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Original Paper

Developing Human Resources in the Era of Digital Transformation in Vietnam: Current Status and Solutions

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Abstract

Digital transformation is becoming an inevitable and powerful trend across all sectors of socio-economic life, contributing to the enhancement of business efficiency, government management, and the quality of life for the public. High-quality human resources with digital skills and adaptability to new technologies are crucial to the success of digital transformation. However, Vietnam is currently facing numerous challenges in developing IT human resources. This paper examines the current state of human resources in Vietnam's digital transformation, discusses the solutions that have been and are being implemented, and proposes specific steps to develop high-quality human resources. The policies and training programs from the government, enterprises, and educational institutions are analyzed and evaluated. Finally, the paper provides recommendations on policies and long-term strategies to improve the quality and quantity of IT human resources, ensuring that Vietnam can seize opportunities from the Fourth Industrial Revolution.

Keywords

digital transformation, IT human resources, digital skills, human resource training, support policies, information technology, human resource development, Vietnam

1. Introduction

Digital transformation is becoming an inevitable trend across all fields of socio-economic life, contributing to improved business efficiency, government management, and public life. With the proliferation of advanced technologies such as Artificial Intelligence (AI), big data, and the Internet of Things (IoT), digital transformation not only involves the application of technology to existing processes but also requires a comprehensive change in the organization and operation of businesses, government agencies, and society. In this context, human resources are the key factor determining the

success of digital transformation. [Note 1]

Developing high-quality human resources with digital skills and the ability to adapt to new technologies is a prerequisite for Vietnam to catch up and leverage the opportunities brought by digital transformation. However, the current state of human resources in Vietnam faces many challenges. Although Vietnam trains about 65,000 IT personnel annually, only 30% of them meet the job requirements immediately. Additionally, the shortage of high-quality IT personnel has become a serious issue, particularly as various sectors, fields, and localities need this human resource to drive the digital transformation process. [Note 2]

The Vietnamese government has introduced numerous policies and programs to develop human resources for digital transformation, such as reducing personal income tax for high-tech personnel and training a minimum of 1,000 digital transformation experts. However, these policies are still not strong enough to thoroughly address the current challenges.

The aim of this paper is to explore the current state of human resources in digital transformation in Vietnam, discuss the solutions that have been and are being implemented, and propose specific results and directions to develop high-quality human resources for digital transformation. The paper hopes to contribute to building a sustainable and developed digital economy, propelling Vietnam to thrive in the Fourth Industrial Revolution.

Research Methodology: This paper employs qualitative research methods, including the analysis of documents, reports, and studies related to the current state and solutions for developing human resources during the digital transformation period. Information is gathered from government reports, international organizations, and academic materials. Additionally, in-depth interviews with experts in the field of IT and digital transformation are conducted to collect practical information and professional opinions.

2. Current Status of Human Resources in Vietnam

2.1 Quantity and Quality of IT Human Resources

Digital transformation requires a significant number of highly skilled Information Technology (IT) personnel; however, the current state of IT human resources in Vietnam faces numerous challenges. Each year, Vietnam trains approximately 65,000 IT personnel, but only 30% of them meet job requirements immediately upon graduation. Most graduates lack sufficient skills and practical experience to participate in complex digital transformation projects. This situation forces many businesses to retrain or supplement the skills of newly hired employees. [Note 3]

Data from labor market reports indicate that the demand for IT human resources in Vietnam is rapidly increasing, particularly in fields such as Artificial Intelligence (AI), big data, and information security. However, the supply of human resources does not keep pace with demand, leading to a severe shortage. According to the Ministry of Information and Communications, Vietnam currently lacks about 400,000

IT personnel, and this number is expected to increase if effective solutions for training and developing human resources are not implemented. [Note 3]

2.2 Training Statistics and Job Readiness

According to the International Labor Organization (ILO), approximately 70% of IT graduates in Vietnam need additional training before they can participate in real-world projects. Only 30% of graduates meet the immediate job requirements of businesses. The primary reason is that the training programs at universities have not been updated in line with new technologies and focus insufficiently on practical skills. [Note 4]

Current IT training programs in Vietnam primarily emphasize theory with limited opportunities for practical experience and teamwork. Students often lack soft skills such as communication, teamwork, and problem-solving. This inadequacy poses difficulties when working in real-world environments, especially in digital transformation projects that require high levels of collaboration and creativity.

2.3 Government Policies to Develop Human Resources

The Vietnamese government has introduced numerous policies to develop human resources for digital transformation. One significant policy is reducing personal income tax for high-tech personnel. This policy aims to attract and retain IT experts while encouraging businesses to invest in training and developing human resources.

Additionally, the government has launched a program to train at least 1,000 digital transformation experts for various sectors, fields, and localities. This program aims to meet the urgent need for high-quality human resources, ensuring that sectors and localities have sufficient personnel to execute digital transformation projects. [Note 2]

- Local programs for training digital transformation experts

Localities such as Da Nang and Ho Chi Minh City have implemented various training and coaching programs to enhance digital skills for officials and public servants. For example, Da Nang has partnered with universities and businesses to organize intensive training courses on digital technology. Ho Chi Minh City has also launched numerous digital skills training programs for officials, public servants, and enterprise employees to enhance their competitiveness and meet the demands of digital transformation. [Note 3]

These programs typically include courses on programming skills, IT project management, information security, and applications of new technologies like AI, big data, and IoT. Additionally, many programs focus on soft skills such as communication, teamwork, and problem-solving, helping learners effectively apply IT skills in real-world jobs.

- Challenges and issues

Shortage of High-Quality IT Human Resources: One of the most significant challenges today is the severe shortage of high-quality IT human resources. Although the number of graduates from IT training programs increases annually, most of them do not meet labor market requirements. This situation

creates substantial pressure on businesses, forcing them to invest heavily in retraining newly recruited employees. [Note 4]

The shortage of high-quality human resources not only hinders businesses from executing digital transformation projects but also affects the development of the IT industry and the economy as a whole. To address this issue, comprehensive and robust solutions are required, ranging from improving the quality of training at universities to promoting continuous training and skill enhancement programs for employees.

- Difficulties in implementing training programs

The implementation of IT training programs in Vietnam faces several difficulties. First, the training programs at many universities are still heavily theoretical, lacking practical elements, and not keeping up with new technologies. This inadequacy results in graduates lacking practical skills and failing to meet business requirements.

Second, many businesses are reluctant to invest in training and developing human resources. The primary reasons are high training costs and the lack of resources to implement continuous training programs. Moreover, many small and medium-sized enterprises struggle to recruit and retain talent due to fierce competition with larger companies. [Note 5]

Third, the shortage of experienced trainers and lecturers is a significant issue. Many university lecturers lack practical experience and up-to-date knowledge of new technologies, leading to low training quality.

To overcome these difficulties, close cooperation between universities, businesses, and government agencies is needed. Promoting collaborative training programs between businesses and universities can enhance training quality and ensure graduates possess the skills required by employers. Additionally, policies supporting businesses in investing in training and developing human resources, particularly for small and medium-sized enterprises, are essential. [Note 5]

To continue addressing the challenges and issues in developing IT human resources in Vietnam, comprehensive and coordinated measures are required. Below are some recommendations and approaches to overcome these difficulties:

Measures to improve training quality at universities. First, universities need to update their training programs to keep pace with the rapid development of technology. This update includes integrating courses on new technologies such as artificial intelligence, big data, and blockchain into the curriculum. Universities should also focus on teaching practical skills through real-world projects and collaborations with businesses, providing students with opportunities to gain practical work experience. [Note 4]

Additionally, universities need to strengthen their faculty by inviting industry experts to participate in teaching and training. This approach not only improves teaching quality but also helps students access the latest knowledge and trends in the IT field.

Increasing Investment in Training and Developing Human Resources from Businesses. Businesses need to recognize the crucial role of investing in training and developing human resources. This investment includes establishing continuous training programs and enhancing employees' skills to help them stay updated and master new technologies. Businesses should consider collaborating with universities and training organizations to develop specialized training programs that meet their specific needs.

Utilizing Massive Open Online Courses (MOOCs) is also an effective solution for disseminating digital skills to employees. Businesses can encourage employees to participate in online courses to enhance their knowledge and skills while minimizing training costs. [Note 3]

Government support policies. The government must continue implementing supportive policies to promote the development of IT human resources. One crucial measure is to create favorable conditions for businesses to invest in training and human resource development. This can include reducing corporate income tax for expenses related to employee training or providing preferential loans for businesses that invest in human resource training.

Additionally, the government should intensify the implementation of digital transformation expert training programs at the local level. This approach not only ensures that localities have enough high-quality human resources to execute digital transformation projects but also helps alleviate the pressure of human resource shortages in major economic centers like Hanoi and Ho Chi Minh City. [Note 2]

Enhancing international cooperation. International cooperation is also a key strategy for developing high-quality IT human resources. Vietnam can learn from countries that have successfully trained and developed IT human resources, as well as collaborate with international organizations to build advanced training programs. Student exchange programs, research collaborations, and joint projects with foreign universities and enterprises will help improve training quality and provide opportunities for Vietnamese students and employees to access the latest technologies. [Note 4]

Developing high-quality IT human resources is a crucial and urgent task in the context of digital transformation. Achieving this requires concerted efforts from multiple parties, including universities, businesses, and the government. Comprehensive and coordinated solutions such as improving the quality of education, increasing investment in human resource development, and enhancing international cooperation will help Vietnam overcome current challenges and build a strong workforce capable of meeting the demands of the Fourth Industrial Revolution.

3. Discussion

3.1 Solutions for Developing Human Resources in Digital Transformation

Support policies such as reducing personal income tax for high-tech personnel. The Vietnamese government has implemented various support policies to attract and develop high-quality human resources, especially in the field of Information Technology (IT). One important measure is reducing

personal income tax for high-tech personnel. This policy not only encourages individuals to work in the IT sector but also attracts technology experts from other countries to work in Vietnam. This initiative contributes to improving the quality of human resources and meeting the increasing demand for highly skilled personnel in the context of digital transformation.

Training programs for digital transformation experts in various sectors and localities. To meet the urgent need for high-quality human resources in digital transformation, the Vietnamese government has launched a program to train at least 1,000 digital transformation experts for various sectors and localities. This program focuses on enhancing the skills and professional knowledge of officials, civil servants, and enterprise employees. Intensive training courses on digital technology, artificial intelligence, big data, and cybersecurity are regularly organized to ensure that these human resources have the necessary competencies to execute digital transformation projects in localities. [Note 6]

Training and developing digital skills. Urgent need and existing training programs in localities. The demand for digitally skilled human resources in Vietnam is increasing, especially in the context of global digital transformation. Localities such as Da Nang and Ho Chi Minh City have implemented various training and coaching programs to enhance digital skills for officials and public servants. For instance, Da Nang has partnered with universities and businesses to organize intensive training courses on digital technology, while Ho Chi Minh City has launched numerous digital skills training programs for officials, civil servants, and enterprise employees to enhance their competitiveness and meet the demands of digital transformation.

These programs typically include courses on programming skills, IT project management, information security, and applications of new technologies like AI, big data, and IoT. Additionally, many programs focus on soft skills such as communication, teamwork, and problem-solving, helping learners effectively apply IT skills in real-world jobs. [Note 7]

Proposing a digital higher education model and adding new majors. To meet the demand for high-quality human resources in digital transformation, there needs to be innovation in the higher education model. One proposal is to establish a digital higher education model, combining online and traditional learning, enabling students to access courses and learning materials from anywhere. Universities need to add new majors related to digital technology, such as artificial intelligence, big data, blockchain, and cybersecurity, to the curriculum. This will not only improve the quality of education but also ensure that graduates have the necessary skills and knowledge to meet labor market demands.

Applying technology and digital platforms in training. Using massive open online courses (MOOCs) to disseminate digital skills. Massive Open Online Courses (MOOCs) are an effective solution for disseminating digital skills to the workforce. MOOCs provide online courses in various fields, from basic to advanced levels, helping learners enhance their knowledge and skills flexibly and cost-effectively. The government and educational organizations should encourage employees and

students to participate in MOOCs to improve their proficiency and meet the requirements of digital transformation. [Note 8]

For example, platforms like Coursera, edX, and Udacity offer thousands of courses on digital technology, big data, artificial intelligence, and many other fields. Businesses can also use MOOCs to train employees, helping them update their knowledge and skills, thus improving work efficiency and contributing to the digital transformation of enterprises.

Using chatbots and digital platforms to support training and human resource management. Chatbots and digital platforms are increasingly being applied in training and human resource management. Chatbots, integrated with artificial intelligence and natural language processing, can provide 24/7 support to employees, answering queries and guiding work processes quickly and accurately. This not only saves time and costs but also improves work efficiency and employee satisfaction. [Note 8]

Additionally, digital platforms such as Learning Management Systems (LMS) and other online training tools are used to manage the training and development process. These platforms help track learning progress, evaluate learning outcomes, and provide rich learning materials, thus supporting the learning and skill development of employees effectively.

Developing human resources in the era of digital transformation is a crucial and urgent task. Solutions such as improving the quality of education, increasing investment in human resource development, and applying digital technology in training will help Vietnam overcome current challenges and build a strong workforce capable of meeting the demands of the Fourth Industrial Revolution. The government, universities, and businesses need to work closely together to implement these solutions, ensuring high-quality IT human resources that contribute to promoting digital transformation and sustainable socio-economic development.

4. Results

4.1 Evaluating the Effectiveness of Solutions

The policies and programs implemented in Vietnam to develop human resources for digital transformation have shown positive initial results. Reducing personal income tax for high-tech personnel has attracted and retained many IT experts, improving the quality of human resources in this sector. Training programs for at least 1,000 digital transformation experts have enhanced the skills and knowledge of many officials, civil servants, and enterprise employees.

Localities like Da Nang and Ho Chi Minh City have effectively implemented digital skills training and coaching programs, enhancing competitiveness and meeting digital transformation demands. Courses on programming, IT project management, information security, and new technologies like AI, big data, and IoT have improved both practical and soft skills such as communication, teamwork, and problem-solving.

However, challenges remain, including a severe shortage of high-quality IT personnel, training

programs at many universities that are too theoretical and lack practical experience, and insufficient investment in human resource development from businesses.

4.2 Proposing Next Steps

Recommendations for long-term policies and strategies:

Improving training programs at universities: Update curricula to include new technologies like AI, big data, blockchain, and cybersecurity. Emphasize practical skills through real-world projects and business collaborations.

Increasing investment in training and development: Businesses should establish continuous training programs and collaborate with universities and training organizations to meet specific needs.

Promoting MOOCs: Encourage employees and students to use MOOCs to improve their skills and meet digital transformation requirements.

Utilizing chatbots and digital platforms: Use technologies like chatbots and Learning Management Systems (LMS) to save time and costs, improving work efficiency and employee satisfaction.

Specific measures to improve IT human resources:

International cooperation: Collaborate with successful countries and international organizations to build advanced training programs. Facilitate student exchanges, research collaborations, and joint projects with foreign universities and enterprises.

Encouraging private sector participation: Introduce policies to reduce corporate income tax for training expenses or provide preferential loans for businesses investing in human resource training.

Establishing high-tech training centers: Invest in high-tech training centers in key areas to provide intensive courses on new technologies and improve the professional level of IT personnel.

4.3 Future and Vision

Developing human resources in the context of global digital transformation:

Developing high-quality IT human resources is crucial for successful digital transformation. Vietnam needs a flexible education and training system that can quickly adapt to technological changes. Continuously updating and improving digital skills will help Vietnam lead in the Fourth Industrial Revolution.

The importance of continuously updating and improving digital skills:

Continuously updating and improving digital skills is essential for meeting labor market demands. This effort increases labor productivity and creates new opportunities for socio-economic development. Training and skill improvement programs should be widely and flexibly implemented to ensure everyone can access and develop necessary skills.

Vietnam needs to continue investing strongly in education and training, especially in the IT field. The government, universities, and businesses need to work closely together to build an education and training system that meets labor market demands, promoting digital transformation and sustainable socio-economic development.

5. Conclusion

Developing high-quality IT human resources is a critical and urgent task in the context of digital transformation. Policies such as reducing personal income tax for high-tech personnel, training programs for digital transformation experts, and digital skills training programs at the local level have yielded positive results. However, significant challenges remain, such as the severe shortage of high-quality IT personnel, overly theoretical and practically lacking university training programs, and insufficient investment in training from businesses.

To address these challenges, comprehensive and coordinated solutions are needed, including improving the quality of training at universities, increasing investment in training and human resource development from businesses, and enhancing international cooperation. The government, universities, and businesses need to work closely together to implement these solutions, ensuring high-quality IT human resources that contribute to promoting digital transformation and sustainable socio-economic development. In the future, continuously updating and improving digital skills for the workforce will help Vietnam not only catch up but also lead in the Fourth Industrial Revolution.

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