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Digital Transformation in Training Management at Vocational Education Institutions – A Case Study of Hanoi College of Industrial Economics

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Abstract

In the context of the global digital transformation wave, vocational education and training (VET) institutions are under increasing pressure to modernize management processes and enhance training quality. This study examines the digital transformation process in training management at Hanoi College of Industrial Economics (HIEC) as a typical case in Vietnam's VET sector. Using a qualitative case study approach, the research is based on the institution's internal documents, national policy frameworks, and secondary data sources, combined with content analysis to identify achievements, challenges, and future directions. Findings reveal that HIEC has implemented a range of digital solutions - such as the electronic school management software (QMC-EUNI) and an online learning management system LMS - which have significantly improved administrative efficiency, reduced paperwork, and enhanced transparency in training management. However, limitations remain regarding network infrastructure, digital competencies of teaching staff, and limited financial resources. The paper also references lessons learned from international practices and proposes recommendations, including investment in IT infrastructure, capacity building for teachers, development of high-quality digital content, and global collaboration. This study contributes to the limited body of literature on digital transformation in vocational education in Vietnam and provides practical implications for policymakers and institutional leaders to optimize digital integration in training management.

Keywords:

Digital transformation, vocational education, training management, case study, Vietnam.

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1. Introduction

In the context of the Fourth Industrial Revolution 4.0, digital transformation has become an inevitable trend across all fields, including education and training. For vocational education institutions, digital transformation is not only an essential requirement for improving management efficiency and training quality but also a strategic solution to adapt to the rapid changes of the labor market and emerging skill demands.

In Vietnam, the Government has issued several policies and action programs to promote digital transformation in education, particularly in vocational training, notably the National Digital Transformation Program to 2025 with an orientation to 2030. However, the practical implementation at vocational education institutions still faces many challenges: inadequate technological infrastructure, limited digital competencies among teaching staff, insufficient financial resources for comprehensive investment, and low readiness among learners.

Hanoi College of Industrial Economics is among the pioneering units applying digital transformation in training management within the vocational education system. The adoption of learning management systems (LMS), training management software, e-portals, and online learning platforms has contributed to improving management efficiency, reducing administrative procedures, enhancing transparency, and improving students' learning experiences. However, this process also reveals limitations and difficulties that need to be addressed for optimal effectiveness. This paper selects Hanoi College of Industrial Economics as a case study to analyze the digital transformation process in training management, identify achievements and existing problems, and propose improvement solutions. Thereby, the study not only provides practical evidence for digital transformation in vocational education in Vietnam but also offers policy suggestions and lessons learned for vocational institutions both domestically and internationally.

2. Theoretical Framework for Digital Transformation in Training Management

2.1. Concept of Digital Transformation in Training Management

Digital transformation in training management refers to the application of digital technologies, big data, artificial intelligence (AI), cloud computing, and other digital platforms across all management, teaching, and learning activities. The objective is to improve management efficiency, optimize processes, enhance personalized learning, and improve training quality.

In the vocational education context, digital transformation goes beyond digitizing materials and adopting learning management systems (LMS). It extends to integrating electronic student record systems, monitoring learning progress, assessing competencies against outcome standards, and linking data with enterprises to meet real-world training needs.

2.2. Role of Digital Transformation in Vocational Education

International studies, such as the OECD Digital Education Outlook (2021), state that smart technologies bring significant benefits to education, including "personalized learning, support for learners with special needs, and blockchain-based credentialing." Meanwhile, UNESCO's TVET Strategy 2022–2029 emphasizes building "flexible lifelong learning pathways" with a focus on inclusivity and equitable digital transformation in vocational education. UNESCO (2022)–Transforming Technical and Vocational Education and Training for Successful and Just Transitions: UNESCO Strategy 2022–2029 identifies TVET as a key driver to help youth and adults develop skills, move towards quality, equal, and stable employment, and foster social and economic transitions towards digitalization, greening, and inclusivity. Thus, digital transformation brings the following major benefits to vocational education:

Improving management efficiency: Reducing paperwork, increasing transparency, and supporting data-driven decision-making.

Enhancing training quality: Providing rich and diverse learning content; applying simulations and virtual/augmented reality (VR/AR) for practical training.

Personalizing learning experiences: Allowing learners to choose pace, format, and content according to their capabilities.

Connecting enterprises and schools: Supporting customized training, monitoring internships, and assessing vocational skills.

2.3. Challenges in Digital Transformation for Training Management

Despite its great potential, digital transformation in vocational education faces many challenges:

Digital competencies of teachers and managers: Lack of skills to use digital tools and unfamiliarity with online teaching methods.

Inadequate technology infrastructure: Internet connectivity, hardware, servers, and management software do not meet high usage demands.

Limited financial resources: Difficulty investing long-term in IT systems.

Organizational culture and learner readiness: Some learners and instructors are still hesitant to change traditional methods.

3. Current Status of Digital Transformation in Training Management at Hanoi College of Industrial Economics

From 2021 to 2024, Hanoi College of Industrial Economics has implemented various digital transformation activities in training management, focusing on three main areas:

IT Infrastructure

Invested in servers, high-speed internet connections, and standard computer labs at its two campuses (Campus 1: 143 Nguyen Ngoc Vu, Yen Hoa Ward, Hanoi; Campus 2: 106 Ta Thanh Oai, Dai Thanh Commune, Hanoi). Currently, the college has 09 computer labs with nearly 300 internet-connected computers equipped with specialized software to meet practical

needs. Integrated the online training management system with the college website; all training operations are conducted on the QMC system.

Training Process Management

100% of professional activities—from admission, student records, training plans, timetables, academic results, finance, to facilities are updated and managed uniformly in the QMC-EUNI software. Applied digital signatures for approving teaching plans and issuing certificates. Integrated cloud-based student learning data storage.

Teaching and Learning Support

Encouraged lecturers to develop e-learning courses and digital resources; currently, 5 courses are available online in the Faculties of Garment and Fashion, Economics and Management, Information Technology, and Engineering. Organized annual digital skills training for lecturers to improve online teaching capabilities. Developed communication channels via Fanpage, Facebook, Zalo, TikTok, etc., to share learning information and school activities.

4. Results Achieved in the Process of Digital Transformation in Training Management at Hanoi College of Industrial Economics

The results achieved at Hanoi College of Industrial Economics (HIEC) show many similarities with international trends in digital transformation in vocational education. Specifically:

(1) Increased transparency and management efficiency: The application of digital technologies in training management has streamlined administrative processes, particularly in areas related to admissions, document processing, approvals, and monitoring students' learning progress. At HIEC, data digitization has reduced processing time by approximately 80% compared to previous manual procedures. This aligns with the OECD (2021) assertion that digitalizing educational processes significantly reduces administrative burdens and enhances transparency in management. Moreover, centralized data storage has enabled the leadership to make evidence-based decisions, contributing to improved academic governance and operational efficiency.

(2) Enhanced student learning experience and services: Digital technologies have empowered students to take a more active role in their learning process. Through online platforms, students can easily access academic records, register for courses, track their study progress, and receive real-time notifications on mobile devices. This has reduced reliance on face-to-face administrative tasks while promoting transparency and personalization. According to UNESCO (2022), one of the key benefits of digital transformation in vocational education is the creation of flexible, lifelong learning pathways and greater inclusivity. Consequently, students' learning experiences extend beyond merely acquiring knowledge to developing self-management skills and academic autonomy.

(3) Improved adaptability to flexible teaching models: During the COVID-19 pandemic, the college swiftly transitioned to online teaching modes, ensuring that academic programs were not disrupted. Thanks to its digital infrastructure, lecturers implemented blended learning approaches and advanced pedagogical models such as flipped classrooms.

This corresponds with OECD (2021) findings, which highlight that digital transformation enhances the resilience of vocational education systems during crises and promotes learning anytime, anywhere. Similarly, UNESCO (2022) emphasizes that integrating digital technologies into vocational education is a core solution for building flexible, equitable, and sustainable learning ecosystems.

5. Challenges and Limitations in the Digital Transformation of Training Management at HIEC

Although the digital transformation process at HIEC has produced initial positive results, several challenges and limitations remain:

First, technology infrastructure is still inconsistent. Some classrooms lack essential equipment such as projectors, screens, microphones, and cameras. Wireless networks are weak or fail to cover all areas, especially in older buildings at Campus 2, causing interruptions when delivering courses with online components. The college's servers lack robust backup mechanisms, and system uptime is unstable, occasionally resulting in network congestion and limited access during peak periods.

Second, there is a noticeable disparity in digital competencies among lecturers. Many younger lecturers quickly adapt and integrate technology into their teaching, while some older faculty members struggle with designing digital materials, using LMS platforms, or conducting virtual classes. This uneven level of digital proficiency leads to inconsistencies in the degree of course digitization, thereby affecting students' overall learning experiences.

Third, financial resources remain limited, presenting a significant challenge. The college primarily relies on state budget allocations and tuition fees, making it difficult to fully upgrade infrastructure, renew software licenses, ensure system maintenance, or organize specialized digital skills training programs for lecturers on a regular basis.

These limitations indicate that, for the digital transformation process to be truly sustainable and effective, the college must simultaneously focus on upgrading infrastructure, building a teaching workforce with comprehensive digital competencies, and seeking additional socialized funding sources to ensure stable investment in the digitization of training management activities.

6. Lessons Learned

From the implementation of digital transformation in training management at Hanoi College of Industrial Economics, several key lessons can be drawn:

First, it is essential to develop a clear and systematic digital transformation roadmap. The roadmap should include specific objectives, measurable indicators, and phased implementation plans tailored to the institution's actual conditions. This strategic direction helps the leadership team stay focused while fostering consensus and commitment across the entire staff and faculty.

Second, building digital capacity among lecturers and administrative staff is a decisive factor. The college has paid attention to organizing training courses and workshops, while establishing technical support teams to address emerging difficulties. This approach

helps lecturers become more confident in designing digital teaching materials and using online training management systems effectively.

Third, leveraging internal and external resources brings significant benefits. By collaborating with technology enterprises and international organizations, the college has been able to access new technologies, supplement financial resources, and learn from global best practices in implementation.

Finally, ensuring data security and information safety is crucial. Digitizing all training-related data requires strict information protection mechanisms to maintain system integrity and reliability, thereby strengthening the trust of lecturers, students, and stakeholders.

These lessons not only support HIEC in improving its digital transformation process but also provide valuable references for other vocational education institutions nationwide.

7. Conclusion and Recommendations

7.1. Conclusion

The study on digital transformation in training management at Hanoi College of Industrial Economics demonstrates that:

Digital transformation has had a clear impact on improving the efficiency of training management, contributing to modernizing technology infrastructure, streamlining administrative processes, enhancing access to learning materials, and enriching students' learning experiences.

The college has gradually built a digitalized training management environment with systems such as QMC, e-portals, digital learning resources, and online teaching tools.

However, the implementation process still faces multiple challenges, including inconsistent technical infrastructure, varying levels of digital competency among faculty, and constraints in financial resources.

7.2. Recommendations

Based on the research findings, the author proposes several recommendations:

For the College:

Develop a long-term digital transformation strategy with clear quantitative targets (e.g., percentage of courses digitized, student satisfaction ratings).

Strengthen digital skills training for lecturers and administrative staff, while encouraging the sharing of best practices in technology integration.

Invest in additional equipment and network infrastructure across all classrooms and laboratories to ensure consistency.

For the Ministry of Home Affairs:

Provide financial support and preferential policies for vocational colleges during their digital transformation process. Build a shared vocational training database to connect information among schools and enterprises, thereby enhancing management effectiveness.

For Enterprises:

Increase collaboration with vocational education institutions in developing digital learning resources, simulation tools, and blended learning programs incorporating real-world enterprise settings.

Support schools in implementing new software and technologies through public–private partnership projects.

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