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THE ROLE OF LIFELONG LEARNING IN DEVELOPING HIGH-QUALITY HUMAN RESOURCES IN VIETNAM'S DIGITAL ERA

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Abstract:
The Fourth Industrial Revolution has intensified the imperative for continuous skill development, rendering initial formal education insufficient for career-long employability. This study examines the role of lifelong learning in developing high-quality human resources in Vietnam during the digital era, employing qualitative methodology based on document and policy analysis of Party and State documents, government reports, and international organization assessments. The findings reveal that Vietnam has progressively elevated lifelong learning to a foundational pillar of national development strategy, with the 13th National Party Congress identifying human resource development as a strategic breakthrough and institutional infrastructure providing mechanisms for learning society construction. Quantitative indicators demonstrate progress, including STEM enrollment increasing by 10.6 percent in 2024. However, significant challenges persist: only 13 percent of the workforce possesses formal training qualifications, approximately 65 percent of top technology talents work abroad, and a 23-percentage point urban-rural gap constrains equitable digital learning access. The study proposes six recommendations addressing financing mechanisms, university-enterprise collaboration, grassroots infrastructure, digital divides, talent retention, and recognition of prior learning. The research concludes that policy commitment and institutional architecture constitute necessary but insufficient conditions; sustainable financing, stakeholder coordination, and implementation capacity determine whether strategic frameworks translate into workforce quality improvements.

Keywords: lifelong learning; high-quality human resources; digital transformation; learning society; Vietnam

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1. Introduction

The Fourth Industrial Revolution has fundamentally transformed the relationship between education, work, and economic development. Characterized by the convergence of digital technologies, artificial intelligence, automation, and data analytics, this technological transformation creates both unprecedented opportunities and substantial challenges for national development strategies. The accelerating pace of technological change renders knowledge and skills acquired through initial formal education increasingly insufficient for career-long employability. The World Economic Forum (2023) projected that 44 percent of workers' core skills would require updating within a five-year period, while the International Labour Organization (2019) estimated that approximately 70 percent of manufacturing jobs in developing Asian economies face potential automation within two decades. These projections underscore the imperative for continuous learning throughout working life rather than front-loaded education concentrated in youth.

Within this global context, lifelong learning has emerged as a strategic priority for nations seeking to develop high-quality human resources capable of driving innovation and maintaining economic competitiveness. High-quality human resources, characterized not merely by formal qualifications but by adaptive capacity, creative problem-solving abilities, and continuous learning orientation, constitute the foundation for knowledge-based economic development. The construction of learning societies, where educational opportunities extend beyond formal institutions to encompass workplaces, communities, and digital platforms, represents the institutional framework through which lifelong learning principles are operationalized at the national level.

Vietnam stands at a critical juncture in its development trajectory. The 13th National Party Congress in 2021 identified human resource development as one of three strategic breakthroughs for national development, emphasizing high-quality human resources combined with science, technology, and innovation (Communist Party of Vietnam, 2021). Resolution 57-NQ/TW of the Politburo on breakthrough development of science, technology, innovation, and national digital transformation further elevated the strategic importance of workforce quality for Vietnam's aspirations to become a developed, high-income nation by 2045. The "Digital Literacy Campaign" initiated by General Secretary Tô Lâm explicitly connected President Hồ Chí Minh's historical anti-illiteracy movement with contemporary imperatives for digital competency, framing lifelong learning as both revolutionary heritage and future-oriented necessity.

Despite substantial policy attention and institutional development, Vietnam faces persistent challenges in translating lifelong learning frameworks into workforce quality outcomes commensurate with digital transformation demands. The gap between policy articulation and implementation effectiveness, limited financing mechanisms, urban-rural disparities in learning access, and talent retention difficulties constrain the realization of strategic objectives. Understanding how lifelong learning functions within Vietnam's human resource development strategy, identifying implementation barriers,

and proposing evidence-based recommendations constitute essential contributions to both scholarly understanding and policy development.

This study examines the role of lifelong learning in developing high-quality human resources in Vietnam's digital era. Employing qualitative methodology based on document and policy analysis, the research analyzes Party and State documents, government reports, international organization assessments, and academic literature to understand policy evolution, institutional mechanisms, achievements, and challenges. The study contributes to addressing gaps in existing literature regarding the integrated analysis of lifelong learning, human resource development, and digital transformation within the Vietnamese context.

2. Literature Review

The conceptual foundations of lifelong learning emerged from UNESCO's seminal work in the 1970s. Edgar Faure and colleagues, in the landmark report "Learning to Be," articulated a vision of education extending beyond formal schooling to encompass continuous learning throughout the human lifespan (Faure et al., 1972). Jacques Delors and colleagues subsequently elaborated this vision in "Learning: The Treasure Within," identifying four pillars of education: learning to know, learning to do, learning to live together, and learning to be (Delors et al., 1996). These foundational works established the philosophical premise that education should accompany individuals throughout life, particularly as societies undergo rapid transformation. The learning society concept represents the institutional manifestation of these principles, characterized by universal access to learning opportunities and integration of formal, non-formal, and informal education pathways (UNESCO Institute for Lifelong Learning, 2018).

Human capital theory provides the economic rationale for investment in lifelong learning and human resource development. This theoretical tradition posits that education and training enhance individual productivity, driving economic growth at the national level. In knowledge-based economies, continuous skill development constitutes a critical determinant of both individual employability and national competitiveness (World Bank, 2022). The concept of high-quality human resources, central to Vietnamese policy discourse, reflects this understanding by emphasizing qualitative dimensions of knowledge, skills, and adaptive capacity.

The Fourth Industrial Revolution has intensified the imperative for lifelong learning by accelerating skill obsolescence. The World Economic Forum (2023) projected that 44 percent of workers' core skills would require updating within five years. International Labour Organization (2019) research documented that approximately 70 percent of manufacturing jobs in developing Asian economies face potential automation within two decades. These projections underscore the insufficiency of initial formal education for career-long employability, elevating the importance of systematic reskilling and upskilling mechanisms.

International experiences demonstrate diverse approaches to institutionalizing lifelong learning. Singapore's SkillsFuture initiative exemplifies comprehensive national frameworks integrating individual learning accounts with employer engagement mechanisms. Germany's dual vocational training system emphasizes employer investment, with enterprises contributing approximately 70 percent of training costs, creating strong alignment between training content and labor market requirements (Communist Review, 2014).

Vietnamese perspectives on lifelong learning draw upon both international frameworks and distinctive national traditions. President Hồ Chí Minh's thought on self-learning provides ideological foundations resonating with contemporary concepts, emphasizing that learning must continue throughout life (Communist Review, 2018). Contemporary research has examined Community Learning Centers as grassroots delivery mechanisms and the challenges of extending educational access to remote communities (Ministry of Education and Training of Vietnam, 2008). UNESCO (2025) observed that Vietnam has established digital competency frameworks, though persistent urban-rural divides constrain equitable access to technology-enabled learning (UNESCO, 2024).

Despite extensive policy attention to lifelong learning in Vietnam, significant gaps remain in existing literature. Limited systematic analysis has examined the specific role of lifelong learning in developing high-quality human resources within the digital transformation context. Existing research has insufficiently examined alignment between strategic policy articulation and implementation effectiveness. This study addresses these gaps by analyzing how lifelong learning functions within Vietnam's strategic framework for human resource development in the digital era.

3. Material and Methods

3.1 Research Approach and Design

This study adopted a qualitative research approach grounded in the interpretivist paradigm, which is particularly suited for examining policy frameworks, conceptual relationships, and the dynamics of implementation within specific socio-political contexts. The qualitative orientation enabled an in-depth exploration of how lifelong learning has been conceptualized, institutionalized, and operationalized within Vietnam's national strategy for human resource development during the digital transformation era.

The research design employed document analysis and policy analysis as the primary methodological strategies. Document analysis provided a systematic procedure for reviewing and evaluating both printed and electronic materials, allowing for the examination of policy evolution, strategic priorities, and implementation mechanisms (Bowen, 2009). Policy analysis complemented this approach by offering an evaluative framework to assess the coherence between policy objectives and observable outcomes in the lifelong learning ecosystem.

The analytical framework integrated three interconnected dimensions. The policy dimension examined strategic directions articulated in Party resolutions and government directives. The institutional dimension investigated delivery mechanisms, stakeholder responsibilities, and coordination structures. The outcome dimension assessed documented achievements, persistent challenges, and gaps between policy articulation and implementation effectiveness.

3.2 Data Collection and Analysis

Data collection focused on secondary sources comprising five categories of documents. The first category included Party Congress resolutions, particularly the 13th National Congress documents, and Central Committee resolutions such as Resolution 29-NQ/TW on fundamental education reform and Resolution 52-NQ/TW on Industry 4.0 participation. The second category encompassed government reports and directives from the Ministry of Education and Training and the Ministry of Labour, Invalids and Social Affairs. The third category comprised international organization publications, including reports from UNESCO, the International Labour Organization, and the World Bank addressing Vietnam's education system, labor market, and human capital development. The fourth category consisted of Vietnamese academic publications from reputable journals, notably the Communist Review and the Political Theory Journal. The fifth category included official statistical data on education enrollment, workforce training rates, and digital competency indicators.

Data analysis followed a thematic analysis approach adapted from Braun and Clarke (2006), proceeding through systematic phases of familiarization, initial coding, theme identification, theme review, and theme definition. Content analysis techniques were applied to policy documents to identify recurring concepts, strategic priorities, and implementation mechanisms. Triangulation across multiple source types enhanced the validity and reliability of findings by cross-verifying information from Party documents, international reports, and academic analyses.

This study acknowledged certain limitations inherent to document-based research. The reliance on secondary data precluded direct observation of implementation processes at grassroots levels. Policy documents may present idealized objectives that do not fully reflect ground-level realities. Additionally, the rapidly evolving nature of digital transformation means that some recent developments may not yet be captured in published documents.

4. Results and Discussion

4.1 The Strategic Role of Lifelong Learning in Vietnam's Human Resource Development Policy

4.1.1 Evolution of Party and State Perspectives

The analysis of Party documents reveals a progressive elevation of lifelong learning from a supplementary educational concept to a foundational pillar of national development

strategy. This evolution reflects the Party's deepening recognition that sustainable human resource development in the digital era requires continuous learning throughout the lifespan rather than front-loaded formal education alone.

The 10th Party Congress in 2006 initiated the formal articulation of the learning society concept, stating the need to transition from the existing education model toward an open education model characterized by lifelong education systems, continuous training, and flexible learning pathways that ensure social equity in education (Communist Party of Vietnam, 2006). This foundational statement established the conceptual framework that subsequent congresses would elaborate and operationalize.

The 13th National Party Congress in 2021 elevated human resource development to unprecedented strategic prominence by identifying it as one of three breakthrough areas for national development (Communist Party of Vietnam, 2021). The Congress documents articulated three interconnected strategic breakthroughs: perfecting socialist-oriented market economy institutions, developing human resources with emphasis on high-quality human resources combined with science, technology, and innovation, and constructing synchronous modern infrastructure systems. Notably, the 13th Congress documents introduced "human development" alongside "improving human resource quality" for the first time, signaling a more comprehensive understanding that encompasses not merely workforce skills but holistic individual development aligned with lifelong learning principles (Institute of International Education Research, 2021).

The political commitment to lifelong learning received renewed emphasis through the "Digital Literacy Campaign" initiated by General Secretary Tô Lâm. At the meeting with representatives of the Vietnam Association for Promoting Education in July 2025, President Lương Cường called upon citizens to engage in regular and lifelong learning encompassing not only traditional literacy but also mastery of science and technology, innovation, and digital transformation (Communist Review, 2025a). This campaign explicitly connected the historical anti-illiteracy movement led by President Hồ Chí Minh in the 1940s with contemporary imperatives for digital competency.

4.1.2 Policy Framework Architecture

The policy framework supporting lifelong learning operates through multiple interconnected instruments. Resolution 29-NQ/TW issued by the 8th Plenum of the 11th Central Committee in November 2013, established the overarching framework for fundamental and comprehensive education reform (Central Committee of the Communist Party of Vietnam, 2013). This resolution articulated the objective of completing the national education system oriented toward an open system, lifelong learning, and learning society construction. The resolution mandated transformation from knowledge transmission toward comprehensive development of learner competencies and qualities, explicitly recognizing that such transformation requires learning opportunities extending beyond formal schooling.

Resolution 52-NQ/TW issued by the Politburo in September 2019 addressed Vietnam's active participation in the Fourth Industrial Revolution, identifying human

resource development as critical for capturing opportunities presented by technological transformation (Politburo of the Communist Party of Vietnam, 2019). The resolution emphasized the necessity of reforming education and training to develop human resources capable of adapting to rapid technological change, implicitly requiring continuous skill updating throughout working lives.

The Framework on Building a Learning Society for the period 2012-2020 operationalized these strategic directions through specific targets and implementation mechanisms. According to the UNESCO Institute for Lifelong Learning (2018), this framework established the National Steering Committee on Building a Learning Society with responsibility for coordinating lifelong learning initiatives across ministries and localities. Provincial steering committees were mandated to oversee implementation within their jurisdictions, creating a multi-level governance structure for lifelong learning promotion.

The adoption of the Digital Technology Industry Law in June 2025, which included a dedicated chapter on artificial intelligence, marked a significant milestone in formalizing the legal environment for digital skills development. UNESCO (2025) noted that this legislation, combined with the National AI Strategy adopted in 2021, established frameworks for digital competency development that inherently require lifelong learning approaches, given the rapid evolution of technological capabilities.

4.1.3 Institutional Mechanisms and Delivery Systems

The institutional infrastructure for lifelong learning in Vietnam encompasses formal, non-formal, and informal education pathways. Community Learning Centers constitute the primary grassroots delivery mechanism, with the network expanding substantially since 1997 to provide lifelong learning opportunities at the commune level. According to the national report submitted to UNESCO CONFINTEA, these centers operate under the management of Commune People's Committees through Center Management Committees comprising local leaders and representatives from various sectors, including agriculture, healthcare, and education (Ministry of Education and Training of Vietnam, 2008).

The Vietnam Association for Promoting Education has emerged as a significant institutional actor in lifelong learning promotion. According to former Vice President Nguyễn Thị Doan, Chairwoman of the Association, membership had reached nearly 27 million individuals nationwide as of December 2024 (Communist Review, 2025a). The organizational structure extends from the central level to grassroots units at villages, residential clusters, schools, enterprises, and armed forces units. This extensive organizational network enables mobilization of social resources for learning society construction beyond formal state institutions.

Continuing Education Centers operating at the district level complement Community Learning Centers by providing more structured non-formal education programs, including equivalency programs and vocational preparation. The Ministry of

Education and Training maintains oversight of these centers while provincial authorities bear responsibility for resource allocation and quality assurance.

4.1.4 Integration with Digital Transformation Agenda

The analysis reveals increasing integration between lifelong learning frameworks and Vietnam's digital transformation strategy. The National Digital Competency Framework for Learners established standardized expectations for digital skills across educational levels, while ongoing development of AI competency frameworks for teachers and education managers addresses the pedagogical dimensions of digital transformation. UNESCO (2025) observed that Vietnam has established a strong foundation through the AI in Education Strategy, though continued efforts to strengthen teacher capacity in AI skills and digital pedagogy remain necessary.

According to UNESCO (2025), the digital economy contributed 18.3 percent to GDP in 2024, underscoring the economic significance of digital skills. Internet penetration reached 84.2 percent of the population, creating infrastructure conditions for technology-enabled lifelong learning. The expansion of online learning platforms, particularly accelerated during the COVID-19 pandemic, has created new pathways for continuous skill development that transcend traditional institutional boundaries.

4.2 Achievements, Challenges, and Critical Analysis

4.2.1 Documented Achievements in Education and Training Expansion

Quantitative indicators demonstrate substantial expansion in education and training provision during recent years. According to Vice Minister of Education and Training Phạm Ngọc Thưởng, speaking at the Government's regular press conference in July 2025, STEM field enrollment in higher education increased by 10.6 percent in 2024 compared to 2023, equivalent to more than 60,000 additional students (Government Portal of Vietnam, 2025). The total system comprises 218 training institutions participating in STEM education, with newly enrolled STEM students in 2024 totaling over 218,000, accounting for approximately 36 percent of national enrollment.

Minister of Education and Training Nguyễn Kim Sơn attributed educational achievements during 2020-2025 to synchronized solutions including institutional improvement, enhanced governance capacity, teacher development, infrastructure investment, and expanded international cooperation (Communist Party of Vietnam Online Newspaper, 2025). The proportion of lecturers holding doctoral degrees reached 36.2 percent, while teachers at various levels meeting qualification standards ranged from 90.4 to 99.9 percent.

Infrastructure development has extended educational access to previously underserved populations. The establishment of 100 inter-level schools in border and remote areas by 2025 addressed geographical barriers to education access (Communist Party of Vietnam Online Newspaper, 2025). Vietnamese students' performance at international olympiads continued to demonstrate educational quality, with all 8

members of Vietnam's team winning prizes at the International Artificial Intelligence Olympiad 2025, placing Vietnam fourth among 60 participating countries.

4.2.2 Persistent Workforce Quality Challenges

Despite expansion in educational provision, significant workforce quality challenges persist. Analysis presented in the World Bank's Vietnam Economic Update in August 2022, as cited by economist Phạm Hồng Chương, identified that only approximately 13 percent of Vietnam's workforce possessed formal training qualifications, a rate below regional comparators (World Bank, 2022). This gap between educational expansion and workforce qualification rates suggests a disconnection between formal education outputs and labor market skill requirements.

The challenge of talent retention emerged prominently in World Bank analysis. World Bank Country Director for Vietnam Mariam J. Sherman, speaking in October 2025, indicated that approximately 65 percent of Vietnam's top technology talents were working abroad (World Bank, 2025a). This brain drain phenomenon particularly affects strategic technology sectors where Vietnam seeks to establish competitive positions, including semiconductor design and artificial intelligence development.

World Bank economist Trần Thị Ánh Nguyệt's analysis of Vietnam's semiconductor industry prospects highlighted the human resource dimension of industrial upgrading challenges (World Bank, 2025b). The analysis indicated that semiconductor industry development would require approximately 80 percent of the workforce to possess university-level qualifications, representing roughly ten times the current supply of appropriately qualified personnel. Such dramatic skill requirements underscore the inadequacy of traditional education pathways alone and the necessity for accelerated upskilling and reskilling mechanisms.

International Labour Organization research projected that approximately 70 percent of manufacturing jobs in Vietnam face potential displacement due to automation within two decades (International Labour Organization, 2019). The World Economic Forum (2023), in its Future of Jobs Report, estimated that 44 percent of workers' core skills would change within a five-year period, while projecting that 85 million jobs would be displaced globally by technological change by 2025, even as 97 million new jobs emerge. These projections indicate that Vietnam's workforce faces substantial restructuring pressures requiring systematic reskilling and upskilling responses.

4.2.3 Implementation Gaps and Structural Constraints

The analysis identified significant gaps between policy articulation and implementation effectiveness. UNESCO Institute for Lifelong Learning (2018) documented that the Framework on Building a Learning Society 2012-2020's objectives were not achieved to their full extent despite obtaining important results. Specific limitations included relapses into illiteracy, particularly in hard-to-reach rural areas, underdevelopment of Continuing Education Centers in some rural areas due to pending investments, and inefficient operation of most Community Learning Centers combined with material deficiencies.

UNESCO Institute for Lifelong Learning (2018) further identified limited awareness among various administrative levels and agencies regarding the goals and benefits of learning society construction. The implementation process lacked full enthusiasm from some stakeholders, concrete implementation plans, and effective coordination mechanisms. These findings suggest that institutional capacity and stakeholder commitment constraints impede the translation of strategic policy directions into operational reality.

The urban-rural divide presents a structural challenge for equitable lifelong learning access. UNESCO (2024), in its Global Education Monitoring Report for Southeast Asia, documented a 23-percentage point gap between urban and rural women in ICT skills possession, reflecting broader patterns of digital divide that constrain technology-enabled learning in rural areas. During the COVID-19 pandemic, students from the poorest households were 34 percent less likely to experience distance learning compared to those from the richest households. These disparities demonstrate how socioeconomic inequalities translate into differential learning access.

4.2.4 Critical Analysis of Policy-Practice Alignment

Examination of the relationship between policy objectives and observable outcomes reveals both alignment and divergence. At the strategic level, clear alignment exists between Party directives emphasizing lifelong learning and the institutional architecture established to support learning society construction. The multi-level governance structure, extensive organizational networks, and expanding educational infrastructure demonstrate systematic efforts to operationalize strategic directions.

However, the persistence of low workforce training rates despite educational expansion suggests structural misalignment between educational outputs and labor market requirements. The predominance of theory-oriented curricula in formal education creates graduates whose competencies may not match employer requirements. According to analyses from the Ministry of Education and Training, weak university-enterprise linkages limit practical skill development and employment-relevant training (Ministry of Education and Training of Vietnam, 2021).

The brain drain phenomenon reflects not merely wage differentials but also the quality of professional development opportunities available domestically. High-quality human resources seeking continuous growth may find limited advanced learning and career development pathways within Vietnam, contributing to talent outflows that undermine returns on educational investments.

Resource constraints present fundamental challenges for lifelong learning infrastructure development. Limited research and development investment compared to regional competitors constrains innovation in educational delivery. Community Learning Centers frequently operate with inadequate materials and equipment, limiting their effectiveness as lifelong learning delivery mechanisms (UNESCO Institute for Lifelong Learning, 2018).

4.2.5 Discussion in Relation to International Frameworks

Vietnam's approach to lifelong learning demonstrates substantial alignment with UNESCO's conceptual frameworks while reflecting distinctive national characteristics. The emphasis on learning society construction echoes UNESCO's advocacy since Edgar Faure's 1972 report "Learning to Be" and subsequent elaboration in Jacques Delors' 1996 report "Learning: The Treasure Within" (Faure et al., 1972; Delors et al., 1996). The integration of formal, non-formal, and informal learning pathways corresponds to UNESCO's comprehensive vision of lifelong learning ecosystems.

The incorporation of Hồ Chí Minh's thought on self-learning and lifelong learning provides ideological grounding that connects international concepts with the Vietnamese revolutionary heritage. President Hồ Chí Minh's teaching that learning must continue throughout life and his personal example of continuous self-education offer cultural and political legitimation for lifelong learning promotion (Communist Review, 2018).

Comparison with regional experiences offers instructive contrasts. Singapore's SkillsFuture initiative provides substantial individual learning accounts and coordinates skill development across government, employers, and educational institutions with robust funding mechanisms. Germany's dual vocational training system integrates workplace and classroom learning with employer investment, comprising approximately 70 percent of training costs (Communist Review, 2014). Vietnam's approach, while institutionally elaborate, appears to lack comparable funding mechanisms and employer engagement structures that characterize these successful international models.

The analysis suggests that Vietnam has established necessary but not sufficient conditions for effective lifelong learning ecosystem functioning. Policy frameworks, institutional structures, and organizational networks provide foundational architecture. However, resource constraints, implementation capacity limitations, and coordination challenges constrain the translation of this architecture into outcomes commensurate with the demands of digital transformation and high-quality human resource development.

5. Recommendations

Based on the analysis of Vietnam's lifelong learning policy framework, institutional mechanisms, and implementation challenges, several recommendations emerge for strengthening the role of lifelong learning in high-quality human resource development during the digital era.

First, establishing sustainable financing mechanisms for lifelong learning constitutes a fundamental priority. The current reliance on state budget allocation constrains the scale and quality of learning opportunities available to the workforce. Vietnam should consider developing individual learning account systems similar to Singapore's SkillsFuture Credit, providing citizens with dedicated funds for skill development throughout their careers. Such mechanisms would shift partial responsibility for learning investment to individuals while maintaining state support for priority areas.

Additionally, tax incentives for enterprises investing in employee training could stimulate private sector engagement, addressing the current gap where employer contribution to workforce development remains limited compared to international benchmarks such as Germany's dual system, where enterprises contribute approximately 70 percent of training costs.

Second, strengthening university-enterprise collaboration requires systematic institutional reform. The persistence of theory-oriented curricula disconnected from labor market requirements reflects insufficient integration between educational institutions and employers. Establishing mandatory internship programs, industry advisory boards for curriculum development, and joint research initiatives would create feedback mechanisms ensuring educational outputs align with evolving skill demands. The semiconductor and artificial intelligence sectors, identified as strategic priorities in Resolution 57-NQ/TW, particularly require such collaboration given the specialized competencies demanded and the current gap between workforce supply and industry requirements.

Third, upgrading the capacity and effectiveness of grassroots lifelong learning infrastructure demands sustained investment. Community Learning Centers and Continuing Education Centers represent the primary delivery mechanisms for non-formal education, yet many operate with inadequate resources and limited program quality. Standardizing quality assurance frameworks, professionalizing staff through systematic training, and integrating digital learning resources would enhance these institutions' capacity to serve diverse learner populations. The target of establishing learning communities at commune, ward, and township levels by 2030 requires corresponding resource allocation to achieve meaningful implementation rather than merely formal compliance.

Fourth, bridging the urban-rural digital divide requires targeted interventions ensuring equitable access to technology-enabled learning. The documented 23-percentage point gap in ICT skills between urban and rural populations constrains rural residents' participation in digital learning opportunities. Expanding broadband infrastructure to underserved areas, providing subsidized devices for low-income learners, and developing offline-capable learning resources would address connectivity barriers. Furthermore, digital literacy programs tailored to adult learners with limited prior technology exposure should complement infrastructure investments to ensure effective utilization of expanded access.

Fifth, developing comprehensive policies for talent retention and attraction addresses the brain drain challenge undermining returns on educational investment. The finding that approximately 65 percent of Vietnam's top technology talents work abroad reflects not merely wage differentials but also limited domestic opportunities for professional growth. Creating competitive research environments, establishing clear career advancement pathways, and providing world-class professional development opportunities would enhance Vietnam's attractiveness for high-quality human resources. Diaspora engagement programs connecting overseas Vietnamese professionals with

domestic institutions could facilitate knowledge transfer even when permanent return proves unfeasible.

Sixth, establishing robust systems for recognition of prior learning and micro-credentials would facilitate flexible learning pathways aligned with lifelong learning principles. Many workers possess competencies acquired through informal learning and work experience that formal qualification systems fail to recognize. Developing national qualification frameworks with clear articulation between formal, non-formal, and informal learning outcomes would enable workers to document and build upon existing competencies systematically. Digital credentialing systems utilizing blockchain technology could enhance the portability and verification of learning achievements across institutional and national boundaries.

6. Conclusion

This study examined the role of lifelong learning in developing high-quality human resources in Vietnam during the digital era. Through qualitative analysis of Party and State documents, government reports, international organization assessments, and academic literature, the research revealed both substantial achievements and persistent challenges in translating lifelong learning policy frameworks into workforce quality outcomes.

The analysis demonstrated that Vietnam has progressively elevated lifelong learning from a supplementary educational concept to a foundational pillar of the national development strategy. The 13th National Party Congress's identification of human resource development as a strategic breakthrough, combined with Resolution 57-NQ/TW's emphasis on science, technology, and innovation, reflects the Party's recognition that sustainable development in the digital era requires continuous learning throughout the lifespan. The institutional architecture supporting lifelong learning, including Community Learning Centers, Continuing Education Centers, and the Vietnam Association for Promoting Education's extensive organizational network, provides foundational infrastructure for learning society construction.

Quantitative indicators reveal meaningful progress in educational expansion. STEM enrollment increased by 10.6 percent in 2024, the proportion of lecturers holding doctoral degrees reached 36.2 percent, and Vietnamese students achieved notable success at international competitions, including the International Artificial Intelligence Olympiad. These achievements demonstrate the effectiveness of synchronized policy implementation encompassing institutional improvement, teacher development, and infrastructure investment.

However, significant challenges constrain the realization of strategic objectives. Only approximately 13 percent of Vietnam's workforce possesses formal training qualifications, indicating disconnection between educational expansion and labor market skill requirements. The brain drain phenomenon, with approximately 65 percent of top technology talents working abroad, undermines returns on educational investment.

Persistent urban-rural divides in digital access, with a 23-percentage point gap in ICT skills, constrain equitable participation in technology-enabled learning. Implementation gaps at grassroots levels, where Community Learning Centers frequently operate with inadequate resources, impede translation of strategic directions into operational reality.

The study proposed six recommendations addressing identified challenges: establishing sustainable financing mechanisms, including individual learning accounts, strengthening university-enterprise collaboration, upgrading grassroots learning infrastructure, bridging the urban-rural digital divide, developing talent retention policies, and creating systems for recognition of prior learning and micro-credentials. These recommendations draw upon international experiences from Singapore and Germany while remaining attentive to Vietnam's specific socio-political context.

The findings contribute to understanding how developing countries can leverage lifelong learning frameworks for human resource development amid digital transformation. Vietnam's experience demonstrates that policy commitment and institutional architecture constitute necessary but insufficient conditions for effective lifelong learning ecosystems. Sustainable financing, stakeholder coordination, and implementation capacity at grassroots levels determine whether strategic frameworks translate into workforce quality improvements.

Future research should examine implementation dynamics at provincial and local levels, investigate employer perspectives on workforce competency gaps, and assess the effectiveness of specific interventions such as digital literacy programs. Longitudinal studies tracking learning participation and employment outcomes would provide evidence for policy refinement. As Vietnam pursues its aspiration to become a developed nation by 2045, strengthening the lifelong learning ecosystem remains essential for cultivating the high-quality human resources upon which this transformation depends.

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Conflict of Interest Statement
The author declares no conflicts of interest.

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