province based on developing and testing the model. The research added three new criteria to the evaluation scale of factors affecting the quality of vocational training of vocational institutions in Quang Ninh province. The degree of influence of these factors on the quality of vocational training is ranked in order from high to low: lecturer, support service, curriculum, trainees, and infrastructure.

Fourth, based on analyzing the current situation of vocational training quality of vocational institutions in Quang Ninh province according to the criteria and impact factors and analyzing the domestic and international context in industry 4.0, the research proposed 5 groups of solutions to improve the quality of vocational training of vocational institutions in Quang Ninh province in the future.

The research results show that the research achieved the objectives and mission, which have scientific and practical significance.

LIST OF PUBLICATIONS

1. Vu Duc Minh (2021). *Model of factors affecting the quality of vocational training in vocational education institutions*. Asia Pacific Economic Review. No. 593, July 2021
2. Vu Duc Minh (2021), *Solutions to improve vocational training quality at vocational training institutions in Quang Ninh province*. Asia Pacific Economic Review. No. 593, July 2021