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The Impact of Technology Transfer on Economic Development in the 4.0 Era: Empirical Evidence from the Agriculture and Rural Sector in Vietnam

Quang Bach TRAN[1], Thi Yen NGUYEN[2]

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Abstract

Agriculture and the rural sector play a crucial part in Vietnam's socio-economic growth. The study's goal is to see how technology transfer from young intellectual research activities affects the economic evolution of Vietnam's agriculture and rural sector in the 4.0 technology era. The research has used a quantitative method through analysis of linear structural model SEM, with a survey scale including 480 samples that are managers in departments and branches in agriculture and rural sector in the provinces in Vietnam. Research results show that technology transfer from research activities of the young intellectual has a direct and positive impact on economic development in agriculture and rural sector. This level of impact will increase with the participation of the intermediary factors such as awareness of managers, trust, and mechanisms in the mobilization and use of resources. These results contribute to both theoretical and practical aspects when proving the impact of technology transfer from the research activity of the young intellectual to the economic development in the field of agriculture and rural sector in the 4.0 era and the mediating role of awareness of managers, trust and mechanisms in the mobilization and use of resources.

Keywords: Technology Transfer, Research Activity, Young Intellectual, Economic Development, Agricultural, and Rural Sector

JEL Classification Code: O13, O14, Q16

1. Introduction

The agriculture and rural sector in Vietnam always play a fundamental role in socio-economic construction and development. Throughout history, Vietnam's agriculture and rural sector have formed and preserved many cultural identities of the nation. Besides, it has provided food for social consumption, raw materials for the processing industry, agricultural products for export, human resources for socio-economic activities, and consumed products produced by factories in urban. The merger between the academic sector and industry was the result of the second academic revolution, which developed step by step and ensured the successful commercialization of research results (Alibekova et al., 2019). With the requirements of the innovation process in the context of the 4.0 technology revolution, the rural agriculture industry needs to make bold, effective breakthroughs to ensure rapid and sustainable economic development and create a consumed market that is diverse in type, quantity, and quality. To meet the development progress and the set goals in the innovation, technology transfer, application of new achievements and knowledge from research activities will be an effective solution. In particular, the young intellectual's rapid access to technology is one of the decisive factors in this process's effectiveness.

Agriculture makes a huge contribution to economic growth through trade with domestic and foreign industrial sectors. Therefore, it is necessary to promote the agricultural industry, especially in rural areas. The young intellectual will be the most potential and largest human resource. Therefore, it is essential to promote the potential of scientific and technological knowledge staff to serve the local economic and social development in the period of industrial revolution 4.0. In the current context, when the world is transforming with the Industrial Revolution 4.0, the role of the young intellectual is increasingly being promoted. It is considered the foundation for socio-economic development that reflects the national power.

[1]First Author and Corresponding Author. Lecturer, Faculty of Economics, Vinh University, Vietnam [Postal Address: 182 Le Duan, Ben Thuy, Vinh City, Nghe An, Vietnam] Email: tbach152008@gmail.com
[2]Lecturer, Faculty of Economics, Vinh University, Vietnam. Email: yennguyen1507@gmail.com

The main motivation for any research and development activities carried out at the national and international levels is to create more data and contribute to the development of the economy (Kireyeva et al., 2020). Up to now, many researchers have examined the relationship between technology transfer and economic development in rural agriculture as Dwi Suseno and Dwiatmadja (2016), Amal (2016), etc. One of the determinants of the countries' economic activities is technology transfer. Economists have long recognized that the transfer of technology is central to economic growth and that the development of any country depends on the extent and effectiveness of that transfer. Munirul et al. (2013) studied the relationship between technology transfer from foreign direct investment to economic efficiency and imply that increasing technology transfer internationally increases the host country's production efficiency and causes higher welfare. Consistent with Munirul et al. (2013) and Valerio and Daniela (2005) argued that foreign direct investment creates a significant source of technology transfer between countries. Especially for a high-educated country, technology transfer strongly impacts economic development. Technology transfer and related policies contributed to economic promotion (Temitayo & Euiseok, 2020).

The 4.0 technology era has focused on technological advances and their application to production and business activities, which greatly influence all industries. The difference of this era breaks traditions to support super-fast production. In fact, in the 35-year comprehensive reform of the country, Vietnam's agriculture has been achieving rapid and stable growth for a long time. The cultivation, animal husbandry, forestry, and fisheries have significant growth rates. In the agriculture, forestry, and fishing industry, the output of crops, livestock, and shrimp in 2020 increased highly. It played a core role in that the growth rate of this area was higher than in 2019, of which the agriculture's growth rate reached 2.55%. Export turnover of agricultural, forestry, and fishery products has made progress. In recent years, the Vietnamese agriculture industry has had many bright spots as the high-technology application in production increases productivity and product value. The production and consumption links of agricultural products are diversified, suitable to the production conditions of each region and locality. The socio-economic infrastructure in rural areas is paid attention to construction.

Besides the achievements, agricultural and rural development in Vietnam still has limitations such as low labor productivity and product quality. The situation of "devaluation season" has still occurred due to dependency on the output market. Many products considered local strengths are still raw and unprocessed, so the value is low. The structure of agricultural production and rural economy in many places is slowly shifting. The development of industries, trades, and services in rural areas has not been commensurate with their potential. The purely agricultural labor force accounts for a large proportion of the rural labor structure. The agricultural products' productivity, quality, and competitiveness are not still high. The research, application of science and technology, and investment funds for science and technology in the agricultural industry are still limited. The quality of the planning is not reasonable. There is a lack of linkage with the implementation resources and consistency among different types of land planning. At the same time, the mobilization and use of financial resources for agricultural and rural development still have limitations. Resources for investment have not yet met the demand, mainly depending on the funding from the state budget. The outstanding debt for basic construction in rural areas is still high. Moreover, the progress of disbursing the capital is still slow. Therefore, mobilizing and using financial resources for economic development in agriculture and rural areas has not been effective. It decreases the stakeholders' participation and development motivation.

The young intellectual with dynamism, enthusiasm, and quick access to the achievements of innovation in the 4.0 era will be one of the determinants in many different fields' development, including the rural agricultural economy industry. Based on a theoretical overview, the research has built a model to examine the impact of technology transfer from research activities of the young intellectual to economic development in the agriculture and rural sector. In this relationship, the research has demonstrated the mediating role of awareness of managers, trust, and mechanisms in mobilizing and using resources. These test results contribute to both theory and practice in making some recommendations for economic development in the Vietnamese agricultural and rural sectors in the 4.0 technology era.

2. Literature Review and Hypotheses

2.1. Literature Review

Transfer of technology ownership means that the owner transfers the right to possess, use and dispose of the technology to another organization or individual. Munirul et al. (2013) demonstrated the impact of technology transfer from foreign direct investment on enhancing efficient production in the host country and leading to higher welfare, which increases economic efficiency. According to Gunsel (2015), knowledge sharing is the foundation of technology transfer. Technology transfer plays a core role in the nation's innovation, creating positive spillover and improving R&D capacity for organizations and localities. Knowledge has contributed hugely to economic growth through technology transfer and corporate business innovation (Maria & Oscar, 2016). While solid commitment from the government is needed, projects must be carefully designed based on clear strategic plans - the business economics must be there (Lee, 2022).

Economic development is an economic transition relating to the economy's structural transformation through industrialization, gross domestic product, and per capita income (Tran et al., 2021). For the agricultural sector in the 4.0 technology era, development orientation and policy is the basis for promoting economic development. In particular, it is necessary to maximize agricultural production capacity, radically renovate organizational forms, improve science and technology content and add value to products. Besides, the financial system must direct investment capital into the agricultural sector and production development.

In addition to the two main factors studied as technology transfer and economic development, the study deals with intermediate variables, including awareness of the manager, trust, and a mechanism for mobilizing and using human resources.

Perception is the act or process of acquiring knowledge through thought, experience, and senses. Its process included knowledge, attention, evaluation, estimation, reasoning, calculations, problem-solving, and decision making. The manager's awareness of technology transfer from the agricultural sector's young intellectuals includes understanding roles, program content, role model, leadership in activities, and trust in transfer activities (Diu, 2017).

Trust is fundamentally essential in organizing a long-term relationship within any commercial enterprise ecosystem (Halliburton & Poenaru, 2010). From an organizational perspective, trust is how a member trusts in the enterprise (Zaheer & Harris, 2006). It can be expressed at three levels: cognition, intention, and behavior. It is difficult to distinguish between trust at the cognitive level and the intention level. Morgan & Hunt (1994) argued that the willingness to rely on a partner is a form of belief. If a party believes in the partner but is not willing to rely on the partner, then the trust is only limited (Moorman et al., 1992). Trust at the behavioral level means that the believer must take risks when acting (Mayer et al., 1995).

The structure's mechanism includes many different components closely related to each other. The mode of operation is the interaction between the parts in the system according to defined principles and processes to achieve a goal (Yun, 2005). Mobilizing and using resources synchronously for economic development in the agriculture and rural sector is the orientation and solutions that the State promulgates to foster this sector's growth. To run a strong and synchronous mechanism, it is necessary to establish a legal framework for the mobilization and utilization of resources from the central to local levels. After making a clear plan, the stakeholders will implement it. The final step is the inspection and examination. The criteria to evaluate the mechanism for mobilizing and using resources for economic development in the agriculture sector include effectiveness, efficiency, economy, suitability, and stability.

2.2. Research Hypotheses

2.2.1. Technology Transfer from Research Activities of the Young Intellectual and Economic Development in the Agriculture Sector

Podrug et al. (2017) suggested that transferring new technology and knowledge positively impacts the organization's innovation ability. Grant (1996) demonstrated that technology transfer has significantly contributed to organizational performance. Applying new knowledge from transferring depends on the knowledge management process, including the creation, capture, development, and sharing of knowledge. An effective process will create opportunities to make good decisions and improve the organization's performance. Darroch and MacNaughton (2002) implied that technology transfer promotes creativity and innovation, develops new methods and procedures, changes traditional methods as well as makes organizations better. Morgan and Hunt (1994) showed that cooperative behavior and technology transfer is a positive results of commitment. It is an aspect that reflects management effectiveness, which contributes to improving efficiency in business and national development. To test the relationship between technology transfer from research activities of the young intellectual and economic development in the agriculture and rural sector in Vietnam, the hypothesis is:

H1: *Technology transfer from research activities of the young intellectual has a positive impact on economic development in the agriculture and rural sector in Vietnam in the 4.0 era.*

2.2.2. Technology Transfer from Research Activities of the Young Intellectual and Awareness of Managers

Amal (2020) demonstrated a positive and significant relationship between leadership empowerment and technology transfer efficiency (product and process efficiency, business performance, and human resource capacity). The result also clarified that employee training has the strongest influence while employee supervision has the lowest effect on technology transfer efficiency. The young intellectual with a large team of young scientists trained and approached new scientific and technological platforms to gain new knowledge from meaningful research activities. It plays a fundamental role in improving managers' perceptions, helping them have more insight into transfer activities and applicability to practice in each locality. And in the agriculture and rural sector, in the context of the 4.0 technology era, how is the relationship between technology transfer from research activities of the young intellectual and awareness of managers shown? The authors hypothesized:

H2: *Technology transfer from research activities of the young intellectual impacts positively awareness of managers.*

2.2.3. Awareness of Managers and Economic Development in the Agriculture Sector

The manager's perception is of strategic importance in the production and business of organizations and the level of economic development in each field. Vietnam's agriculture and rural sector have made great strides, leaving deep impressions both at home and abroad in recent years. It comes from the right direction and is based on the deep awareness of the importance of transferring new knowledge and technologies from the research activities of the young scientist's early access to advanced technology and scientific working methods in other countries. Wu et al. (2009) showed that interpersonal trust positively influences knowledge sharing and practical application. Technology 4.0 is creating new steps and enhancing the value of products. To examine the relationship between the manager's awareness and economic development in the field of the agriculture sector, the hypothesis is proposed as follows.

H3: *Management staff's perception of technology transfer activities from the research of the young intellectual has a positive impact on economic development in the agriculture and rural sector in Vietnam in the 4.0 era.*

2.2.4. Technology Transfer from Research Activities of the Young Intellectual and the Manager's Trust

Bandura (1989) implied individuals need to consider the environment, personal goals, and social relationships before transferring knowledge and technology. Accordingly, if an individual is uncertain about his competence and the shared knowledge, he may not share it. Hence, trust is the heart of knowledge exchange (Davenport & Prusak, 1998) and one of the most important drivers of successful knowledge sharing (Ford, 2003). The higher level of trust, the higher level of knowledge sharing (Anderson & Narus, 1990; Ardichvili, 2003). Engstrom (2003) also suggested that satisfaction and belief in the development prospects of each individual affect knowledge sharing. According to Wheatley (2000), individuals will share their knowledge voluntarily if they perceive sharing as necessary to their work and at the same time feel encouraged to share. The studies mentioned the individual trust factor when proposing a research model on knowledge sharing. Ismail and Yusof (2009); Al-Qadhi et al. (2015) proved a positive relationship between trust and transferring knowledge and technology. In the context of the 4.0 era, to test the impact of technology transfer from research activities of the young intellectual and the manager's trust in the field of agriculture and rural sector in Vietnam, the hypothesis is put forth as follows.

H4: *Technology transfer from research activities of the young intellectual positively affects the manager's trust.*

2.2.5. The Manager's Trust and Economic Development in the Agriculture Sector

Considering the relationship between managers' trust and economic development in the agriculture sector, Klein and Rai (2009) agreed that the manager's trust and economic growth have a positive relationship. Guinot et al. (2014) argued that trust in the organization is one of the determinants of organizational performance. Bakiev (2013) implied that the high-performance work system through mediation is the relationship between trust, cohesion, and performance perception positively impacting management performance. A high level of trust is related to the effectiveness of a manager's behaviors (Podsakoff et al., 1990). According to Morgan and Hunt (1994), commitment and trust support efficiency and effectiveness in relationships. To examine this relationship in the 4.0 technology era, the hypothesis is proposed as follows.

H5: *The manager's trust in technology transfer from the research of the young intellectual has a positive impact on economic development in the agriculture sector in Vietnam in the 4.0 era.*

2.2.6. Technology Transfer from Research Activities of the Young Intellectual and Mechanisms for Mobilizing and Using Resources

Technology transfer plays a fundamental role in increasing innovation, creating positive spillovers, and enhancing internal R&D capacity for organizations and localities (Maria & Oscar, 2016). Technology transfer from the research activities of the young intellectual positively impacts enhancing flexibility in the mechanism and use of resources. It ensures that localities take advantage of existing resources and develop a sustainable economy, especially in the agriculture sector. The mechanism ensures flexibility, creating an initiative for localities and creating a foundation for making decisions in the right direction. In the context of technology 4.0, to demonstrate the relationship between technology transfer from research activities of the young intellectual to the mechanism of mobilization and use of resources, the hypothesize is proposed as follows:

H6: *Technology transfer from research activities of the young intellectual positively affects the mechanism of mobilizing and using resources for economic development in the agriculture and rural sector in Vietnam in the 4.0 era.*

2.2.7. The Mechanism for Mobilizing and Using Resources and Economic Development in the Field of Agriculture and Rural Sector

The mechanism for mobilizing and using financial resources for new rural construction complies with the state and local authorities' viewpoints, orientations, and goals about economic development (Scoones, 1998). Mobilizing and using financial resources aim to implement the socio-economic development goal for each locality in general and new rural construction in particular (Hoang, 2018). Efficient mobilization and use of resources positively impact operational efficiency and contribute to economic development. To test the relationship and impact direction of the mechanism of mobilization and use of resources on economic development in the field of agriculture and the rural sector, the authors hypothesize:

H7: *The mechanism of mobilization and use of resources has a positive impact on economic development in the field of agriculture and the rural sector in Vietnam in the 4.0 era.*

2.2.8. Awareness and Trust of the Manager

Venkatesh et al. (2012) argued that using previous experience is a prerequisite for using technology which is the main factor for adopting that technology in the future. Trust represents perceived values for all management activities. Trust leads to knowledge sharing (Engstrom, 2003), which increases with the manager's positive perceptions towards technology transferring. From the above argument, hypothesis H8 is proposed as follows.

H8: *The manager's awareness has a positive effect on the manager's trust in technology transfer activities from the research of the young intellectual in the agriculture and rural sector in Vietnam in the 4.0 era.*

2.2.9. The Mechanism for Mobilizing and Using Resources and the Manager's Trust

Fair and reasonable policies are the basis to ensure the development of the economic sectors of a country. Munirul et al. (2013) examined the relationship between technology transfer from foreign direct investment to economic efficiency. The result showed that the higher the level of international technology transfer, the higher the production efficiency in the host country, which leads to higher welfare. Technology transfer and related policies contribute to economic promotion (Temitayo & Euiseok, 2020). To study the relationship between the mechanism of mobilization and use of resources and the manager's trust from the research activities of the young intellectual in the agriculture and rural sector in Vietnam, the hypothesis is proposed as follows (Figure 1).

H9: *The mechanism of mobilization and use of resources positively impact the manager's trust in technology transfer activities from the research of the young intellectual in the agriculture sector in Vietnam in the 4.0 era.*

3. Research Method

3.1. Research Scale

Based on the literature, the article has proposed a research model with the independent variable of technology transfer from the research activities of the young intellectual. The intermediate variables are the manager's perception, the manager's trust, and the mechanism for mobilizing and using resources. The target variable is economic development in the agriculture and rural sector. A Likert scale with five levels (Strongly agree; Agree; Normal; Disagree; Strongly disagree) is used. Indicators for measuring variables are applied with adjustments following the characteristics of the research sample from previous studies (see Table 1).

3.2. Research Sample

The research sample has been selected by the non-probability sampling method. In other words, the authors have chosen a convenient sample that is stratified relatively according to localities. The survey object in the study is the manager in the departments and branches in the agriculture and rural sector in provinces in Vietnam. The sample size is 480 observations. The data collection process has been implemented in two ways: face-to-face and online. The number of online questionnaires collected is 300, and the number of usable questionnaires is 284. About the face-to-face survey, the number of sheets issued is 250, the number of votes collected is 221, and the number of usable votes is 196. The total number of valid sheets for analysis is 480. According to Hair et al. (1998), for the reference of the expected sample size, the minimum sample size is five times the total number of observed variables. With 27 observations in the manuscript, the sample size includes 480 observations to meet the analysis requirements. The data collection period is from August 2021 to September 2021.

3.3. Data Processing

The research has used the quantitative method. After collection and cleaning, data are processed through SPSS and Amos programs. First, the authors have evaluated the scale's reliability through Cronbach's Alpha value which must be higher than 0.7. Next, exploratory factor analysis (EFA) is

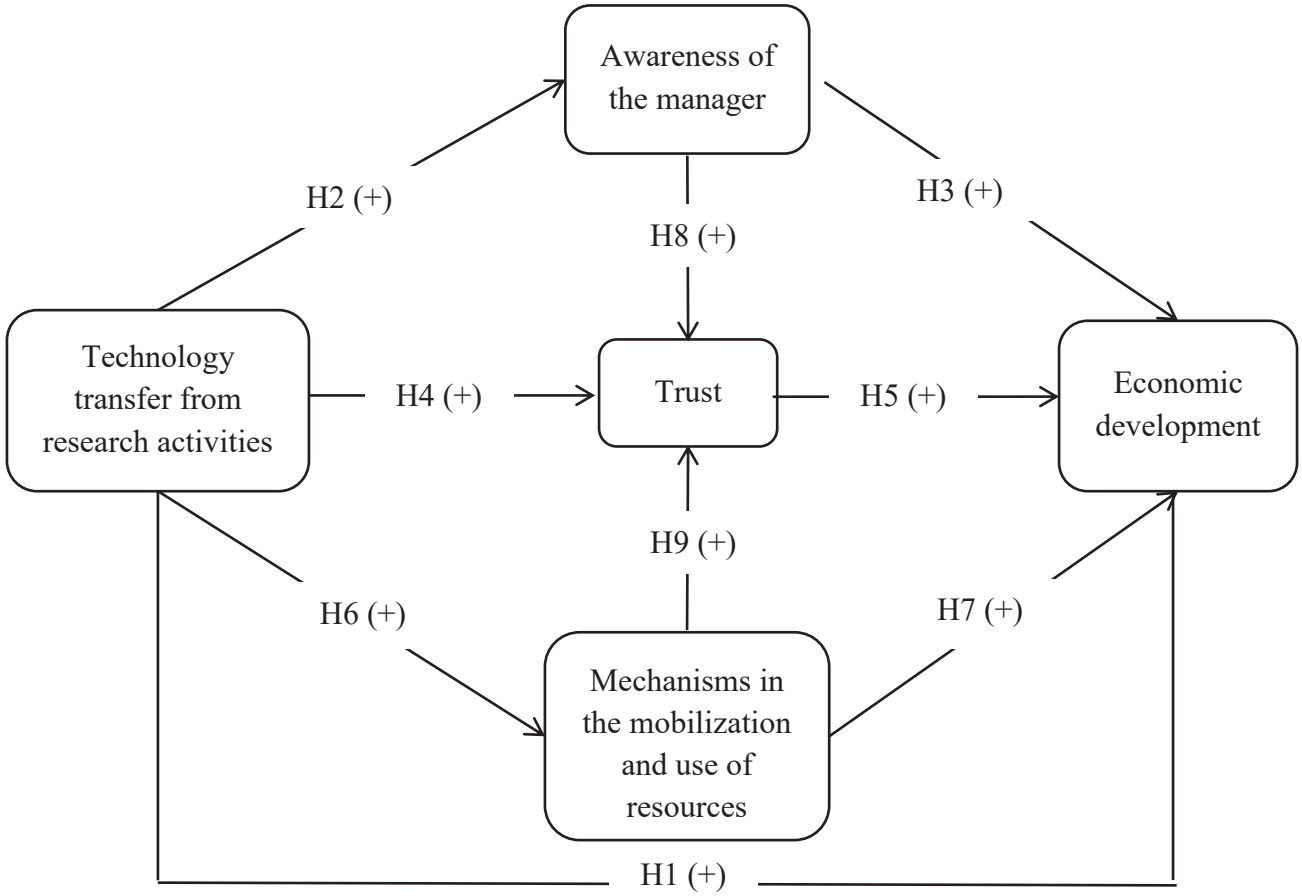

Figure 1: Research Model

Table 1: The Origin of the Scale of Variables

No	Variables	Acronym	Number of Observation	The Reference Papers
1	Technology transfer from research activities	TT	6	Chennamaneni (2006)
2	Awareness of the manager	AM	4	Diu (2017)
3	Trust	TR	5	Morgan and Hunt (1994)
4	Mechanisms in the mobilization and use of resources	MR	6	Hoang (2018)
5	Economic development	ED	6	Scoones (1998)

used to determine the "convergent value" and "discriminatory value" of the scale. Then, the AMOS program is utilized to evaluate the suitability of the research model through testing the CFA confirmatory factor and to examine the research hypotheses by analyzing the SEM linear structural model with the required indicators. chi-square/df < 3 (Kettinger & Lee, 1995); GFI, TLI, CFI > 0.8; RMSEA < 0.08 (Taylor et al., 1993). Finally, the study has conducted the dataset's descriptive statistical analysis to determine the mean values of the model's variables.

4. Research Results and Discussion

4.1. Testing the Reliability of the Scale

To assess the scale's reliability, Cronbach's Alpha analysis for each variable is examined. The test result shows the high reliability of the used scale used. Because the variables' correlation coefficients of the total variables are > 0.3 and Cronbach's Alpha coefficients of all variables are > 0.7. At the same time, the coefficient of Cronbach's Alpha If Item

Deleted, if the observation is removed, are all smaller than the Cronbach's Alpha coefficient of the total variable (see Table 2).

4.2. Exploratory Factor Analysis

After testing the scale's reliability, the exploratory factor analyses (EFA) for the independent, intermediate, and dependent variables are implemented. The results show that the data is eligible for analysis because its factor loading coefficients > 0.5 and satisfies two conditions "the convergence value" (observed variables converge on the same factor) and "the convergence value" (observed variables belonging to this factor are distinguished from another) (see Table 3 & 4).

4.3. CFA Analysis

The results show the model's suitability. The index Chi–square = 764.635; df = 314; Chi–square/df = 2.435 (<3); P = 0.000; GFI = 0.891 (>0.8); TLI = 0.950 (>0.8); CFI = 0.956 (>0.8); RMSEA = 0.055 (<0.08).

4.4. Structural Equation Modeling Analysis

Analyzing the SEM model for the research model, the authors have found that the composite indexes are satisfactory. Specifically, Chi-square = 790.940; df = 315; Chi-square/df = 2.524 (<3); P = 0.000; GFI = 0.887 (>0.8); TLI = 0.947 (>0.8); CFI = 0.953 (>0.8); RMSEA = 0.056 (<0.08) (see Figure 2).

The estimation results show that the research model is appropriate. All hypotheses are accepted with a significance level of $P < 0.05$.

Hypothesis H1 is accepted with a significance level of $P < 0.05$ and has a positive regression weight (0.125). In other words, Technology transfer from research activities of the young intellectual has a positive impact on economic development in the Vietnamese agriculture sector in the 4.0 era. This result is consistent with the research of Podrug et al. (2017), Grant (1996), Darroch and MacNaughton (2002); Morgan and Hunt (1994), etc. However, the impact level is insignificant. Therefore, the authority must have more positive views on research results from the young intellectual. It is a basis for orientations and solutions for technology transfer, effectively supporting the locality's economic development.

Hypothesis H2, H3 is accepted with a significance level of $P < 0.05$ and has a positive regression weight (0.452 and 0.196). In other words, technology transfer from research activities of the young intellectual positively affects the manager's awareness which positively impacts economic development in the agriculture and rural sector in Vietnam 4.0 era. These results are consistent with the studies of Amal (2020), Wu et al. (2009), etc.

Similarly, the hypotheses H4 and H5 are accepted because of the significance level of $P < 0.05$ and the positive regression weight (0.298 and 0.201). Technology transfer from research activities of the young intellectual positively impacts the manager's trust, which influences positively economic development in the agriculture and rural sector in Vietnam 4.0 era. This result is also consistent with the research of Bandura (1989), Davenport and Prusak (1998), Ford (2003), Anderson and Narus (1990); Ardichvili (2003), etc.

Table 2: Evaluation of the Reliability of the Scale Through Cronbach's Alpha Coefficient

No	Variables	Acronym	Cronbach's Alpha Coefficient
1	Technology transfer from research activities	TT	0.911
2	Awareness of the manager	AM	0.819
3	Trust	TR	0.901
4	Mechanisms in the mobilization and use of resources	MR	0.925
5	Economic development	ED	0.944

Table 3: EFA Factor Analysis Results

EFA	KMO Coefficient	*P*-value	Extracted Variance	Factor Loading Factor	Conclusion
The independent and intermediate variables	0.921	0.000	70.605	All > 0.5	Ensure analysis requirements
The dependent variable	0.906	0.000	80.218	All > 0.5	Ensure analysis requirements

Table 4: Rotation Matrix in EFA Analysis for the Independent and Intermediate Variables

Items	Component			
	1	2	3	4
MR3	0.882			
MR6	0.851			
MR1	0.850			
MR2	0.826			
MR4	0.818			
MR5	0.708			
TT1		0.821		
TT2		0.810		
TT5		0.804		
TT3		0.802		
TT4		0.766		
TT6		0.765		
TR5			0.836	
TR2			0.809	
TR3			0.799	
TR4			0.793	
TR1			0.734	
AM2				0.784
AM4				0.770
AM3				0.756
AM1				0.728

The hypotheses H6 and H7 also show that, with significance levels < 0.05 and positive regression weights (0.414 and 0.417), the hypotheses H6 and H7 are accepted, respectively. Therefore, it can be concluded that technology transfer positively impacts the mechanism of mobilization and use of resources, which contributes to economic development in agriculture and the rural sector. These results are also similar to the studies of Maria and Oscar (2016), Scoones (1998), etc.

Thus, accepting all the model's hypotheses means that the technology transfer activity from the research of the young intellectual impacts directly and positively the economic development in the agriculture and rural sector. However, this impact level is insignificant. It will increase when the mediating factors influence the manager's awareness, trust, and mechanisms in the mobilization and use of resources. These are the significant contributions of this study when demonstrating the importance of technology transfer activities from the research of the young intellectual to economic development in the agriculture and rural sector in the 4.0 era and the mediating role of the manager's awareness, trust, and mechanisms in the mobilization and use of resources (see Table 5).

In addition, with the significance level $P < 0.05$ and the regression weight in the positive test (0.306; 0.20), the hypotheses H8 and H9 are accepted. In other words, the manager's awareness and the mechanism for mobilizing and using resources have a positive impact on the manager's trust in technology transfer activities from the research of the young intellectual. This is consistent with to the studies of Engstrom (2003), Venkatesh et al. (2012), Munirul et al. (2013), Temitayo and Euiseok (2020), etc.

4.5. Descriptive Statistics

A descriptive statistic is conducted to have a realistic view of the research problem. The results show that, with the highest average value of all variables included in the model of 3,7750, the technology transfer factor from research activities of the young intellectual in Vietnam is assessed at a high level. It shows clearly the correct orientations and policies of the Party and State in

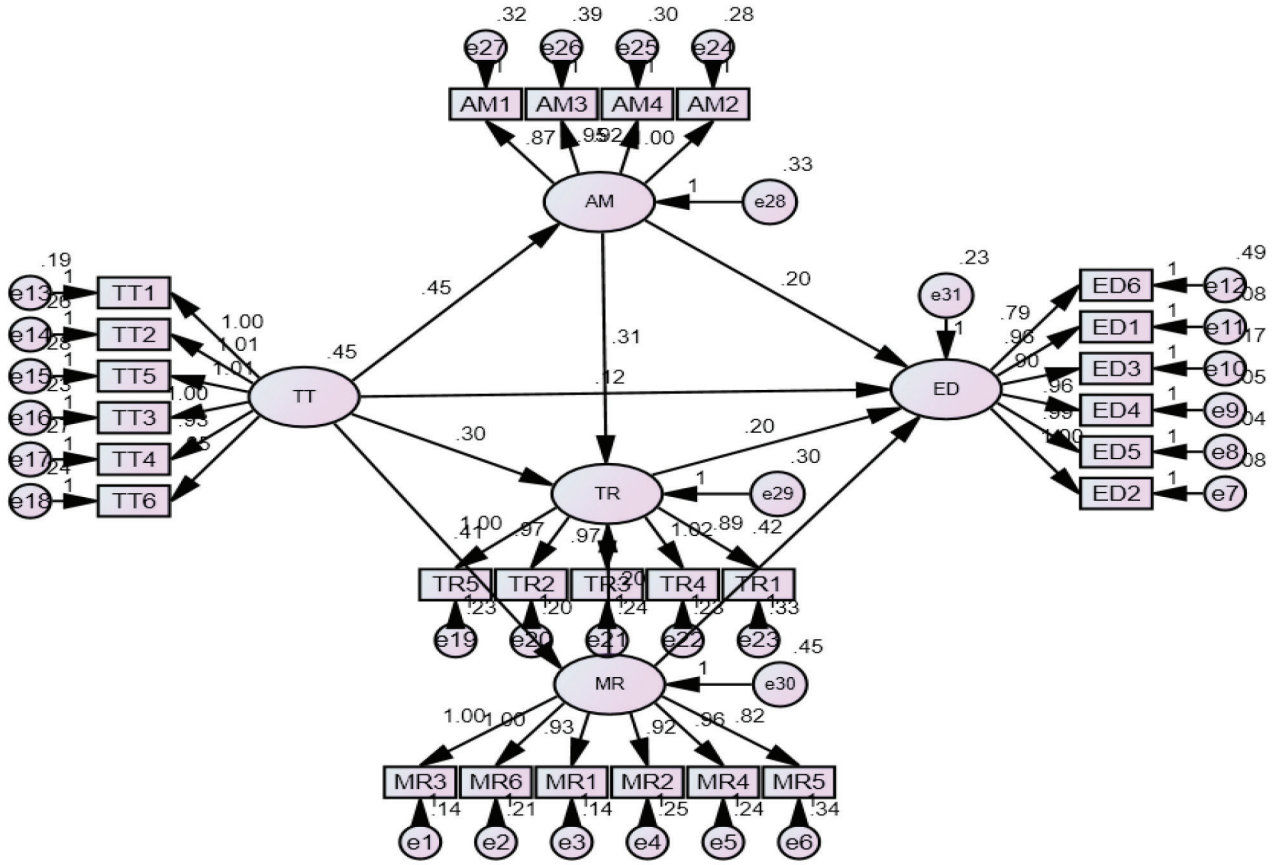

Figure 2: SEM model analysis

Table 5: The SEM Analysis Result for Relationships in the Model

Hypothesis	Relationship	Weight	S.E.	C.R.	*P*	Conclusion
H1	ED ← TT	0.125	0.048	2.594	0.009	Accept
H2	AM ← TT	0.452	0.051	8.848	0.000	Accept
H3	ED ← AM	0.196	0.050	3.919	0.000	Accept
H4	TR ← TT	0.298	0.056	5.301	0.000	Accept
H5	ED ← TR	0.201	0.047	4.287	0.000	Accept
H6	MR ← TT	0.414	0.052	7.935	0.000	Accept
H7	ED ← MR	0.417	0.040	10.537	0.000	Accept
H8	TR ← AM	0.306	0.057	5.329	0.000	Accept
H9	TR ← MR	0.200	0.044	4.523	0.000	Accept

operating, managing, and creating a legal corridor that is the premise for economic development in the agricultural sector. However, in the coming time, it is necessary to promote more focused solutions to promote the strengths of each locality and make the most of human resources in economic development.

Besides, the average value of the manager's trust is 3.4771 shows the manager's belief in departments and branches in technology transfer activities from the research activity of the young intellectual is still low. One of the reasons is that the research's results in the agriculture sector are too theoretical and lack practice. Moreover,

the local technology level has not enough to thoroughly apply research results into practice. On the other hand, the perception of some leaders and local managers is not appropriate, which limits the motivation in research from the young. Therefore, raising awareness and building trust among managers in research activities and technology transfer from the research of the young officer and scientist will be one the effective solutions. It increases the motivation of the young and creates a premise to come up with innovative solutions and breakthrough plans for long-term economic development in the agriculture sector in the localities of the science and technology era 4.0 (see Table 6).

5. Conclusion and Recommendations

The study aims to examine the impact of technology transfer from research activities of the young intellectual on economic development in the agriculture and rural sector in Vietnam in the 4.0 era. The research result shows that technology transfer from research activities of the young directly and positively impact but is not significant economic development in the agriculture and rural sector. This impact level will increase with the participation of mediating factors such as the manager's awareness, trust, and the mechanism of mobilizing and using resources.

The findings of this study contribute to both theory and practice. Theoretically, the research has demonstrated the impact of technology transfer activities from the research activity of the young intellectual to economic development in the agriculture and rural sector in the 4.0 era and the role of the mediating role as the manager's awareness and trust, mechanisms in the mobilization and use of resources. Practically, the research results are a basis for the authority in making effective solutions for economic development in the agriculture and rural sector in Vietnam in the 4.0 era.

Besides these contributions, the study also has certain limitations. The convenience sampling method used is a limitation of the study, and it is possible to reduce the controllability of the sample's representativeness. At the same time, the research context is the agriculture and rural sector in Vietnam which is one of the limitations. From the obtained results, the authors suggest the direction of development in research carried out in many fields and other countries in the region and around the world.

Based on the research results, the authors have proposed a number of recommendations for economic development in the agriculture and rural sector in localities in the 4.0 era by promoting technology transfer from the young intellectual's research activities.

Firstly, with technology transfer activities, it is necessary to promote communication and proactively suggest orientations in the technology transfer. Moreover, it is essential to encourage the young in research and transfer technology, especially technologies applied in agriculture and the rural sector in the localities. The authority must also ensure transparency to protect the rights of products. At the same time, the authority needs to support the young intellectual, create motivation in research activities, search for new knowledge and breakthrough technological solutions, and ensure maximum exploitation of all existing resources of each locality for economic development in the agriculture and rural sector.

Secondly, to enhance the manager's awareness, it is essential to organize seminars and scientific conferences which apply the research works of the young intellectual. Extensive propaganda needs to be conducted to raise the manager's awareness about the importance, meaning, and application of technology transfer activities. Moreover, the effectiveness of management and supervision over technology transfer activities needs to be enhanced. The overall plan and strategy need to be set up to ensure a strategic role in technology transfer.

Third, to increase the manager's trust, a friendly and fair cooperation environment is built, which encourages the sharing of information and knowledge from research activities. A good relationship between managers and the young intellectual is enhanced, which demonstrates confidence in practical application results from research and the ability to work together with partners, the local manager, and the young intellectual.

Fourth, with the mechanism for mobilizing and using resources, it is necessary to diversify resources, diversify methods, take advantage of the potential and choose

Table 6: The Results of Statistical Analysis Describing the Values of the Variables

Variables	*N*	Min	Max	Mean	Std. Deviation
TT	480	1.00	5.00	3.7750	0.67904
AM	480	1.00	5.00	3.7443	0.66906
TR	480	1.00	5.00	3.4771	0.71053
MR	480	1.00	5.00	3.5993	0.70512
ED	480	1.00	5.00	3.7611	0.67281

appropriate content and levels of mobilization. Take advantage of local resources, especially human resources. At the same time, the authority needs to ensure flexibility, initiative, and efficiency in building and operating mechanisms for mobilizing and using resources.

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