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Reimagining Digital Labour Futures in Vietnam: A Causal Layered Analysis Case Study of Socio-Technical Transitions in an Emerging Economy

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ABSTRACT

Vietnam's rapid digital transformation presents a complex paradox: whilst the digital economy demonstrates exceptional growth exceeding 20% annually, the labour market exhibits deepening precarity and structural inequalities. This study employs a comprehensive Futures Studies approach, utilising Causal Layered Analysis (CLA), scenario planning, and the Futures Wheel, to examine Vietnam's digital labour dynamics through in-depth interviews with 28 stakeholders across five categories: workers, employers, educators, policymakers, and futures experts. Grounded in Inayatullah's Six Pillars Framework for futures thinking, the research reveals four distinct layers of causality: surface trends showing accelerated digitisation and gig economy expansion; systemic causes including policy-driven development and legal grey zones; worldviews characterised by pervasive techno-optimism and partnership illusions; and deep myths positioning Vietnam as an "Asian Tiger" pursuing a "Digital Leapfrog." Futures Wheel analysis maps the cascading impacts of widespread AI adoption, while scenario planning identifies four potential pathways, ranging from inclusive digital prosperity to stratified precarity. The findings demonstrate how surface-level economic success can coexist with microeconomic vulnerability when social infrastructure fails to keep pace with technological advancements. This rigorous application of established Futures Studies methods provides empirical insights for managing digital labour transitions in emerging economies, contributing substantial case study evidence and practical policy insights for ensuring equitable development outcomes whilst leveraging technological opportunities.

1 | Introduction

The digital transformation of labour markets represents one of the most profound socio-technical transitions of the contemporary era, fundamentally restructuring employment relationships, skill requirements, and social protection systems (World Bank 2018). Vietnam exemplifies the complexity of this transformation, demonstrating exceptional digital economic growth of over 20% annually while simultaneously experiencing deepening labour market inequalities and institutional gaps (Google and Bain 2023). This paradox, where macroeconomic success coexists with microeconomic precarity, requires analytical approaches that can penetrate beyond surface indicators to reveal underlying structural dynamics and anticipate future trajectories.

Traditional labour market analyses often prove insufficient for understanding such complex, multi-layered phenomena characteristic of wicked problems in postcolonial settings. Linear forecasting methods struggle to capture the nonlinear, qualitative, and cultural dynamics that shape long-term trajectories (Inayatullah 1998, 2004, 2008). Moreover, existing research frequently examines singular aspects of digital transformation - such as platform labour precarity or skills mismatches - without

integrating these into comprehensive systemic analyses capable of informing transformative interventions.

The significance of this research lies in its systematic application of established Futures Studies methods to an emerging economy experiencing rapid technological leapfrogging. Vietnam's digital economy achieved a gross merchandise value (GMV) of $36 billion in 2024, representing 16% growth from the previous year, with projections indicating potential expansion to $200 billion by 2030 (Google and Bain 2024). However, this growth trajectory coexists with significant labour market challenges, including skills gaps affecting an estimated 30% of technology sector positions, and the expansion of the gig economy, which encompasses over 7 million workers operating without traditional employment protections.

This study addresses analytical limitations through a rigorous application of Causal Layered Analysis (CLA) and complementary Futures Studies methods. CLA, developed and continuously refined by Inayatullah (1998, 2004, 2008, 2017) and extended through collaborative scholarship (Inayatullah et al. 2022; Milojević and Inayatullah 2015), provides a poststructuralist framework for deconstructing complex issues across four analytical layers: litany (surface trends), systemic causes (structural drivers), worldviews (cultural ideologies), and myths/metaphors (deep narratives). Complementing this depth-oriented approach, futures methods - including scenario planning and Futures Wheel analysis - enable systematic exploration of potential trajectories and policy interventions (Glenn 2009; Bengston 2016).

The research gap addressed here is threefold. First, whilst abundant literature exists on gig economy dynamics, digital skill mismatches, and technological disruption, few studies integrate these strands within developing country contexts using deep foresight methodologies. Second, CLA remains underutilised in labour market research, particularly in Global South contexts, despite its potential for revealing hidden assumptions and enabling transformative policy discourse. Third, Vietnam-specific research on digital labour futures remains limited, with most analyses focusing on advanced economies or providing purely descriptive assessments.

This study pursues three research questions: (1) How are Vietnam's digital labour dynamics articulated across the four CLA layers? (2) What alternative future scenarios emerge when these insights are synthesised using foresight tools? (3) Which policy interventions are suggested by these scenarios to address identified challenges whilst leveraging digital opportunities?

The research contributes both methodologically and substantively. Methodologically, it demonstrates the analytical power of systematically applying multiple Futures Studies tools within Inayatullah's Six Pillars Framework, offering a replicable approach for other emerging economies. Substantively, it provides actionable insights for policymakers navigating digital transitions whilst illuminating how deep cultural narratives shape technological adoption and resistance patterns in postcolonial settings.

2 | Literature Review

This literature review synthesises key themes for understanding digital labour transformation in emerging economies. The review focuses on four interconnected domains: digital labour transformation patterns, gig economy dynamics, skills evolution, and employment restructuring, whilst establishing the theoretical foundation for applying advanced Futures Studies methodologies.

2.1 | Digital Labour Transformation and Employment Structure Evolution in Emerging Economies

The digital economy has emerged as a critical growth engine in developing countries. Vietnam exemplifies this transformation through investments in information and communication technologies, e-commerce expansion, fintech development, and the integration of digital infrastructure across traditional sectors (Ma 2024). This transformation accelerates economic growth and enhances competitiveness in global markets by fostering digital labour export opportunities and integration into international value chains (Kurian 2025).

Digitalisation constitutes a structural shift in employment patterns, creating new high-skill jobs in e-commerce, fintech, and IT services whilst threatening routine, low-skill roles through automation (World Bank 2018; Huynh et al. 2025). Vietnam's economic trajectory illustrates this "double-edged sword": while labour has shifted from agriculture toward services and manufacturing, many positions remain low-productivity and poorly protected.

The evolution of digital technologies has significantly reshaped labour market dynamics, most notably through the rise of the gig economy, where freelance and short-term contractual work mediated through digital platforms has become increasingly prevalent. Remote work modalities, enabled by digital communication tools and virtual collaboration platforms, allow employees to work flexibly across geographic boundaries, reorganising traditional employment models whilst introducing greater dynamism and adaptability to labour markets worldwide (Kovalchuk and Zaharii 2025).

Studies project that automation could limit traditional manufacturing-led development paths for late-industrialising countries, compelling them to "leapfrog" directly into digital services and higher-value segments (Huynh et al. 2025). Nevertheless, evidence suggests that job polarisation is less advanced in developing economies than in advanced countries - possibly due to the persistence of agricultural and informal sectors - but may intensify as technologies diffuse.

2.2 | Gig Economy Dynamics and Precarity in Developing Contexts

The expansion of the gig economy across the Global South has been promoted as a development strategy to "bring jobs to places that need them" (Graham et al. 2017). However, empirical studies consistently reveal a fundamental duality: whilst gig work provides flexibility and income opportunities, it simultaneously embeds workers in precarious arrangements with limited social protection (De Stefano 2016; Dunn 2020).

In Southeast Asia, food-delivery and ride-hailing platforms exemplify this tension. Algorithmic management and misclassification as "independent contractors" expose workers to health, safety, and income insecurities (Daniels 2024; Vu and Nguyen 2024). Evidence

from Malaysia during COVID-19 demonstrates how displaced workers turned to platform gigs as interim livelihoods, underscoring the sector's role as an economic buffer rather than a sustainable career pathway (Mohd Daud et al. 2024).

The rise of non-standard, platform-mediated work further signals a reconfiguration of employment relationships, complicating social insurance and labour regulation systems. These developments mirror broader concerns in global literature: whilst platform work lowers entry barriers and offers flexibility, it frequently embeds precarity, algorithmic control, and fragmented worker voice - issues already visible in Southeast Asia's rapidly expanding gig sectors.

These findings converge on the urgent need for governance frameworks extending labour rights and social insurance to platform workers in emerging markets. However, such reforms require an understanding of the economic dimensions of platform work and the deeper cultural narratives and worldviews that sustain current arrangements.

2.3 | Digital Skills Transformation and Competency Evolution

Digital transformation accelerates the demand for advanced ICT, data, and problem-solving skills; yet, many workers, including recent graduates, lack these competencies, resulting in persistent digital skills mismatches in developing economies (International Labour Organization 2021; Tee et al. 2024). Large-scale reviews estimate substantial economic losses from unfilled digitally intensive roles, highlighting urgent needs for continuous upskilling, reskilling, and lifelong learning policies.

Evidence from East and Southeast Asia suggests that many graduates and incumbent workers lack advanced ICT and data competencies, constraining inclusive participation in digital economies (World Bank 2018). In Malaysia, employers report significant gaps between the expected and actual digital skills of graduates (Tee et al. 2024). Comparable concerns are evident throughout the region, where limited access to quality digital education, particularly in rural areas, hampers inclusive participation in digital economies.

The literature positions skills mismatch as a central bottleneck in digital labour markets, linking human capital development to broader resilience in labour markets. An exhaustive analysis of online job postings reveals that an overwhelming majority now require digital skills, establishing digital literacy as foundational for economic participation rather than merely specialised competency.

However, these shifts entail challenges, notably increased job insecurity, erosion of traditional labour protections, and the need for robust regulatory frameworks to safeguard workers' rights (Ozerniuk 2025). Simultaneously, growing demand for digital skills emerges as routine tasks become automated and more sophisticated technical capabilities are required, necessitating comprehensive upskilling and reskilling initiatives to address widening skills gaps (Lyaskovskaya 2022).

2.4 | Vietnam's Digital Transformation: Policy Architecture and Implementation Realities

Vietnam's government has positioned the digital economy as a primary driver of growth, targeting 20% of GDP by 2025 and 30% by 2030 through the comprehensive "National Digital Transformation Programme" (Government of Vietnam 2020). This strategy focuses on the development of digital government, economy, and society, creating powerful momentum for technological adoption across sectors.

The state has successfully courted foreign direct investment as a tool for technological upgrading, explicitly targeting "quality" FDI in priority sectors, including high-tech manufacturing and digital services. This approach accelerates the adoption of advanced production methods whilst fueling intense demand for a skilled domestic workforce.

However, significant disconnections exist between these ambitions and labour market realities. A major challenge is the "digital skills gap," as Vietnam has experienced declining rankings in human capital indices despite producing substantial numbers of IT graduates annually (PwC 2021). The education system reportedly lags behind industry needs, with curricula emphasising theoretical knowledge over practical, industry-ready skills.

Most significantly, legal frameworks for traditional employment relationships often fail to address the realities of platform work. Most gig workers operate in legal grey zones, classified as "partners" or "independent contractors" rather than employees, creating substantial protection gaps (Buckley 2023). This leaves workers with entrepreneurship risks but few rewards, generating high vulnerability states that undermine the social contract underlying successful development.

Having established the substantive context of digital labour transformation, gig economy dynamics, skills evolution, and Vietnam's policy architecture, we now turn to the methodological foundation that guides our analytical approach. Section 3 explicates Causal Layered Analysis as the primary framework for understanding these complex, multi-layered phenomena.

3 | Causal Layered Analysis: Methodological Foundation

This Section establishes the methodological foundation for our analysis of Vietnam's digital labour transformation. We explicate Causal Layered Analysis (CLA) as a poststructuralist methodology, particularly suited to examining complex socio-technical transitions, before situating our approach within the broader scholarship of Futures Studies and contemporary methodological developments.

3.1 | CLA's Four-Layer Framework

CLA offers a poststructuralist methodology for addressing complex, multi-level transformations by disaggregating issues into four layers: litany, systemic causes, worldview, and myth/metaphor, revealing how surface phenomena are rooted in deeper narratives and cultural imaginaries (Inayatullah 1998, 2004; Inayatullah et al. 2022). CLA's utility lies not in prediction but in creating transformative spaces for reimagining futures through systematic deconstruction of taken-for-granted assumptions governing social discourse.

Within this framework, CLA operates across four interconnected levels, each revealing different dimensions of reality and enabling different types of interventions (Inayatullah 1998, 2004):

Litany Level: Surface-level data and headlines representing unquestioned reality, often presented as quantitative trends and problems in news media. This level captures what is immediately visible and commonly discussed, but remains trapped in immediate concerns without deeper questioning.

Systemic Causes: Social, technological, economic, environmental, political, and historical factors contributing to observed phenomena. This level moves beyond symptoms to identify the structural drivers and institutional arrangements that create current conditions.

Worldview/Discourse: Deeper cultural structures legitimising systemic causes, reflecting ideologies and paradigms shaping understanding. This level examines the beliefs, values, and ways of knowing that make certain systems seem natural or inevitable.

Myth/Metaphor: Unconscious, emotive dimensions expressed through visual images and stories, representing foundational narratives. This deepest level explores the collective stories and symbolic frameworks that give meaning and direction to social life.

3.2 | Critical Extensions and Contemporary CLA Applications

Since Inayatullah (1998, 2004) foundational articulation, CLA has undergone substantial methodological refinement and critical engagement, culminating in comprehensive assessments of three decades of transformative research (Inayatullah et al. 2022). Recent developments emphasise the integration of narrative dimensions with layered analysis, with narrative foresight emerging as a critical extension that focuses explicitly on the stories individuals, organisations, and societies construct about their futures (Milojević and Inayatullah 2015). This approach strengthens CLA's capacity to reveal how deep metaphors and worldviews shape not merely what futures are anticipated, but which futures are rendered imaginable or unimaginable within specific cultural contexts.

Contemporary scholarship has significantly expanded the application domains of CLA. Riedy (2016) demonstrates how interior transformation - attending to the psychological and consciousness dimensions alongside external structural change - represents an essential pathway toward viable futures, particularly when addressing entrenched systemic challenges. Ramos (2015) traces CLA's methodological evolution, arguing that its "transcendence" lies in the capacity to integrate multiple epistemological traditions whilst remaining accessible to diverse stakeholder groups, a characteristic particularly valuable in cross-cultural and participatory foresight contexts.

Empirical applications in recent years have extended CLA to diverse domains, including labour market transformations. Kozyrev (2025) applies CLA to examine data-enabled futures of learning and employment, revealing how technological platforms reshape not merely skill requirements but foundational assumptions about the purposes of education and work. This application demonstrates CLA's utility for unpacking the paradoxes characteristic of digital transformation - where surface-level opportunities coexist with deeper structural vulnerabilities. Similarly, Inayatullah (2017) employed CLA to analyse teaching and learning futures within employment ecosystems transformed by automation, identifying how alternative scenarios emerge from different combinations of policy responses and worldview shifts.

Methodological innovations have also enriched CLA's analytical toolkit. Minkkinen et al. (2016) systematically examine the role of metaphors in futures research, providing frameworks for analysing how specific metaphorical framings enable or constrain particular policy pathways. A comprehensive bibliometric analysis by Wahab (2024) documents CLA's expansion across geographic regions and disciplinary domains over two decades (2000–2022), identifying key themes, influential scholars, and emerging application areas whilst noting persistent gaps in Global South applications - a gap the present study addresses directly.

These developments collectively position CLA as a mature yet evolving methodology capable of addressing the complex, culturally-embedded challenges characteristic of socio-technical transitions in postcolonial contexts. The methodology's demonstrated capacity to reveal hidden assumptions, integrate multiple ways of knowing, and create transformative spaces for reimagining futures provides strong precedent for its application to Vietnam's digital labour dynamics.

3.3 | Complementary Futures Methods Integration

Beyond CLA, Futures Studies provide systematic methods for exploring uncertainties through scenario planning, Delphi surveys, and Futures Wheel analysis (Barbosa et al. 2022; Bengston 2016; Glenn 2009). Futures Studies embrace the inherent uncertainty and complexity of future developments by mapping multiple potential trajectories based on present actions and emergent social trends, using diverse qualitative, quantitative, and mixed methods to generate alternative narratives.

Complementing CLA's diagnostic capabilities, additional Futures Studies methods enable systematic exploration of alternative trajectories through established approaches:

Scenario Planning: Constructing multiple plausible futures based on key uncertainties and driving forces, moving beyond trend extrapolation to consider discontinuities and alternative development pathways (Schwartz 1991; Van der Heijden 1996).

Futures Wheel Analysis: Mapping cascading consequences of specific trends or decisions across multiple orders of impact, revealing hidden connections and unintended consequences often missed by linear analysis (Glenn 2009).

Participatory Foresight: Engaging stakeholders in collaborative future-building exercises to enhance buy-in and implementation whilst incorporating diverse perspectives and local knowledge.

The application of CLA to labour market research remains limited, especially in Global South contexts, despite its potential for revealing hidden cultural assumptions shaping policy and individual behaviour (Adebowale and Agumba 2022). This underutilisation presents opportunities for advancing understanding of how deep cultural narratives enable and constrain development choices in postcolonial settings.

4 | Theoretical Framework: A Comprehensive Futures Studies Approach Utilising Inayatullah's Six Pillars Framework

This study systematically applies multiple Futures Studies methods grounded in Inayatullah's Six Pillars Framework for futures thinking (Inayatullah 2008). This established framework provides the theoretical foundation for integrating CLA with complementary foresight tools, enabling a comprehensive analysis of current dynamics and a systematic exploration of alternative futures.

4.1 | The Six Pillars Framework as Theoretical Foundation

Inayatullah's Six Pillars Framework offers a structured approach to futures thinking through six interconnected methodological pillars: mapping, anticipating, timing, deepening, creating alternatives, and transforming (Inayatullah 2008). This framework provides the theoretical foundation for combining CLA's analytical depth with scenario planning's strategic foresight capabilities, creating a robust methodology for examining complex socio-technical transitions.

The framework operates on multiple levels simultaneously. The mapping pillar enables systematic exploration of past, present, and future trends through tools such as the Futures Triangle and shared history exercises. The anticipating pillar employs emerging issues analysis and the Futures Wheel methodology to identify and trace the consequences of emerging developments. The timing pillar examines macrohistorical patterns and models of social change to understand the dynamics of transformation.

The deepening pillar utilises CLA to unpack surface phenomena and reveal underlying structural, cultural, and mythological dimensions. The creating alternatives pillar develops multiple scenarios using established scenario planning methodologies. Finally, the transforming pillar narrows focus toward preferred futures and develops actionable pathways for realisation.

4.2 | Methodological Integration and Theoretical Innovation

The theoretical contribution demonstrates how the systematic application of the Six Pillars Framework creates analytical coherence when combining multiple methods of Futures Studies. CLA provides a deep diagnostic understanding of current dynamics, while scenario planning and Futures Wheel analysis enable the construction of robust, creative scenarios that challenge dominant assumptions.

This integration connects critical analysis with practical strategy development, making it particularly suitable for addressing complex digital labour challenges that require a structural understanding and a transformative vision. The methodological rigour stems from using CLA insights to inform scenario construction, ensuring that alternative futures address surface-level problems and engage with deeper worldviews and myths that sustain current arrangements.

Conversely, futures exercises reveal which myths and worldviews enable or constrain desired transformations, feeding back into deeper CLA analysis. This creates a dynamic, iterative analytical process grounded in established theoretical frameworks whilst generating empirically rich insights for policy intervention.

5 | Methodology

5.1 | Research Design

This study employs a qualitative, exploratory design systematically integrating CLA with participatory foresight methods within Inayatullah's Six Pillars Framework (Inayatullah 2008; Ngo et al. 2025). The approach combines interpretive analysis of current conditions with systematic exploration of future possibilities, enabling understanding and action orientation. The research design acknowledges that digital labour transformation involves not merely technical or economic changes, but fundamental shifts in social relations, cultural meanings, and institutional arrangements requiring deep analytical engagement.

The selection of CLA as the primary analytical framework builds upon demonstrated effectiveness in examining complex labour and employment transformations. Recent applications have successfully employed CLA to analyse learning and employment ecosystems disrupted by technological change (Inayatullah 2017; Kozyrev 2025), revealing how surface-level economic indicators often obscure deeper systemic tensions and cultural contradictions. These precedents demonstrate CLA's particular suitability for contexts, such as Vietnam's digital economy, where rapid technological adoption occurs alongside persistent institutional and cultural structures shaped by distinctive historical trajectories. The methodology's poststructuralist orientation enables examination of how postcolonial narratives interact with global technological discourses to shape both opportunities and constraints in emerging economies.

The methodological approach follows established protocols for qualitative futures research (Bell 1997; Slaughter 1996), emphasising iterative analysis, stakeholder engagement, and systematic integration of multiple analytical perspectives. The design enables examination of both manifest and latent dimensions of digital labour transformation, consistent with poststructuralist methodological principles underlying CLA.

5.2 | Data Collection and Sample Description

Sample Composition: In-depth interviews were conducted between March and August 2024 across Hanoi and Ho Chi Minh City with 28 participants across five stakeholder categories:

- Workers ($n = 12$): Students preparing for employment (3), current employees in digital sectors (4), job seekers (2), and gig workers (3). Workers represented a diverse range of skill levels and employment statuses, with ages ranging from 22 to 45. The gig worker sub-category included individuals with specialised technical backgrounds who had transitioned to platform-based work due to labour market conditions.
- Employers ($n = 6$): Technology companies (4) and manufacturing/business enterprises undergoing digitalisation (2). Employer representatives included C-level executives, HR directors, and technical managers from companies ranging from startups to multinational subsidiaries.

- Educators ($n = 4$): IT and AI specialists in higher education institutions, representing traditional universities and specialised technical institutes directly involved in digital skills training.
- Policymakers ($n = 3$): Government officials from the Ministry of Labour, Invalids and Social Affairs, Ministry of Information and Communications, and Ministry of Education and Training, all directly involved in digital transformation and labour policy development.
- Experts ($n = 3$): One international development specialist with expertise in technological foresight, and two economic analysts specialising in Vietnam's digital economy transformation.

Selection Criteria and Sampling Strategy: Purposive sampling targeted individuals with direct experience of Vietnam's digital transformation, following established stakeholder identification protocols in future research (Curry and Schultz 2009). Workers represented diverse employment statuses, skill levels, and geographic locations within major urban centres. Employers included both digital-native companies and traditional enterprises undergoing technological adoption. Educators focused on technical disciplines most relevant to the digital economy's demands. Policymakers represented key ministries involved in labour and digital transformation policies.

The geographic focus on major urban centres reflects the reality that digital transformation primarily affects urban populations initially, acknowledging this as a limitation for rural perspectives. The 2035 time horizon was selected to align with Vietnam's long-term development planning cycles and provide sufficient temporal distance for meaningful scenario development.

Interview Protocol and Data Collection Procedures: Semi-structured interviews lasting 45–90 min explored experiences, perceptions, and expectations regarding digital labour transformation. The protocol was designed to elicit responses corresponding to different CLA layers whilst gathering insights for scenario construction. Questions progressed systematically from factual descriptions (litany level) through structural analysis (systemic level) to deeper explorations of beliefs, values, and symbolic frameworks (worldview and myth levels).

All interviews were conducted in Vietnamese by native speakers, with simultaneous translation verification to ensure conceptual accuracy. Interview locations were selected to ensure participant comfort, with particular attention to power dynamics when interviewing gig workers and other potentially vulnerable populations.

5.3 | Analytical Framework and Data Processing

CLA Application: Interview transcripts were systematically analysed according to the four CLA layers using iterative coding processes informed by established CLA methodological protocols (Inayatullah 2004). Litany-level data included quantitative trends, visible changes, and commonly reported problems. Systemic analysis identified structural drivers, institutional factors, and causal relationships through pattern matching across stakeholder categories.

Through discourse analysis of participants' explanatory frameworks, worldview exploration revealed underlying ideologies, cultural assumptions, and paradigmatic frameworks. Myth/metaphor analysis uncovered deep narratives, symbolic representations, and foundational stories shaping stakeholder perspectives by analysing metaphorical language and narrative structures.

5.4 | Scenario Development Process

Building on CLA insights, four alternative scenarios were developed systematically by combining multiple scenario planning approaches (Van der Heijden 1996; Schwartz 1991). The scenario development process followed established protocols:

Step 1: Driver Identification: Key driving forces and uncertainties were identified from CLA analysis, including technological adoption patterns, policy response capabilities, educational system adaptation, and social cohesion dynamics.

Step 2: Uncertainty Mapping: Critical uncertainties were mapped along two primary dimensions: the speed and inclusiveness of institutional adaptation to technological change, and the degree of social coordination in managing transition costs.

Step 3: Scenario Architecture Development: Following the Intuitive Logics approach to scenario planning, which provides an overarching framework for integrating multiple specific methods, four scenarios were constructed, representing different combinations of these uncertainties. Each scenario is internally consistent and plausible, based on current trends and driving forces.

Step 4: Narrative Development: Detailed scenario narratives were developed, incorporating stakeholder perspectives and grounded in empirical insights from the CLA analysis, ensuring scenarios reflected authentic possibilities rather than abstract constructions.

Our approach integrates classical scenario planning frameworks with insights from critical scenario literature that emerged in the 2000s and 2010s. Narrative foresight (Milojević and Inayatullah 2015) emphasises that scenarios function not merely as plausible projections, but as culturally embedded stories that shape which futures become imaginable and which remain unthinkable. This recognition informed our attention to ensuring scenario narratives resonate with Vietnamese cultural contexts whilst challenging assumptions embedded in dominant development discourses. The integration of narrative considerations with structural analysis strengthens scenario robustness by addressing both material conditions and meaning-making processes through which stakeholders interpret and respond to change. This approach responds to critiques that purely technocratic scenario planning can reinforce existing power asymmetries by privileging certain voices and worldviews whilst marginalising others (Riedy 2016).

Futures Wheel Analysis: The central trend of "Widespread AI Adoption in Manufacturing by 2030" was analysed using the Futures Wheel methodology (Glenn 2009) to map cascading first, second, and third-order impacts. This analysis informed scenario development by revealing potential unintended consequences and systemic interactions.

5.5 | Analytical Rigour and Validation

Multiple analytical techniques ensured methodological robustness, following established protocols for qualitative futures research (Bell 1997). These included pattern matching across stakeholder categories, negative case analysis to identify contradictory evidence, and member checking with selected participants to validate

interpretations. The research team included members with different disciplinary backgrounds (economics, social policy, futures studies) to provide multiple analytical perspectives.

Validation Procedures: Preliminary findings were shared with a subset of participants through follow-up interviews and focus group sessions, allowing for feedback and refinement while enhancing credibility and practical relevance. This participatory validation process also served as an additional data collection method, deepening the understanding of key themes and their implications.

Critical Methodological Reflection: The choice of CLA and complementary futures methods reflects their established effectiveness in analysing complex socio-technical transitions (Inayatullah 2004; Slaughter 1996). Alternative approaches, such as Milojević's transformational foresight methodology, could offer distinct insights, particularly in relation to gender and power dynamics. However, the Six Pillars Framework offers superior integration of multiple analytical levels whilst maintaining theoretical coherence.

The poststructuralist orientation of CLA enables examination of taken-for-granted assumptions shaping digital labour discourse, whilst scenario planning provides concrete frameworks for policy engagement. This combination addresses analytical depth and practical relevance, which are essential for engaging policymakers in complex transformation challenges.

5.6 | Ethical Considerations and Limitations

All participants provided informed consent after receiving detailed information about research purposes, procedures, and potential risks. Interviews were conducted confidentially with anonymised reporting, protecting participant identities. The research received institutional ethics approval from the National Economics University Review Board and adhered to international standards for social science research involving human subjects.

The study's qualitative focus provides analytical depth but limits statistical generalisability to broader populations. Geographic concentration in major urban centres may underrepresent rural perspectives on digital transformation, though this reflects the reality that digital transformation initially concentrates in urban areas. The rapidly evolving technological landscape necessitates regular updating as new platforms and applications emerge.

Scenario projections represent plausible possibilities rather than predictions, with their value lying in stimulating strategic thinking rather than forecasting specific outcomes. The CLA methodology's poststructuralist orientation may not resonate with all policy audiences, requiring careful translation into practical recommendations (Tables 1 and 2).

6 | Results

6.1 | Causal Layered Analysis of Vietnam's Digital Labour Dynamics

6.1.1 | The Litany: Surface Trends and Visible Changes

The surface layer reveals Vietnam's exceptional digital economic performance alongside emerging labour market tensions. The digital economy is demonstrating remarkable growth, exceeding 20% annually, and positioning Vietnam as Southeast Asia's fastest-growing digital market (Google and Bain 2023).

TABLE 1 | CLA analysis summary.

CLA layer	Key characteristics	Primary evidence	Dominant narratives	Intervention points
Litany	- 20%+ digital economy growth - 200,000 annual skills gap - 8.5 million gig workers - Declining gig incomes	Economic statistics, media reports, visible job displacement	"Digital boom and labour challenges"	Policy announcements, skills training programs
Systemic causes	- State-led digital transformation - Formal-informal labour divide - Educational-industry misalignment - Legal framework gaps	Policy analysis, institutional assessment, structural relationships	"Development through technology adoption"	Legal reform, education restructuring, social protection design
Worldview	- Pervasive techno-optimism - "Partnership" ideology - State as digital architect - Meritocratic beliefs	Cultural surveys, stakeholder interviews, discourse analysis	"Technology as progress and individual responsibility"	Narrative change, consciousness raising, alternative development models
Myth/metaphor	- Asian Tiger destiny - Digital leapfrog capability - AI as double-edged sword	Deep cultural analysis, symbolic representation, foundational stories	"Heroic national transformation through technological mastery"	New metaphors, alternative stories, reimagined futures

TABLE 2 | Alternative future scenarios summary.

Scenario	Key characteristics	Policy approach	Technology integration	Social outcomes	Economic performance
Digital dragon roars	Inclusive innovation, proactive reform, comprehensive reskilling	Transformative: New legal frameworks, massive public investment, coordinated strategy	Human-centred: Technology augments rather than replaces workers	High equality, strong social cohesion, rural-urban balance	Sustainable high growth with equitable distribution
Gilded cage	Extreme inequality, technological surveillance, social stratification	Minimal: Market-driven, limited intervention, growth-focused	Efficiency-maximising: Automation prioritises cost reduction over social impact	High inequality, social unrest, authoritarian control	High GDP growth with massive inequality
The bamboo bends	Gradual reform, managed change, stakeholder collaboration	Incremental: Steady improvements, public-private partnerships, evidence-based policy	Balanced: Technology adoption with social consideration	Moderate inequality, stable democracy, gradual improvement	Moderate but sustainable growth
Patchwork economy	Inconsistent development, partial solutions, institutional gaps	Reactive: Ad hoc responses, political constraints, limited coordination	Uneven: Islands of excellence amid persistent gaps	Variable outcomes, regional disparities, ongoing tensions	Erratic growth, boom-bust cycles

E-commerce reached $22 billion GMV in 2024, whilst fintech achieved $149 billion in transaction values.

However, this growth coexists with significant challenges. The skills gap affects an estimated 30% of positions in the technology sector, with annual shortages of 150,000 to 200,000 developers projected through 2026. Simultaneously, the gig economy employs millions of workers under precarious conditions, with average monthly incomes ranging from $200 to $400 after expenses.

Worker Perspectives on Surface Changes:

> *Every day I see new job postings asking for AI skills, but my computer science degree barely covered machine learning basics. It's like the market moved faster than our education system.*
>
> Recent graduate, Computer Science, Hanoi

> *I've been driving for Grab for three years. The income keeps worsening - more drivers, fewer customers, lower rates. I work 12 hours daily but only earn about $300 monthly after fuel and maintenance.*
>
> Gig worker, 28 years old, Ho Chi Minh City

> *The company keeps talking about digital transformation, but they expect us to learn new systems without proper training. It's stressful because I worry about being replaced by younger workers who understand technology better.*
>
> Manufacturing worker, 42 years old

Automation's visible impact manifests through factory closures and job displacement announcements. Several textile and electronics manufacturers have implemented automated production lines, reducing workforce requirements by 30%–50% whilst increasing output quality and speed.

6.1.2 | Systemic Causes: Structural Drivers and Institutional Gaps

Systemic analysis reveals how state-led digital transformation creates conditions for both opportunity and precarity. The government's "National Digital Transformation Programme" successfully mobilises resources and signals priorities, but struggles to upgrade social infrastructure at a comparable pace.

The formal-informal labour market divide represents a critical systemic fault line. Whilst 65% of workers operate informally, new digital platforms create additional informal arrangements disguised as "partnerships." Legal frameworks designed for traditional employment relationships often fail to address the realities of platform work.

Educational system misalignment emerges as another key systemic cause. Despite producing 50,000–55,000 IT graduates annually, curricula emphasise theoretical knowledge over practical, industry-ready skills. Vocational training remains underdeveloped for mid-level technical roles that require both technical and soft skills.

Employer Insights on Systemic Challenges:

> *We spend 6–8 months training new graduates because university curricula lag 2–3 years behind industry needs.*

We need people who can work with cloud architectures and AI frameworks, not just write basic code.

CTO, Technology startup, 150 employees

The labour law is completely outdated in terms of how we operate. We want to offer flexible work arrangements, but the regulations assume everyone works 8-hour days in fixed locations. It creates compliance headaches.

HR Director, E-commerce company

Foreign investors bring advanced technology, but they also bring pressure for immediate productivity gains. We automate not to eliminate jobs, but because global competition demands efficiency.

Manufacturing executive

Infrastructure disparities create additional systemic barriers. While urban areas enjoy robust internet connectivity and digital services, rural regions lag significantly in terms of high-speed access, digital literacy, and technology adoption. This geographic digital divide reinforces existing economic inequalities and limits potential for inclusive growth.

6.1.3 | Worldview/Discourse: Cultural Ideologies and Assumptions

Worldview analysis reveals pervasive techno-optimism as the dominant cultural framework. Survey data indicate that 85% of Vietnamese respondents believe technology presents more opportunities than risks, which is dramatically higher than the global average of 50% (PwC 2021). This optimism is particularly characteristic of youth, who view technology careers as both economically beneficial and patriotically valuable.

However, competing worldviews create tensions. Platform companies promote a "partnership" narrative, emphasising flexibility and entrepreneurship whilst obscuring dependency relationships and risk transfers. Workers partially internalise this discourse whilst experiencing its contradictions through low incomes and insecurity.

The government's worldview positions the state as a digital architect and cultural guardian, simultaneously promoting technological advancement while maintaining regulatory control. This dual perspective explains policies that encourage foreign investment while requiring local partnerships and content controls.

Educator Perspectives on Worldview Tensions:

Students are enthusiastic about AI and see it as their pathway to prosperity. But they don't understand that technical skills alone aren't sufficient - they need critical thinking about how technology shapes society.

AI Professor, Leading technical university

There's this belief that technology will automatically solve our development challenges. But we're seeing how it can also create new forms of inequality if we're not careful about implementation.

Education policy researcher

Young people want to work for tech companies because they represent modernity and success. Traditional manufacturing is seen as backward, even though these jobs often provide more security.

Vocational training director

The "meritocratic" worldview particularly influences educational and career choices, with families investing heavily in technical education, believing it guarantees upward mobility. This creates intense competition for technology roles whilst leaving other essential sectors understaffed.

6.1.4 | Myth/Metaphor: Deep Narratives and Symbolic Frameworks

At the deepest layer, three powerful myths structure Vietnamese digital labour discourse:

"Vietnam as the Next Asian Tiger": This foundational myth positions Vietnam on a heroic trajectory replicating the economic miracles of South Korea, Singapore, and Taiwan. It creates pressure to prioritise high GDP growth and technological advancement as primary success markers, whilst framing social costs as necessary sacrifices for national progress.

"The Digital Leapfrog": Technology is mythologised as enabling Vietnam to bypass traditional development stages and vault directly into knowledge-based economy status. This narrative encourages focus on cutting-edge sectors whilst potentially de-prioritising foundational improvements for broader workforce segments.

"The Double-Edged Sword": AI and automation are simultaneously framed as revolutionary saviours, unlocking productivity, and disruptive threats, causing job displacement. This metaphor creates technological determinism, shifting focus from social choices about technology design toward individual adaptation requirements.

Policymaker Reflections on Deep Narratives:

We must become an Asian Tiger—this is our historical destiny after the wars and reconstruction. Digital technology is our weapon for achieving this status by 2045.

Digital transformation official, Ministry of Information and Communications

Everyone talks about the Fourth Industrial Revolution as inevitable, but we have choices about how to implement it. The question is whether we create prosperity for everyone or just a few.

Labour ministry representative

The 'leapfrog' story is powerful because it gives hope that we can skip the dirty, difficult stages of development that other countries experienced. But maybe some of those stages taught important lessons.

Economic policy advisor

6.2 | Alternative Future Scenarios for Vietnam's Digital Labour (2035)

Based on CLA insights and stakeholder input, four scenarios explore how current tensions might resolve, representing different

combinations of policy responses, technological development patterns, and social adaptation strategies.

6.2.1 | *Scenario 1: "The Digital Dragon Roars" (Optimistic)*

Vietnam successfully navigates digital transition to become an inclusive "Asian Tiger." Proactive policy reforms in the late 2020 s address systemic fault lines identified in the CLA analysis. The 2025 Labour Law is robustly implemented, closing "partner" loopholes and establishing portable social protection for gig workers linked to digital transaction systems.

A "National Reskilling Mission" fundamentally overhauls education and training through public-private partnerships. The industry co-designs curricula that focus on practical skills, successfully closing the skills gap through modular, competency-based programs. This initiative includes rural digital literacy programs and urban-rural technology transfer mechanisms.

FDI shifts from low-cost assembly to high-value R&D, with global technology companies establishing innovation hubs specialising in AI applications for emerging markets. Vietnam becomes a leader in "appropriate technology" development, creating solutions suitable for regional deployment.

Targeted investments bridge the urban-rural divide through innovative agriculture initiatives and rural entrepreneurship programs. By 2035, Vietnam is expected to achieve both rapid growth and equitable distribution, validating the "Digital Dragon" metaphor while avoiding the "Tiger" trap of inequality.

6.2.2 | *Scenario 2: "The Gilded Cage" (Pessimistic)*

Unresolved tensions harden into permanent structural inequality, representing the worst-case evolution of current dynamics. The skills gap becomes an unbridgeable chasm, creating a rigid two-caste society where a small, highly paid tech elite enjoys immense wealth. At the same time, displaced workers flood informal and gig economies.

Widespread automation throughout the late 2020 s is expected to displace millions without adequate reskilling pathways. The gig economy becomes a digitally managed underclass competing for low-wage tasks under algorithmic surveillance. Platform algorithms optimise for efficiency rather than worker welfare, creating a "race to the bottom" in labour conditions.

Social safety nets are overwhelmed, whilst the government celebrates headline GDP figures that mask growing inequality. Rural areas continue to fall further behind as resources increasingly concentrate in technology hubs. Social unrest emerges periodically but is managed through surveillance technologies and economic dependence.

The "Asian Tiger" myth becomes hollow for the majority who remain trapped in precarious arrangements. This scenario represents the failure of current development paradigms to address the social consequences of technological disruption.

6.2.3 | *Scenario 3: "The Bamboo Bends" (Moderate-Optimistic)*

Vietnam implements gradual yet meaningful reforms that address key challenges identified through CLA analysis. Labour protections for gig workers are strengthened through new legal categories that recognise economic dependence while preserving flexibility. Portable benefits systems enable workers to accumulate social protection across multiple platforms and employment types, providing a comprehensive approach to social protection.

Education reforms improve industry alignment whilst maintaining broader humanistic goals. Universities develop closer industry partnerships whilst vocational training expands to serve mid-level technical roles. Lifelong learning systems enable continuous skill updating as technology evolves.

Automation proceeds gradually, allowing time for workforce adaptation through retraining programs and job creation in new sectors. Public–private partnerships successfully retrain displaced workers for emerging roles in healthcare, education, and environmental services.

Urban-rural gaps are narrowing through targeted digital infrastructure investment and support for rural entrepreneurship. This scenario represents successful adaptation to technological change whilst preserving social cohesion.

6.2.4 | *Scenario 4: "The Patchwork Economy" (Muddling Through)*

Critical tensions are managed but never fully resolved, creating a fragmented landscape characteristic of incomplete institutional adaptation. Pockets of world-class technological excellence coexist with persistent challenges in education, labour protection, and regional development.

Education undergoes only incremental reforms, leaving skills gaps as chronic constraints on national competitiveness. Some universities excel in specific technical fields, while others fall behind industry requirements. The quality gap between elite and mass education continues to widen.

New labour laws offer partial protection, with weak enforcement that varies by platform, region, and political priorities. Workers experience inconsistent protection depending on their specific circumstances and location.

Urban-rural divides persist while the economy continues to experience erratic growth, prone to booms and busts. Vietnam avoids societal breakdown but fails to achieve broad-based prosperity, resulting in persistent contradictions between technological advancement and social development.

6.3 | Futures Wheel Analysis: Cascading Impacts of AI Adoption

Futures Wheel analysis maps the potential consequences of "Widespread AI Adoption in Vietnam's Manufacturing Sector by 2030," revealing interconnected challenges that require comprehensive policy responses (Figure 1).

Central Trend: Widespread AI Adoption in Manufacturing by 2030

First-Order Impacts:

- Increased Productivity and 24/7 Operation: Factories achieve higher efficiency, lower error rates, and continuous operation, boosting national manufacturing competitiveness.
- Mass Displacement of Low-Skilled Labour: Millions of assembly line jobs, particularly those held by women in the garment and electronics sectors, are eliminated.

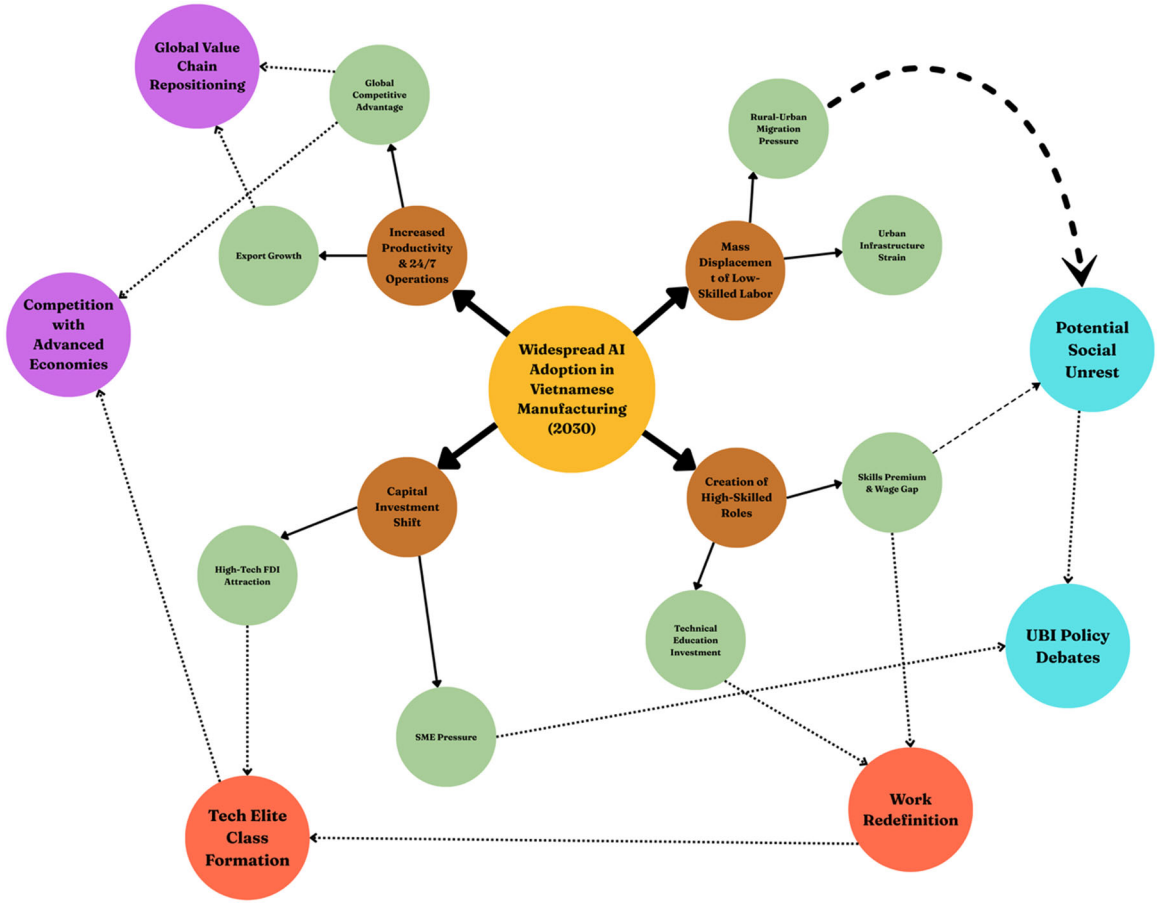

FIGURE 1 | Future wheel analysis: AI adoption in Vietnamese manufacturing.

- Creation of High-Skilled Technical Roles: Demand surges for robot maintenance technicians, automation engineers, AI system supervisors, and data analysts.
- Capital Investment Shift: Massive expenditure required for new machinery and software, shifting economic base from labour-intensive to capital-intensive production.

Second-Order Impacts:

- Economic Ripples: Dramatic wage polarisation between technical specialists and displaced workers; pressure on domestic SMEs unable to afford automation; potential demand contraction from widespread unemployment.
- Social Ripples: Urbanisation surge as rural workers seek opportunities; strain on social safety nets from unprecedented displacement; gendered impact as women hold many assembly jobs.
- Educational Ripples: Crisis in vocational training requiring a complete overhaul toward robotics and mechatronics; curriculum race as universities struggle to create relevant programs.

Third-Order Impacts:

- Political Shifts: Potential social unrest from large disaffected populations; political debates over Universal Basic Income and robot taxation; shifting power dynamics between capital and labour.
- Cultural Transformations: Fundamental redefinition of work's cultural meaning away from manual labour toward knowledge and technical skills; disruption of traditional family structures.
- Geopolitical Repositioning: Vietnam's altered position in global value chains, shifting from a cheap labour source to a high-tech production hub, potentially competing with advanced economies.

Expert Predictions on Future Trajectories:

> *If we automate without planning for social consequences, we'll create massive inequality that could destabilise the entire development model. But using automation to augment human capabilities while ensuring shared benefits could enable unprecedented prosperity.*
>
> Technology futurist, international development background

> *The next five years are critical. Our decisions about education, labour law, and social protection will determine whether technology serves development or undermines it. We're at a historical inflection point.*
>
> Economic policy advisor, government think tank

Vietnamese workers are incredibly adaptable, but they need support systems to manage this transition. The private sector can't handle this alone – it requires coordinated national effort.

Multinational manufacturer executive

7 | Discussion

7.1 | Theoretical Contributions and Empirical Insights

This study demonstrates the analytical power of systematically applying established Futures Studies methods within Inayatullah's Six Pillars Framework to understand complex sociotechnical transitions. The research reveals how surface-level economic success can coexist with deeper structural vulnerabilities when institutional development fails to keep pace with technological advancements, contributing to the literature on technological leapfrogging in emerging economies.

The application of CLA to digital labour dynamics in Vietnam extends existing theoretical frameworks by illuminating cultural and mythological dimensions of technological adoption in postcolonial settings. Previous CLA applications have focused primarily on developed country contexts or abstract policy issues (Adebowale and Agumba 2022). This study demonstrates how the methodology can reveal how narratives of national development intersect with global technological trends to shape policy alternatives.

This application extends recent CLA scholarship in several distinctive ways. While Kozyrev (2025) examined data-enabled futures of learning and employment in advanced economy contexts, and Inayatullah (2017) analysed the impacts of automation on teaching ecosystems, our study represents one of the first systematic applications integrating CLA with participatory scenario planning and Futures Wheel analysis, specifically within an emerging economy experiencing technological leapfrogging. This responds to identified gaps in CLA's geographic and thematic applications, as documented by Wahab (2024) comprehensive review, which noted limited engagement with labour market transitions in the Global South. Methodologically, our development of Reverse CLA tables for each scenario (Table 3) extends analytical tools available to practitioners, enabling more systematic exploration of how alternative futures manifest across all four analytical layers. This innovation builds upon narrative foresight principles (Milojević and Inayatullah 2015) by making explicit the deep stories and metaphors animating each scenario, thereby facilitating more conscious selection among alternative development pathways.

The research reveals how deep myths - particularly the "Asian Tiger" and "Digital Leapfrog" narratives—simultaneously enable rapid technological adoption and constrain policy alternatives. This finding extends poststructuralist development theory by demonstrating how cultural narratives serve as both resources and constraints in development processes.

The study confirms that Vietnam's exceptional digital economic growth (20%+ annually) coexists with deepening labour market precarity, validating concerns about "jobless growth" in technology-driven development models. The skills gap represents more than a technical deficit, constituting

TABLE 3 | Reverse CLA analysis for each scenario.

Scenario	Litany (2035)	Systems	Worldview	Myth/Metaphor
Digital Dragon	• Full employment with dignity • Universal digital literacy • Sustainable prosperity metrics	• Inclusive tech governance • Adaptive education systems • Strong social protection	• Technology serves humanity • Collective prosperity focus • Democratic innovation	• Vietnam as inclusive pioneer • Technology as liberation tool • Harmony between progress & equity
Gilded Cage	• Massive inequality • Surveillance society • Elite prosperity/mass precarity	• Market-driven automation • Minimal social support • Authoritarian governance	• Technological determinism • Individual responsibility • Efficiency über alles	• Social Darwinism triumphant • Technology as master • Progress requires sacrifice
Bamboo Bends	• Gradual improvement • Reduced inequality • Stable institutions	• Balanced tech adoption • Incremental reforms • Stakeholder partnerships	• Pragmatic adaptation • Social market economy • Cautious optimism	• Resilience through flexibility • Technology as tool • Patient cultivation
Patchwork	• Uneven development • Regional disparities • Volatile growth	• Fragmented institutions • Policy inconsistency • Incomplete adaptation	• Competing narratives • Policy uncertainty • Mixed messages	• Vietnam as works-in-progress • Technology as wildcard • Muddling through tradition

fundamental misalignment between educational philosophy and labour market realities.

The finding that 85% of Vietnamese respondents demonstrate techno-optimism (vs. 50% globally) suggests a cultural predisposition toward technological solutions that may obscure attention to institutional adaptation needs. The gig economy operates within distinctive cultural contexts where "partnership" narratives resonate with entrepreneurial aspirations whilst obscuring economic dependence.

7.2 | Methodological Innovation and Systematic Application

While CLA and scenario planning have been employed individually in various contexts, this study demonstrates their systematic integration within the Six Pillars Framework for analysing digital labour transitions. The methodological contribution demonstrates how CLA's depth-oriented analysis can inform scenario construction, ensuring that alternative futures address surface-level problems and engage with deeper worldviews and myths that sustain current arrangements.

The research followed established protocols (Inayatullah 2008; Bell 1997; Curry and Schultz 2009), adapting them to the Vietnamese context. The integration addresses critiques of futures studies as lacking analytical rigour, whilst overcoming CLA's limitation of being stronger on diagnosis than prescription.

Developing Reverse CLA tables for each scenario represents a methodological extension, enabling more profound exploration of how alternative futures might manifest across all analytical layers. This technique provides policy practitioners with more comprehensive tools for understanding transformation pathways.

7.3 | Policy Implications and Strategic Recommendations

The analysis reveals three critical intervention points corresponding to different CLA layers:

Systemic Level Interventions: The study confirms the urgent need for modern labour law to address the realities of platform work. However, CLA analysis suggests extending traditional employment protections may prove insufficient. New legal categories recognising economic dependency, whilst allowing flexibility, could better serve workers and platforms. Portable benefits systems linked to digital identity infrastructure offer practical implementation pathways leveraging Vietnam's advanced digital government capabilities.

The "Digital Dragon" scenario illustrates how comprehensive human capital strategies can address high-skilled technical roles and mid-level positions that are vulnerable to automation. Public-private partnerships aligned with national development goals can close skills gaps whilst maintaining broader educational objectives. Critical digital literacy emerges as essential for empowering workers to navigate algorithmic management and technological change.

Worldview Level Interventions: Beyond technical skills training, the research highlights the need for comprehensive approaches addressing the cultural meanings of work and entrepreneurship. Alternative development narratives emphasising collective prosperity rather than individual competition could create space for more inclusive policies.

The pervasive techno-optimism, whilst enabling rapid adoption, may obscure the need for critical evaluation of technological impacts. Educational approaches emphasising critical thinking about technology's social dimensions alongside technical competencies could create more balanced perspectives.

Myth/Metaphor Level Interventions: The deepest intervention point involves challenging and reconstructing the foundational narratives that shape development choices. Alternative metaphors, such as "technology as a social tool" rather than "double-edged sword," could create space for more democratic governance of technology.

The research suggests Vietnam could pioneer "inclusive tiger" narratives, maintaining growth ambitions whilst prioritising equitable outcomes. The "Bamboo Bends" metaphor offers a culturally resonant alternative emphasising resilience through flexibility rather than rigid competition.

7.4 | Comparative Analysis and Global Relevance

Vietnam's experience offers insights for other emerging economies navigating similar transitions. The tension between state-led development ambitions and market-driven technological change represents a common challenge across Southeast Asia and beyond. Successful navigation requires a simultaneous focus on both economic competitiveness and social cohesion, rather than treating these as sequential concerns.

Comparative analysis with other Asian development experiences reveals both similarities and distinctive features. Like South Korea and Taiwan during industrialisation, Vietnam demonstrates strong state capacity for infrastructure development and economic coordination. However, the contemporary global context, characterised by rapid technological change and platform capitalism, creates new challenges that require innovative policy responses.

The study's findings regarding techno-optimism and digital development narratives may resonate across emerging economies where technology is positioned as a pathway to rapid development. Understanding how these narratives enable and constrain policy options offers insights for development practitioners in similar contexts.

The East Asian development model's emphasis on education and human capital investment offers relevant lessons, although it requires adaptation to the realities of the digital age. Vietnam's challenge lies in maintaining social cohesion while pursuing technological advancement, a challenge similar to those faced by other late-industrialising countries.

7.5 | Limitations and Future Research Directions

Several limitations merit acknowledgement whilst suggesting productive research directions. The qualitative methodology provides analytical depth but limits statistical generalizability to broader populations. Geographic concentration in urban areas reflects the initial urban focus of the digital transformation, but may underrepresent rural perspectives.

The rapidly evolving technological landscape necessitates regular updating as new platforms emerge. However, the methodological

framework proves robust across technological changes, focusing on underlying social dynamics rather than specific technologies.

Future research could extend this methodological approach to other countries and sectors. Comparative CLA studies across emerging economies could shed light on how cultural contexts influence technological adoption patterns. Longitudinal research tracking scenario developments could validate future analysis whilst providing insights into transformation dynamics.

Sector-specific applications could prove particularly valuable, especially in healthcare, education, and financial services, where digital transformation has a significant impact on vulnerable populations. Cross-national studies could illuminate how institutional contexts shape technology adoption and labour market outcomes.

The methodology could be enhanced through integration with quantitative impact assessment, which would help understand how cultural narratives influence measurable outcomes, such as wage inequality or social mobility. Mixed-methods approaches could strengthen theoretical understanding whilst enhancing policy relevance.

7.6 | Implications for Digital Labour Research and Policy Practice

This research contributes to emerging literature on digital labour transitions by demonstrating how systematic application of Futures Studies methods can reveal hidden dimensions of technological change. The study demonstrates that successful digital transformation necessitates both technical capacity building and a fundamental reevaluation of employment relationships, educational objectives, and development priorities.

The scenarios suggest that inclusive digital development remains achievable but requires proactive intervention to challenge current institutional arrangements and cultural assumptions. The research emphasises that technological outcomes are not predetermined but rather reflect political and social choices that are amenable to democratic influence.

The study offers policy practitioners a framework for managing technological transitions, striking a balance between economic competitiveness and social cohesion. The CLA-informed scenarios provide concrete tools for strategic planning, while the Six Pillars Framework offers a replicable methodology that can be applied in other contexts.

The research demonstrates that alternative futures remain possible, but their realisation requires conscious intervention, challenging dominant narratives and creating space for more democratic technology governance. As digital transformation continues to reshape labour markets globally, tools for understanding and guiding these changes become increasingly vital for ensuring technological capabilities serve broader human development goals.

8 | Conclusion

This study employed a comprehensive Futures Studies approach utilising Causal Layered Analysis, scenario planning, and Futures Wheel analysis within Inayatullah's Six Pillars Framework to examine Vietnam's digital labour transformation. The research demonstrates how the systematic application of established foresight methodologies can reveal the complex dynamics shaping emerging economy transitions, showing that surface-level economic success coexists with deeper structural vulnerabilities when social infrastructure development fails to keep pace with technological advancements.

The key theoretical contribution is demonstrating how rigorous application of the Six Pillars Framework enables integration of multiple Futures Studies methods while maintaining analytical coherence. The research illuminates how cultural narratives of national development intersect with global technological trends to shape policy choices and individual responses. Identifying techno-optimism, partnership illusions, and development myths provides insights relevant beyond Vietnam's specific context, offering frameworks for understanding how deep cultural structures enable and constrain technological transitions.

Substantively, the research reveals that Vietnam's digital transformation embodies a fundamental paradox: exceptional economic growth coexists with deepening labour market precarity because technological advancement proceeds faster than institutional adaptation. The skills gap, the expansion of the gig economy, and the threat of automation represent not merely technical challenges but manifestations of deeper tensions between development ambitions and social protection needs.

The four scenarios developed through systematic analysis—from the inclusive "Digital Dragon Roars" to the stratified "Gilded Cage"—demonstrate that technological outcomes reflect political and social choices amenable to democratic influence. The Futures Wheel analysis reveals that seemingly technical decisions about automation have cascading social consequences, requiring comprehensive policy responses that address legal frameworks, education systems, and social protection mechanisms.

The study provides policy practitioners with a framework for managing technological transitions that considers both economic competitiveness and social cohesion simultaneously. The research emphasises that successful digital transformation requires technical capacity building and fundamental rethinking of employment relationships, educational purposes, and development priorities. The scenarios suggest that inclusive digital development remains achievable but requires proactive intervention, challenging current institutional arrangements and cultural assumptions.

The methodological framework provides replicable approaches for other emerging economies navigating similar transitions. By combining systematic causal analysis with participatory future-building, the approach enables both understanding of current dynamics and practical engagement with alternative possibilities. This addresses persistent gaps between academic research and policy practice while maintaining analytical rigour and transformative orientation.

Future research could extend this approach through comparative studies across different countries and sectors, longitudinal tracking of scenario developments, and integration with quantitative impact assessment methodologies. As digital transformation continues to reshape labour markets globally, tools for understanding and guiding these changes become increasingly vital for ensuring technological capabilities serve broader human development goals rather than merely economic efficiency.

The study concludes that Vietnam stands at a critical juncture where current development choices will determine whether technology serves inclusive prosperity or exacerbates inequality. The research suggests that alternative futures remain possible, but their realisation requires conscious intervention, challenging dominant narratives and creating space for more democratic technology governance. The systematic application of Futures Studies methods within the Six Pillars Framework provides both analytical tools and practical frameworks for supporting such transformative interventions whilst maintaining scholarly rigour and empirical grounding.

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Ethical Statement

This study was conducted in accordance with the ethical standards and guidelines set forth by the Committee of Scientific and Training of the National Economics University (NEU), Vietnam. The committee reviewed and approved the research proposal to ensure adherence to ethical research practices.

Consent

All participants in this study provided informed consent before their involvement. The consent process included clear information about the study's purpose, procedures, potential risks and benefits, and the voluntary nature of participation. Participants were informed of their right to withdraw from the study without consequence.

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

The data supporting this study's findings are available from the corresponding author, Quoc Dung NGO, upon reasonable request. The data is not publicly available due to privacy and ethical restrictions.

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