

DETERMINANTS INFLUENCING THE LINKAGE BETWEEN TRAINING AND USING LABOUR FORCE: THE CASE OF VIETNAM

Tran Thi Thanh Tam¹ [First Author], Dao Quang Thang*¹ [Corresponding Author],
Thai Thi Kim Oanh¹, Le Ngoc Huong²

¹ Vinh University (VU), Vinh, Viet Nam

² Viet Nam National University of Agriculture (VNUA), Ha Noi, Viet Nam

* Correspondance: Dao Quang Thang, email: daoquangthang@vinhuni.edu.vn

Abstract

This study has the objective of examining the impact of factors on training and employing labour force in Vietnam. With a sample size of 733 participants, the research findings indicate that the motivation of applied knowledge, and teaching quality have a positive and negative impact on the forms of linkage: the training, use linkage, transfer research linkage, information exchange linkage. The study also points out that the factors namely internal barrier, gap response barrier, perception barrier have negatively impact on the forms of linkages. Based on the results of the study, the authors propose some recommendations to improve the legislative framework and enhance the management capacity of vocational education as well as the quality of institutions supporting the linkage between educational institutions and enterprises.

Keywords: Linkage, Training, Usage, Labour, Motivations, Barriers

1. Introduction

With the ascendancy of science and technology, in the current context of globalization and fierce competition, the linkages between training institutions and employers are increasingly important. This linkage serves as a foundation promoting the potential and strengths of each party, in order to create products with high intellectual content, meeting the requirements of the knowledge economy. In the labor market, if educational institutions fail to train students who are of high quality, have industry-insight knowledge, meet the market requirements, an inevitable consequence is that the social progress will be halted, economic growth will be hampered. Vietnam, which emerges from agricultural civilization, is currently in the process of industrialization and modernization, the trained labor force has a particularly important role for the development of the country. Over the past years, in the face of the country's development requirements and under the influence of the market economy, the human resource training system in Vietnam, including universities, colleges and vocational schools has made significant changes, especially in the scale and diversification of training types. However, there are also many serious problems, the most worrying of which is the quality of human resources trained in educational institutions and the receptiveness of the labor market. Therefore, the urgent requirement is to ensure the competitiveness of human resources, create a balance between scale and quality, between "supply" and "demand" for human resources, between training and use of labour force. Nghe An is a province in the North Central of Vietnam, with the fourth largest population in the country with a large scale of labor, abundant human resource potential is a great advantage in the process of implementing the goal of industrialization and modernization of the country as well as socio-economic development in the area. At present, there are many vocational education institutions in Nghe An that are providing training at large scale, with a diverse career structure. From 2014-2019, Nghe An trained more than 75000 employees annually, of which the

college and vocational accounted about 14000 people. The number of workers mainly working in industrial parks, economic zones in the locality with an average income of 5-9 million VND/month. The linkage between educational institutions and enterprises have been launched; however, this establishment exists only on paper with peripheral and nebulous cooperation. *Therefore, the examination of the impact of factors affecting the linkage between training and using labour force serves as a foundation for policy makers to complete the legal framework, improve the capacity of vocational education management, improve the quality of institutions to support training and employing linkages between educational institutions and enterprises.*

2. Literature review and hypotheses

2.1. Literature review

In order to assess the link between training students at educational institutions and using labour force at enterprises, while considering the main factors affecting this linkage, many authors have developed models to evaluate the influence of groups of factors promoting linkage and hindering the linkage. Noticeably are some studies of Geisler and Rubenstein (1989); Bailey et al., 1994; Buisseret and Cameron, 1994; Martino 1996; Scott, 1998 or Polt, W., Rammer, C., Gassler, H., Schibany, A. and Schartinger, D. (2001).

The linkage motive can have an influence on enterprises in their manner to choose forms of linkage and oriente the way of selecting some solutions to promote linkage activities based on the wishes and efforts of the parties involved in the linkage. Geisler and Rubenstein (1989) synthesized the motivations and benefits of linkages for both educational institutions and enterprises. Later studies (such as Martino 1996; Scott 1998) have added other benefits such as cost savings, risk reduction in research implementation as well as benefits that enterprises can obtain in cooperation with educational institutions. For educational institutions, most authors identified fundraising for activities as a reason to partner with enterprises (Martino, 1996; Howells et al., 1998; Martin et al., 2000) and this is increasingly necessary as governments tend to cut down on their research budgets in most countries. Therefore, from perspective of the school, to assess the linkage between training and employing workers depends on the linkage motivation, which is then divided into the following 3 groups:

- Financial motivation: These are the motives derived from the expectation of financial benefits obtained through cooperation activities, related to the following issues: State budget, tuition fees and other sources of revenue and support. In addition, enterprises are responsible for investing and contributing a part of financial resources, defraying the cost of human resource training (this funding is considered mandatory when enterprises use trained laborers). As for vocational educational institutions, they will receive funding investments and use them to cover parts of the expenses related to maintaining and upgrading facilities, management, procurement of learning and teaching materials, etc.
- Motivations for knowledge development and application: Motivations related to the aspects of expectations and benefits from the transfer the findings of research and development of knowledge through engagement activities. From the school, there is more information from enterprises for practical applied research projects, which helps to shorten the gap between basic research at university laboratories and applied research at enterprises.
- Motivations to improve teaching quality: aspects that promote expectation to implement linkages in order to help improving training activities of the school and the use of labour for

enterprises. Therefore, this motivation is related to the cooperation between educational institutions and enterprises in improving professional skills for lecturers, enhancing the quality of teaching staff, developing teaching skills, improving education quality. It is a win-win strategy and needs to be promoted in the upcoming time.

Theoretically speaking, Polt, W., Rammer, C., Gassler, H., Schibany, A. and Schartinger, D. (2001) also pointed out the barriers limiting linkage, including information asymmetry, non-transparent markets, incompatible goals, different cultures, high production costs, and barriers to mobilizing financial resources, uncertain results, brain drain, etc. They are shown in the following figure:

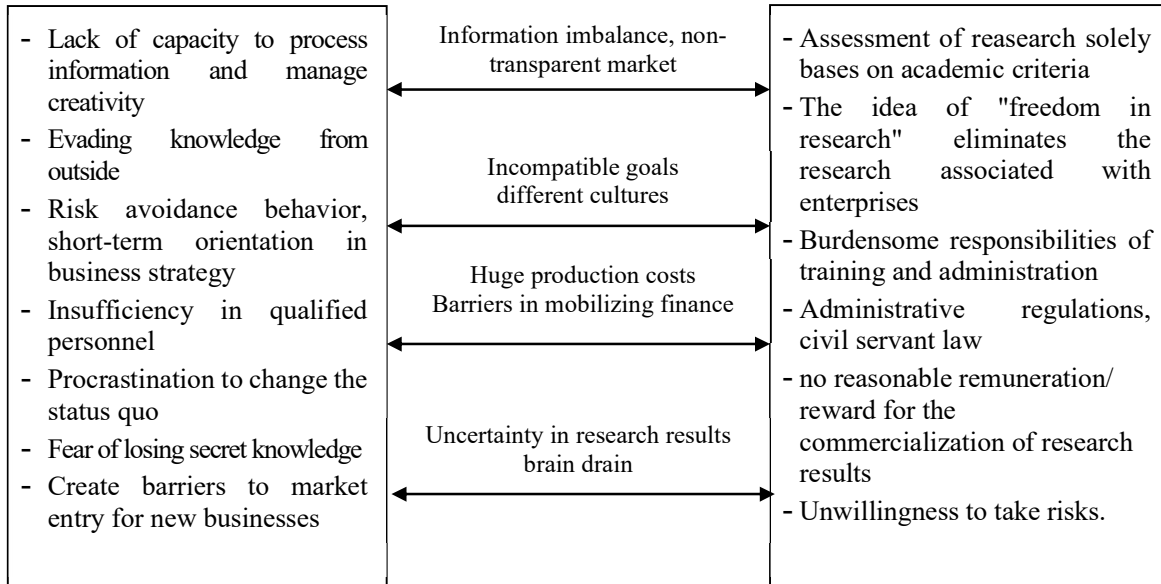


Figure 1: Barriers in the link between educational institutions - Enterprise

Source: Polt, W., Rammer, C., Gassler, H., Schibany, A. và Schartinger

From the educational institutions perspective, it is possible to divide the barriers between educational institutions and enterprises in training and employing trained workers into: *Barriers due to the gap in reponses between the two parties*: Barriers in association with the school's capacity, the cooperation experience, the readiness of lecturers, the culture of cooperation between educational institutions and enterprise; *Barriers related to perception towards collaborative activities*: These are barriers when lecturers, researchers, laboratories are aware of when they realized that they do not fully understand the linkage activities. From that, they can put more effort into proactively implementing existing linkage activities; *Internal barriers*: the policy, the structure of the apparatus does not encourage linkage activities, the delegations of power to different and individuals hinders the process of cooperation.

2.2. Research hypothesis

Linkage motivations are internal factors of the school that promote the intention to carry out activities to link educational institutions with enterprises. The motivation for linkage between the educational institutions and the enterprise reflects the school's desire and willingness to carry out

joint activities with enterprises. The linkage motivation from educational institutions be expressed through the measures the school which aims to improve the linkages with enterprises. Linking barriers are factors that prevent the university from linking with enterprises in the process of technology transfer or other cooperation. Barriers may stem from internal factors of the school, barriers due to disparity between requirements of the joint program between the university and enterprises. Barriers may also come from the school's perception of the linkage with enterprises. Therefore, after researching, evaluating the domestic research and foreign studies, consulting experts' opinions, the authors propose two hypotheses as follows:

- *The motivation for linkage has a positive effect (+) on the degree of how the linkage between the university and enterprises is implemented.*
- *Linkage barriers have a negative effect (-) on the degree of implementation of linkages between the University and enterprises.*

3. Research methodology

3.1. Research scale

On the basis of literature review, the study proposes independent variables as follows: 1) Financial motivation; 2) Motivation for the development of applied knowledge; Motivation to improve teaching quality; 4) Perception barriers; 5) Barrier of response gap; 6) Internal barriers. At the same time, the following dependent variables are proposed: 1) Linkage of training; 2) Linkage of using; 3) Linkage to exchange information and 4) Linkage to research and transfer technology. The scale used in the study is a 5-point Likert scale (Strongly disagree, Disagree, Normal, Agree, Strongly agree).

+ Survey sample: Subjects: for enterprise, most of them use laborers trained at educational institutions in the province: business leaders or managers, human resources officers and officials in charge of external relations; for vocational education institutions, most of them aim to students to provide technical labor for enterprises located in the province, including principals or vice principals, heads of departments, teachers and staff in charge of cooperation activities with enterprises. Survey to collect information for employees working at enterprises who have been trained by vocational educational institutions in the province and students studying in their final year at a vocational training institution in the province.

+ Description of the research sample: The research sample was determined on the basis of the selection of typical participants from some districts and Vinh city in Nghe An province. The sample size is specifically described as follows:

Table 1: Summary of survey questionnaires distributed by subject

No.	The educational institutions in which the survey was conducted	Number of questionnaires sent	Number of questionnaires received	Number of valid answers
1	Teachers and administrators at vocational educational institutions	500	390	325
2	Managers at enterprises	400	255	185
3	Final year students at national educational institutions	200	152	118

4	Alumni who are working at enterprises	200	130	105
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These factors are assessed for reliability by Cronbach Alpha coefficient and total variable correlation coefficient test the internal consistency and to see if there are any inappropriate observed variables that need to be considered or must be removed from the research scale. Therefore, when testing the reliability of the scale, we see that CLGD8, CLGD9 and NT6 have the total variable correlation coefficient less than 0.3. Therefore, we proceed to remove these 3 variables and run the scale reliability test again. The test results show that all factors have Cronbach's Alpha from 0.723 or more (greater than 0.6). This shows that the reliability of the scale after removing 3 variables CLGD8, CLGD9 and NT6 is good, suitable for conducting exploratory factor analysis. Through the results of testing the reliability of the scales, the authors summarize them in the following table:

Table 2. The results of testing the reliability of the scale of the factors

No.	Impact factors	Variable	Measurement Scale	Cronbach's alpha was 0.84.
1	Financial motivation	TC	TC1, TC2, TC3	0,723
2	Knowledge motivation	KT	KT1, KT2, KT3	0,880
3	Motivation of teaching quality	CLGD	CLGD1, CLGD2, CLGD3, CLGD4, CLGD5, CLGD6, CLGD7	0,940
4	Internal barrier	NB	NB1, NB2, NB3	0,792
5	Gap response barrier	KC	KC1, KC2, KC3, KC4, KC5, KC6, KC7	0,960
6	Perception barrier	NT	NT1, NT2, NT3, NT4, NT5	0,897
7	Training linkage	LKĐT	LKĐT1, LKĐT2, LKĐT3, LKĐT4, LKĐT5, LKĐT6	0,910
8	Exchange linkage	LKTĐ	LKTĐ1, LKTĐ2	0,902
9	Research linkage	LKNC	LKNC1, LKNC2, LKNC3, LKNC4	0,932
10	Usage linkage	LKSD	LKSD1, LKSD2	0,909

Sources: Synthesized from the survey results of the author

a. Explore the different forms of linkages between training and using labour

Research results show that using exploratory factor analysis is consistent with research data. The KMO coefficient is greater than 0.5 (0.834), and the 4 factors with Eigenvalues (the amount of variation explained by the factor) greater than 1 are extracted from the original 14 item; and Cumulative with a value of 80.719% which tells us that these 4 factors explain 80.719% of the variability of the data. The observed variables form four main factors, or in other words a set of school-business linkages that can be classified into four main groups. Based on the assessment of

observed variables forming each factor, the author in turn names the constituent factors as follows:

- *The first group consists of six (06) observed variables LKDT1, LKDT2, LKDT3, LKDT4, LKDT5 and LKDT6 was named “**Linkage of training**”*
 - *The second group consists of 03 variables LKSD1, LKSD2 named “**Linkage of using**”*
 - *The third group including 04 variables LKNC1, LKNC2, LKNC3, LKNC4 was named “**Linkage to research and technology transfer**”*
 - *The fourth group of variables LKTĐ1, LKTĐ2 was named “**Linkage of information exchange**”*
- b. Explore groups of factors affecting training and employment linkages*

According to the results in item 1.2.1, appendix 5, KMO = 0.692, so exploratory factor analysis is appropriate. Bartlett test considers the hypothesis H0: the correlation between the observed variables is zero in the population. If this test is statistically significant ($\text{Sig} \leq 0.05$), the observed variables are correlated with each other in the population. (Bartlett's Test) = 0,000 < 0,05 proving that the observed variables are correlated with each other in the population. The results of KMO coefficient and Bartlett's test in the table above show that there are sufficient conditions to conduct factor analysis.

6 factors with Eigenvalues (the amount of variation explained by the factors) greater than 1 are extracted from the original 28 items; and Cumulative with a value of 75,094% tells us that these 6 factors explain 75,094% of the variability of the data. Thus, based on the rotated matrix from EFA analysis, we have 6 factors created from 28 items:

- The first factor consisting of 3 variables TC1, TC2 and TC3 is “**Financial motivation**”
- The second factor including 3 observed variables KT1, KT2, KT3 is “**Motivation of developing applied knowledge**”.
- The third factor includes variables CLGD1, CLGD2, CLGD3, CLGD4, CLGD5, CLGD6, CLGD7 was named “**Motivation to improve teaching quality**”.
- The fourth factor including variables NB1, NB2, NB3 was named “Internal Barriers”
- The fifth factor including variables KC1, KC2, KC3, KC4, KC5, KC6, KC7 was named “**Barriers due to the gap in response between educational institutions and enterprises**”
- The sixth factor including variables NT1, NT2, NT3, NT4, NT5 was named “**Perception barrier**”.

3.2. Adjusted model and research hypothesis

Therefore, the analysis results that explore the structure of the research concept from the survey data show that linkage barriers, linkage motivation and forms of linkage includes many different factors. Therefore, the research model needs to be adjusted to suit the experimental data and the research hypotheses should be restated in more detail. The research model is adjusted as follows:

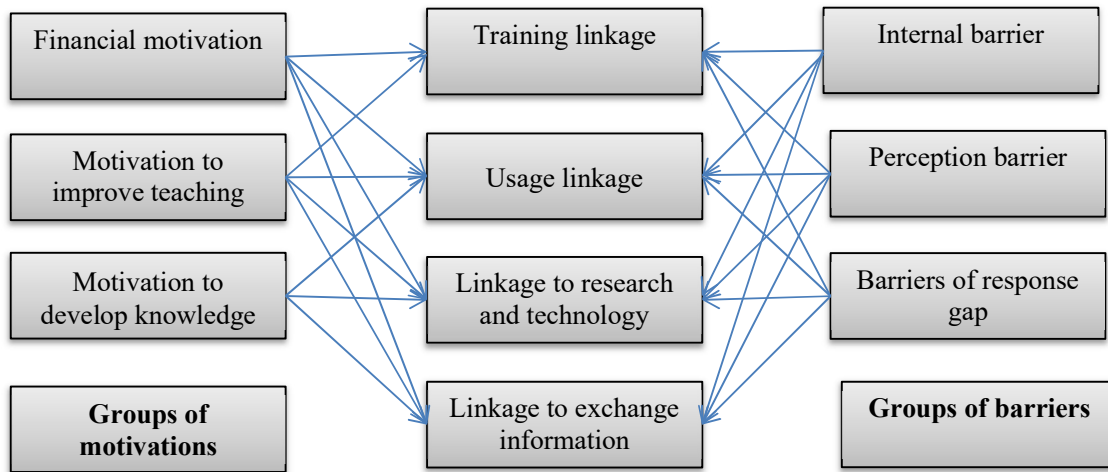


Figure 3. Adjusted model

The research hypotheses are as follows:

H1a, H2a, H3a, H4a: Internal barriers have a negative effect (-) on the form of training, use, technology transfer, and information exchange.

H1b, H2b, H3b, H4b: Teachers' perception barriers have a negative effect (-) on the form of linkages of training, linkage of using, linkage of technology transfer, and information exchange.

H1c, H2c, H3c, H4c: The barrier due to the response gap has a negative effect (-) on Linkage of training, Linkage of using, Linkage to exchange information, and Linkage to research and transfer technology.

H1d, H2d, H3d, H4d: Internal barriers have a negative effect (-) on Linkage of training, Linkage of using, Linkage of information exchange, and Linkage of research and technology transfer.

4. Results and discussion

Regression analysis was performed with 06 independent variables, including: (1) Financial motivation (TC), (2) Knowledge development motivation (KT), (3) Teaching quality motivation (CLGD), (4) Internal barriers set (NB), (5) Perception barrier (KC), (6) Barrier of response gap (NT); 04 dependent variables include: 1) Linkage of training (LKDT); 2) Linkage of using (LKSD); 3) Linkage to exchange information (LKTD) and 4) Linkage to research and transfer technology (LKNC).

Therefore, the article focuses on research on forms of linkages of training and linkages of using employees in Nghe An. Therefore, the authors go into depth to analyze 4 regression models of 4 types of linkages and the model results are shown in the following table:

Table 3. Regression Results

Dependent variable	Model 1		Model 2		Model 3		Model 4	
	Training linkage (LKDT)		Linkage to exchange information (LKTD)		Linkage to research and technology (LKNC)		Usage linkage (LKSD)	
	B	Normali	B	Normalize	B	Normalized	B	Normali

		zed β		d β		β		zed β
(Constant)	0,854* **		2,604***		0,407		3,525* **	
TC	0,026	0,028	0,031	0,024	0	0	-0,046	-0,046
KT	0,346* **	0,352***	0,266***	0,199***	0,306***	0,271***	0,139* **	0,133***
CLGD	0,398* **	0,395***	0,31***	0,227***	0,539***	0,467***	0,163* **	0,152***
NB	- 0,241* **	-0,289***	- 0,339***	-0,3***	-0,331***	-0,347***	- 0,223* **	-0,251***
KC	- 0,195* **	-0,215***	- 0,511***	-0,415***	-0,319***	-0,307***	- 0,336* **	-0,347***
NT	0,381* **	0,354***	0,371***	0,254***	0,39***	0,316***	0,414* **	0,36***
Adjusted R2	0,587		0,478		0,663		0,415	
F	77,764		50,370		107,269		39,383	
Sig.	0,000 ^b		0,000 ^b		0,000 ^b		0,000 ^b	

(*: sig<=0.1: statistically significant with 90% confidence; **: sign<=0.05 statistically significant with 95% confidence level;***: sign<= 0.1: statistically significant with 99% confidence)

Source: Statistical results from the survey of the research

a. Regression results of the form of linkage of training (Training linkage LKDT)

The results of model 1 analysis show that only the factor "financial motivation" has no influence on the choice of the form of training of linkage (p-value > 0.05), all other factors in the model have an influence on the selection of linkage of training (p-value < 0.05).

In which, internal barriers and the barrier of response gap have the negative effect on the choice of the linkage of training with enterprises (b < 0). This may indicate that internal obstacles pose difficulties to the linkages of training between educational institutions and enterprises. At the same time, the gap between the educational institutions' response to the expectations of enterprises has negative impact on the linkage between the two sides.

The factors of motivation for knowledge development, motivation for improving teaching quality and perception barriers of lecturers have a positive influence with the forms of linkages of training (b>0). This proves that the research finds a positive relationship between the motivation for knowledge development and application, the motivation for improving the quality of teaching, and the forms of linkage of training of educational institutions. This shows that teachers who have a strong motivation to improve teaching quality and motivation to develop applied knowledge will be more active in promoting the use of proactive solutions in association with businesses. At the same time Teachers and school administrators who recognize the barriers due to the perception of cooperation can be more determined to carry out cooperative activities.

The analysis results also show that the adjusted R^2 value is 0.587, showing that the 6 independent variables explain 58.7% of the variation of the dependent variable LKDT, besides. The Anova test with $\text{Sig.}=0.000 < 0.05$ shows that the regression model is appropriate and the model's defects have no influence on the estimated results. According to the coefficient $|\beta|$ is normalized, the order of impact of factors from high to low is CLGD, NT, KT, NB và KC.

b. Regression results of the linkage of using labour force (Usage linkage LKSD)

The results of the analysis of model 4: show that financial motivation does not affect the choice of the form of training linkage ($p\text{-value} > 0.05$), the remaining factors in the model have an influence on the choice of training linkages, and forms of linkages of using labor ($p\text{-value} < 0.05$).

Motivation of knowledge development, motivation to improve teaching quality and barriers due to the perception of lecturers have a positive influence with the forms of linkage of using labor ($b > 0$). This shows that teachers who have a strong motivation to improve teaching quality and motivation to develop applied knowledge will be more active in promoting the form of linkage of using labour with businesses. In addition, the higher the awareness between the two sides about the benefits of cooperation, the better the linkage relationship in using labor.

The factors of internal barriers and barriers due to the response gap between vocational educational institutions and enterprises have a negative influence on the use of coordination and cooperation in the use of labour. The study also found that internal barriers and barriers due to the response gap between educational institutions and enterprises have a negative effect on linkage of using labour. The factors of "internal barriers" and "response gap between educational institutions and enterprises" are high, leading to a decrease in the form of linkage of using labour.

The analysis results also show that the adjusted R^2 value is 0.415, showing that the 6 independent variables explain 41.5% of the variation of the variable of linkage of using, besides the Anova test with $\text{Sig.}=0.000 < 0.05$, it proves that the regression model is suitable and the defects of the model do not affect the estimated results. According to the normalized coefficient β , the order of impact of factors from high to low is NT, KC, NB, CLGD, KT.

c. Regression results of the form of information exchange linkage (Linkage to exchange information LKTD)

The results of the analysis of model 2: show that financial motivation does not affect the choice of form of information exchange ($p\text{-value} > 0.05$), the remaining factors in the model have an influence on the selection of the form of linkage in information exchange ($p\text{-value} < 0.05$).

In which, the motivation to develop knowledge, the motivation to improve the quality of teaching and the barrier due to the perception of lecturers have the same influence with the forms of linkage of information exchange. The factors of internal barriers and barriers due to the response gap between vocational training institutions and enterprises have a negative influence on the linkages of exchange of information.

The analytical results also show that the adjusted R^2 value is 0.478, showing that the 6 independent variables explain 47.8% of the variation of the dependent variable LKSD, besides Anova test with $\text{Sig.}=0,000 < 0.05$ shows that the regression model is suitable, and the defects of the model do not affect the estimated results. According to the normalized coefficient β , the order of impact of factors from high to low is KC, NB, CLGD, NT, KT.

d. Regression results of linkage to research and transfer technology (Linkage to research and

technology LKNC)

The results of the analysis of model 3 show that financial motivation does not affect the choice of forms of Linkage of research and transfer technology (p -value > 0.05), the remaining factors in the model all influence on the choice of the form of Linkage of research and transfer technology (p -value < 0.05). In which, the motivation to develop knowledge, the motivation to improve the quality of teaching and the barrier due to the perception of lecturers have the positive influence on the forms of research linkage and technology transfer. The factors of internal barriers and barriers due to the response gap between vocational training institutions and enterprises have the opposite effect on the Linkage of research and transfer technology.

The analysis results also show that the adjusted R^2 value reaches 0.663, showing that the 6 independent variables explain 66.3% of the variation of the dependent variable LKSD, besides Anova test result with $\text{Sig.}=0,000 < 0.05$ shows that the regression model is suitable, and the defects of the model do not affect the estimated results. According to the normalized coefficient β , the order of impact of factors from high to low is CLGD, NB, KC, NT, KT.

5. Conclusions and recommendations

The study examines the impact of factors on the training and employment linkages in Nghe An. Based on the theories and many models about the relationship between educational institutions, enterprises, and government, and by applying the research to the situation of Vietnam, the authors aim to clarify the roles of educational institutions and enterprises, and groups of influential factors for example, motivation of linkages and barriers of linkages. In order to strengthen the link between educational institutions and enterprises in training and employing trained workers in Nghe An province in the coming time, it is necessary to implement synchronous solutions from the main actors (which are educational institutions and enterprises), the environment, and conditions for cooperation. It is important to first innovate the content, modalities and increase the level of training that both parties. To implement this mission, it is necessary to first promote the positive motivations, enhance branding, meanwhile limit internal barriers, gaps in responses between educational institutions and enterprises. Along with that is the process of improving linkage capacity and developing an open and flexible vocational education system, renewing policies for both learners, vocational education institutions and businesses with many preferential policies, favorable conditions should be provided, vocational education institutions should be given autonomy and take full responsibility for their own actions. Based on the research results, the study proposes the following recommendations:

Firstly, Recommendations to the Government and MOLISA on Completing the legal framework and improving vocational educational training governance. Synchronously complete the system of legal documents to implement the Law on State Education and other relevant laws: Law on Education, Law on Investment, Law on Enterprises... Develop a national management framework for Vietnam (VET) in line with the ASEAN regional qualification reference framework, in order to ensure that the diplomas/certificates of the VET system are research recognized by the with countries of the region...; Renovate the operational mechanism training with of VET to enhance the autonomy of VET institutions and promote the socialization of some types of results public non-business services with in the field of VET: Granting autonomy to VET institutions: With comprehensive autonomy for VET institutions in terms of organizational structure, of the personnel, Finance organization, training; Renovate the structure, methods that

of funding and investment in the State budget for VET; Promote the implementation of with policies to encourage the socialization of public non-business services with of VET. Enhance the capacity of state management agencies on VET at all levels: Completing the organizational system of management from central to local levels; Improving the capacity of state managers; Applying ICT in the management of VET. Strengthen work of job orientation for students at post-secondary and upper-secondary educational institutions: Adjust model the structure and scale of training VET in line with the employment needs of of them laborers. Synchronously implement policy mechanisms to attract and encourage more student to study at vocational educational institutions.

Secondly, recommend the People's Committee of Nghe An province on improving the quality of mechanisms to support linkages. Develop and implement Nghe An province's project "Forecasting labor supply - demand" to improve the efficiency of labor market forecasting. Regularly research and develop and issue short-term forecasts and publications forecasting the labor market for each period of at least 5 years by industry and occupation to serve as a basis for planning TVET work and development orientation for human resources of the province; Building a process, selecting models, methods and forecasting labor demand (5 to 10 years period) of Nghe An with high reliability and feasibility in order to:

- Meet effectively and timely the requirements of the state management of labor market and human resource development.
- To help orient and improve the training efficiency of educational and training institutions.
- Meet the actual needs of enterprises, laborers, and other social partners.
- Improve the capacity of information and forecasting labor demand for related agencies/organizations and individuals.

In addition, build and complete the labor market information system. Complete the indicators assessing labor market prices towards integration, especially reflecting the labor market characteristics of Nghe An and being comparable with other provinces in the country. Strengthening staff and capacity of statistics, information analysis and labor market forecasting in the province; invest in equipment infrastructure, especially information technology infrastructure. Regularly organize surveys of the province with an appropriate sample size, reflecting synchronous and complete labor market indicators. Complete the labor market data integration center under Nghe An Department of Labour, Invalids and Social Affairs to store, process and share data regularly.

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