THE USV ANNALS OF ECONOMICS AND PUBLIC ADMINISTRATION | VOLUME 21, ISSUE 2(34), 2021

IMPROVING THE QUALITY OF HUMAN RESOURCES IN THE NORTH MOUNTAINOUS PROVINCE OF VIETNAM TO MEET BUSINESS DEMAND IN THE CONTEXT OF DIGITAL TRANSFORMATION

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Received 26 July 2021; Accepted 2 November 2021

Abstract:
Digital transformation in education is an inevitable and objective process to meet the high demand for human resources based on the change of methods and implementation methods. The training of high-quality human resources plays an extremely important and decisive role in the socio-economic development of each country. The change in training methods will put demands on changing methods, methods and techniques of teaching and training at universities. Research and pilot implementation at universities in the Northern Midlands and Mountains region of Vietnam. The development of higher education in the northern midland and mountainous provinces is reflected in the change in training models and methods, as well as the adjustment of training programs and objectives. This change follows a learner-centered approach to meet CDIO-oriented output standards. Thereby specifying the requirements that need to be implemented to improve the quality of human resources to meet the needs of enterprises. In the context of strong digital transformation, affecting the formation of digital businesses, it is necessary to have digital human resources to operate and master digital platform technologies. Therefore, the task of higher education is to equip learners with necessary professional knowledge, competencies and skills. That will help learners adapt to the changes and fluctuations of the working environment at organizations and businesses in the context of digital transformation.

Key words: Digital transformation, digital economy, digital education, high-quality human resources, global citizenship, digital education, career skills.

JEL classification: M50, O15, M12, R23, I23, G34.

1. INTRODUCTION

The trend of internationalization of the economy and the development of the market economy have created golden opportunities for Vietnamese workers. Along with that trend is the emergence of the Industrial Revolution 4.0, which is based on digital technology and the rise of robots, gradually replacing manual labor. That creates the foundation for the emergence and transformation from a natural resource economy to a knowledge and digital economy [1]. The emergence of new technologies, modern machinery and equipment has led to changes in the relationship between labor supply and demand. Employment opportunities for workers, especially in high-tech industries, create large value-added chains to participate in the ever-expanding global supply chain [2,23]. To take advantage of those opportunities, human resources need knowledge, high professional qualifications, professional skills and the ability to adapt to social and technological changes. On the other hand, globalization has erased the border gap between countries, leading to competition for jobs. If Vietnamese workers do not accumulate enough necessary knowledge and skills, Vietnamese workers will lose at home [5,19]. That opportunity, if

not taken advantage of, will turn into a challenge, creating barriers for Vietnamese human resources when participating in the globalization playground [7,8]. In that context, the need for high-quality human resources, ie workers with skilled (professional and technical) qualifications for a specific profession becomes more and more necessary [20]. High-quality human resources are the crystallization of the most quintessential values of the national human resources, acting as the nucleus participating in the process of creating high labor productivity for society. Such human resources need to meet the requirements of enterprises and the labor market in many aspects. In which, professional knowledge, understanding of socio-economic issues, and computer literacy play the role of the foundation. Skills such as the ability to apply practice, the ability to find and create jobs for yourself, and teamwork skills play an important role. Forging a good attitude, working style, and responsibility to work and the community plays a fundamental role [21,22]. Currently, graduates at many universities do not meet the needs of employers. This is because the knowledge and skills that learners accumulate have not met the output standards expected by employers and society. The training of human resources is associated with output standards, which means that human resources have full background knowledge, specialized and professional skills, teamwork skills, adapting to the context of digital transformation and changing business environment. The development of enterprises is a suitable and indispensable direction [15,16].

Some major universities in the US, higher education institutions are mainly engaged in teaching necessary skills, associated with practical socio-economic development in order to improve the quality of human resources, direct learners to socially practical knowledge [2]. Germany's FH Mainz University of Natural Sciences is a member of SAP - a leading enterprise in providing solutions and software for business administration here. Or FH Mainz School of Germany also has a human resource training association relationship with more than 500 enterprises of different sizes in many countries around the world. This model helps to improve the practical ability of learners, helping learners to gradually adapt to working experience in enterprises [11]. In the UK, most universities have a dedicated department with the role of liaison, connection and agreement between universities and businesses in scientific research and transfer of research results, linking teaching with practice. Paul (2016) when researching on training activities for employees at enterprises, proved that, in enterprises after recruitment, it is necessary to have a period of time to provide them with additional training. The reason is that human resources after graduation have not been able to adapt to new technologies, so it is necessary to train them after recruiting them to work in enterprises [12,20]. Christian (2017) also analyzed typical obstacles and challenges facing Mittelstand. At the same time, it clearly shows the importance of equipping employees with additional knowledge, helping them to grasp new technical processes at enterprises in the context of the emergence of the industrial revolution 4.0 [18]. The mission of educational institutions is to train qualified human resources, meeting both knowledge, skills, attitudes and capabilities to operate technology to meet the context of digital transformation. This also helps learners to easily access and better integrate into the labor market after graduation, and can participate in leading the digital transformation process at businesses [17].

Thus, the current development context requires that workers who want to succeed in an increasingly fierce competitive environment need to be equipped with trained career knowledge, need to improve their scientific thinking capacity, Independent, creative, know how to apply new technologies, constantly develop professional skills... All of these things will help employees to form knowledge, bravery and confidence, firmly when participating in the integration playground [16]. In fact, the quality of human resources in Vietnam is still low and has a large gap compared with other countries in the region, as well as in the world. Even, the quality of human resources in Vietnam currently does not meet the needs of enterprises and the domestic labor market, leading to an imbalance between labor supply and actual demand at enterprises.

2. RESEARCH METHODS

To complete this study, the paper used a combination of the following methods.

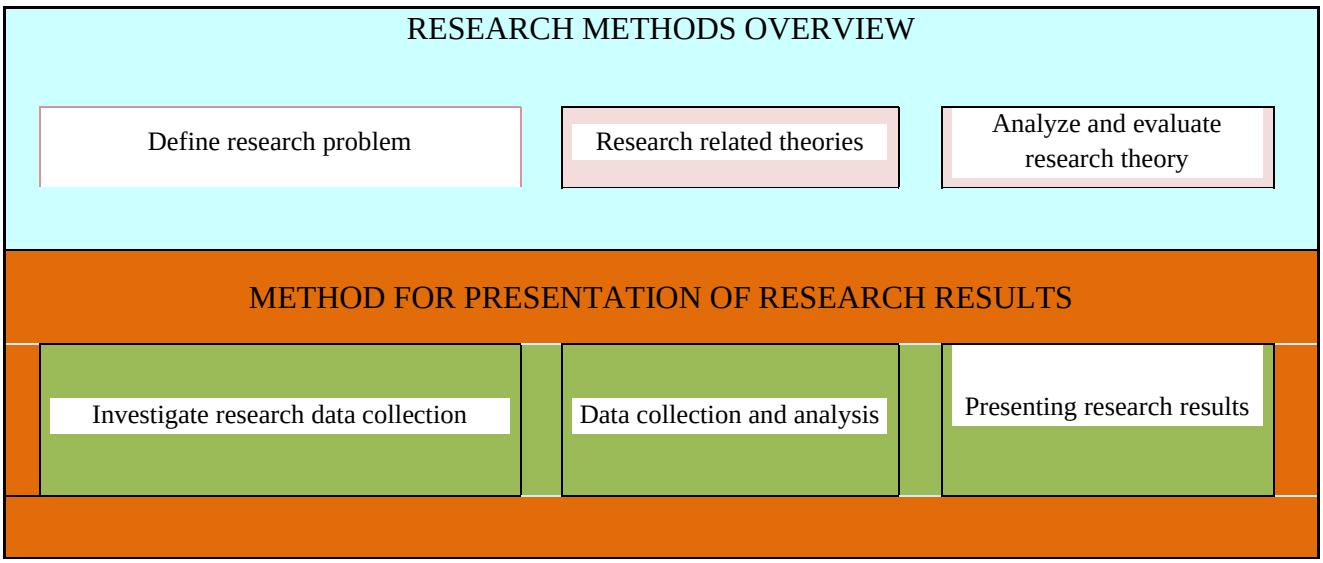

Figure no. 1. Diagram explaining research methods
Source: Author's proposal

Step 1: First, it is necessary to define and clarify the research problem. At this step, the author analyzed the context and identified the remaining problems to carry out the research.

Step 2: Research theories related to meeting the needs of human resources for businesses.

Step 3: Analyze and evaluate theories related to meeting the needs of human resources for enterprises.

Step 4: Investigate and collect research data related to meeting the needs of human resources for enterprises. Research and survey the current status of human resource quality in Vietnam and the Northern Midlands and Mountains.

Step 5: Synthesize and analyze research data related to meeting the needs of human resources for businesses.

Step 6: Presenting research results, research data related to meeting the needs of human resources for enterprises.

Then, the author presents the main results, compares them with some similar studies to get accurate conclusions about the research results related to meeting the needs of human resources for enterprises.

Main research method The article uses survey method by form form, standardized question format and predefined answer options in the questionnaire. Then, proceed to send questionnaires to available emails and through google form. The author used the expert interview method to collect opinions to form a qualitative scale. Next, the author adjusted the scales to form a formal scale consisting of 5 groups of factors with a total of 25 observations.

After completing the survey, the authors conducted a survey at enterprises with students working in the Northern Midlands and Mountains. The survey is distributed directly to the subjects who are leaders and managers at the enterprise through an online form. The total number of ballots distributed was 150 votes. The total number of enterprises surveyed is 150. The authors use the method of exploratory factor analysis (EFA) to reduce the set of observed variables. Then, test the reliability of the scale using Cronbach's Alpha reliability coefficient. The order of research procedure has been detailed by the author in Figura nr. 1.

3. RESULTS AND DISCUSSION

3.1. ASSESS THE CURRENT STATUS OF HUMAN RESOURCE QUALITY

Vietnam's national digital transformation program aims at the dual goal of developing the digital economy and digital society and forming digital technology businesses. To accomplish that

goal, Vietnam needs to select, train and train 1,000 experts on digital transformation. These experts will be responsible for retraining other employees in organizations and enterprises so that they can continue to lead, organize and spread the process of national digital transformation. Vietnam is a developing country with a low level of development, with a large number of human resources, but lacking skills and dynamism, and weak organization and discipline in modern industrial production. The quality of human resources in Vietnam is still far from that of some countries in East Asia and the world. The quality of Vietnam's human resources is evaluated to be equivalent to that of Indonesia, but loses to most other countries and territories in Asia such as Japan, Korea, Singapore, Taiwan, China, Malaysia, and Thailand. The quality of Vietnam's labor force is assessed as having weak technical skills and low practical ability. That makes the competitiveness of the Vietnamese economy relatively low. In addition, the rate of unskilled workers in Vietnam accounted for 81.6% of the total number of employees. Current human resources do not meet the requirements of the industrialization and modernization of the country and the process of international integration. Labor in our country still lacks many working skills, especially group interaction skills, problem detection and solving skills, and situation handling skills. On the other hand, the foreign language ability of Vietnamese human resources is still weak, lack of understanding of the law, lack of sense of responsibility at work, slow to adapt to new environment... Due to lack of professional skills, many businesses Industry does not want to accept fresh graduates. As a result, the percentage of trained workers with bachelor's degrees or higher who are unemployed, or work contrary to their fields of study, is increasing, up to 80%. In the northern mountainous provinces, the annual number of employees is quite large. The largest labor force in the region is Thai Nguyen province. The labor force aged 15 and over in Thai Nguyen province has grown rapidly. In 2020, the number of employees aged 15 and over in Thai Nguyen province is 758 thousand people (Table 1).

Table 1. Labor force aged 15 and over in Thai Nguyen province

	2004	2020
Labor force aged 15 and over (thousand people)	593,1	758

Figure no. 2. Labor force in Thai Nguyen province in 2004 and 2020

Source: The author synthesizes and processes data from Thai Nguyen Provincial Statistics Office

Although the trained workforce has increased every year (Figura nr. 1), the training still has many shortcomings. Laborers lack practical practical tools, heavy on theory, leading to poor quality of human resources, many social professions are in demand but few learners.

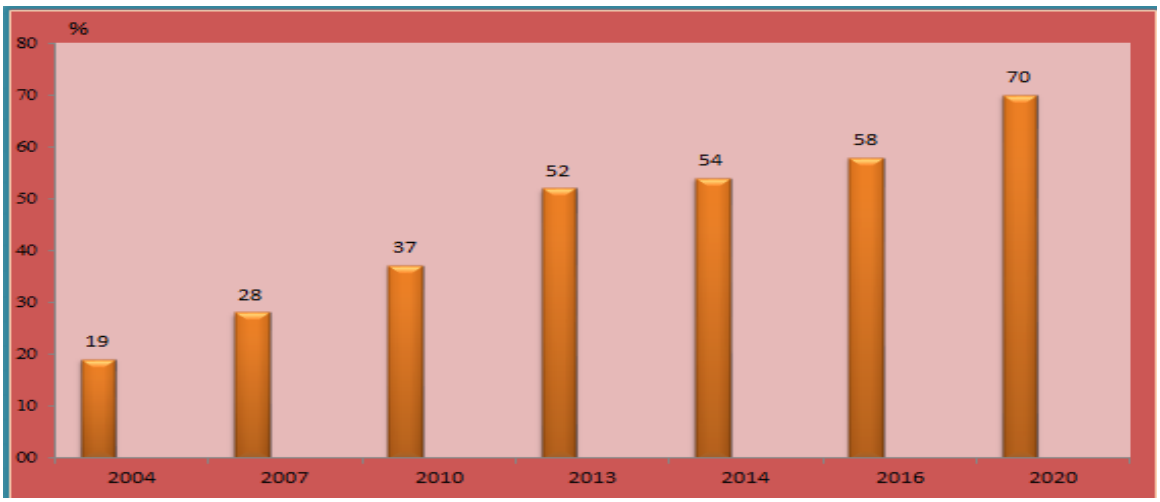

Figure no. 3. Trained workforce from 2004 to 2020

Source: The author synthesizes and processes data from Thai Nguyen Provincial Statistics Office

The growth rate of trained human resources in enterprises in Thai Nguyen province has relatively large fluctuations, tends to increase gradually. Although human resources in enterprises in Thai Nguyen province in particular and the northern mountainous provinces are quite abundant, the rate of unemployed workers after graduating from university and college tends to increase, the rate of unemployment is increasing. The number of workers with technical expertise to meet the requirements of enterprises is still quite low. This is clearly demonstrated through the survey results of the authors at enterprises. All enterprises participating in the survey said that human resources after graduating from universities should be fully equipped with groups of professional knowledge and professional skills. At the same time, in the context of developing a digital economy with the participation of digital businesses, learners need to have full communication and teamwork skills. They need to be trained in the ability to apply knowledge in practice as well as the ability of learners to adapt to the working environment at enterprises (Table 2).

Table 2. Cronbach's Alpha coefficient on the survey sample

Position	Observed variables	Total number of observed variables	Cronbach's Alpha
1	Professional knowledge about the profession in which the learner is trained	5	0,812
2	Vocational skills of learners accumulated during training	6	0,787
3	Communication and teamwork skills	4	0,824
4	Ability to apply knowledge in practice	5	0,714
5	The ability of learners to adapt to the working environment at the enterprise	5	0,674

Source: Author's proposal

For the Northern Midlands and Mountains, it is not possible to develop the economy in the traditional way of developing a resource economy. That is to focus on promoting industrial development, mining and processing. The region needs to innovate in a more modern development mindset to access the world market, with the high-tech foundation of the 4.0 industrial revolution. To participate in the digital economy, Vietnam and the Northern Midlands and Mountains need to conduct training programs and re-train leadership and digital transformation management skills for heads of agencies. , organization, enterprise. Every year, universities need to add to the labor market a suitable force of bachelors and engineers majoring in information technology. Educational institutions, must make adjustments and supplements to training programs associated with digital technologies such as artificial intelligence AI, data science, big data Big Data, cloud computing technology, IoT, VR virtual reality, Blockchain blockchain technology.

3.2. RESULTS OF BUILDING A MODEL CONNECTING OUTPUT STANDARDS WITH BUILDING A TRAINING PROGRAM FRAMEWORK BASED ON SOCIETY'S HUMAN RESOURCE NEEDS

The basis of the educational quality improvement method through the CDIO-oriented output standard model (Conceive - Design - Implement - Operate: idea generation, idea design, implementation and operation) MIT Institute of Technology (USA). The CDIO output standard will aim to design a training program framework with appropriate contents, meeting the requirements of knowledge, skills, competencies and attitudes that are essential that employers expect. In particular, in the context of strong digital transformation, it is very appropriate to form adaptive, manipulative and flexible competencies of learners. The solution to building an output standard model for training programs is the university's commitment to the quality of output products to meet the needs of social and business human resources (Figura nr. 4). The output standard of the training program designed according to the CDIO model is a solution to help improve the quality of training, in order to equip the necessary knowledge, skills and thinking to adapt to the context. Thereby, helping employees meet the requirements of society and businesses. The Northern Midlands and Mountains region of Vietnam needs to have breakthrough policies in infrastructure development to increase regional linkages and promote growth, strengthen the role of human resource training, solve technology legislation on the scope and scale of regional linkages.

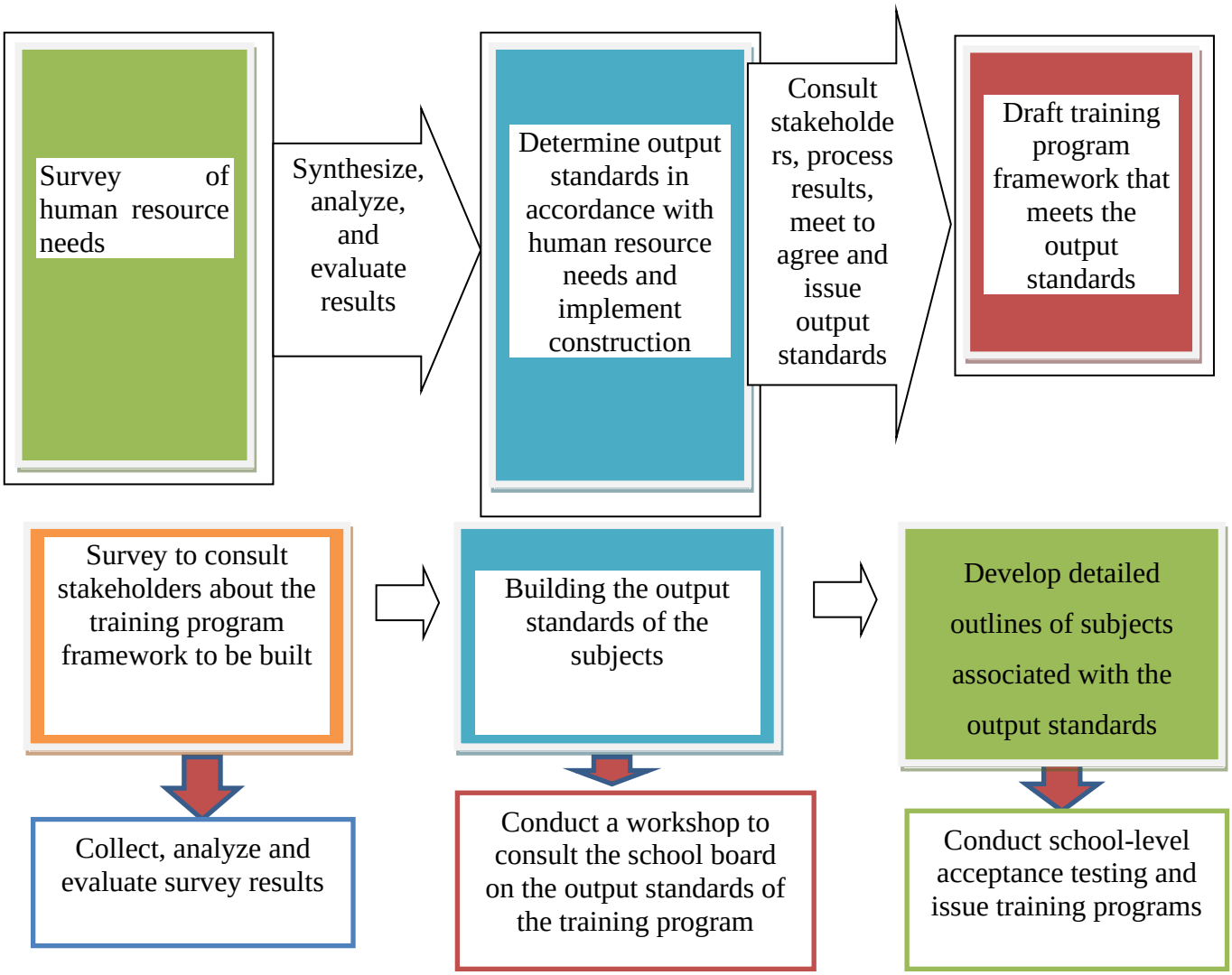

Figura nr. 4. Designing an integrated model between the output standards and the training program framework based on the human resource needs of the society

Source: Author's proposal

To meet the needs of social and business human resources, universities need to creatively apply CDIO principles in the new development context. In the context of society, business and the development trend of Vietnamese education, universities need to improve and develop, develop output standards, and appropriate training programs to form their knowledge. , skills and attitudes to meet stakeholder requirements. In addition to the change in content, there is an improvement in teaching and learning methods to meet the established output standards. After determining output standards suitable to human resource needs, training programs will develop output standards. After the output standard is drafted, it is necessary to consult the stakeholders, process the results, meet to agree and issue the appropriate output standard. From there, draft a suitable training program framework to meet the designed output standards. Conduct a survey to get stakeholders' opinions on the proposed training framework. Stakeholders include university administrators, businesses/employers, alumni, final-year students, faculty members, and experts in the fields of their respective training professions. Develop the output standards of the subjects included in the training program and develop detailed outlines of the subjects associated with the designed output standards. After completing the contents related to the output standards and training programs, the branches will apply the training work according to the predetermined schedule.

4. CONCLUSIONS

Stemming from reality, the quality of human resources in enterprises today has professional qualifications and good skills that do not meet job requirements well. In the surveyed scales, the ability to adapt to the working environment of students after graduating from enterprises has the lowest reliability. The ability of students to apply knowledge into practice after graduation at enterprises is also not highly appreciated by enterprises. In addition, the vocational skills of learners accumulated during the training process are also at a moderate level. Workers still lack skills in foreign languages and informatics; have not yet been able to adapt to the change of technology in businesses and the Industrial Revolution 4.0. There are many reasons for this situation. In which, it must be mentioned that the forecast of human resource needs of universities is not close to the demand for human resources in each industry, field, between localities and economic zones. The planning, construction and development of education and training is still lacking in science, the enrollment is massive, so the quality of training is not high. The conditions of facilities to ensure the training process are very limited, not keeping up with the actual requirements. Most training schools still teach according to the old program, have not updated new knowledge, so they cannot meet the requirements of employers in enterprises. At universities and colleges, the training is still not innovative, with a heavy emphasis on theory and light on practice. That leads to the percentage of human resources who have received vocational training is still low, the quality is not guaranteed, and it has not met the needs of society and businesses. Graduates are still unemployed, underemployed or working in the wrong industry. In the context of developing the digital economy, with breakthroughs in science, technology, and artificial intelligence (AI), it is still operated by humans. Therefore, human resource development is the surest factor for the development and prosperity of the nation and businesses. In order to train human resources to meet the needs of society, it is necessary to create conditions for teachers to have the opportunity to experience real-life work at enterprises. There should be a mechanism to encourage businesses to invest and link with universities in training and recruitment. It is necessary to develop specific policies and programs on human resource development for enterprises in each specific region and economic sector in accordance with the context of Industry 4.0. In particular, it is necessary to develop human resources for key economic sectors. It can be said that human resources for the development of the country's economy play a very important role, especially highly qualified human resources, meeting the increasing development of society and businesses. Therefore, it is necessary to have practical and useful measures to strengthen training, promote the implementation of new methods in training, contribute to creating high-quality resources to provide and ensure the success of students. development of digital economy and digital society. In the next study, we will

continue to give specific measures that universities need to take in improving the quality of training. Learn more specifically about how to build output standards to meet social requirements. Linking training activities at universities with labor recruitment enterprises to create high human resources, meeting the requirements of the labor market.

His paper is supported by the Ministry of Education and Training under the theme of Ministry-level Science and Technology "Study on the linkage model between universities and enterprises in training and human resource supply in the Northern provinces", code B2022-KX-03. In the next study, the author will aim to build an information system to effectively manage resources at enterprises. In the next research, the author will aim to build scales to assess the ability to meet the needs of human resources at enterprises for each training profession.

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