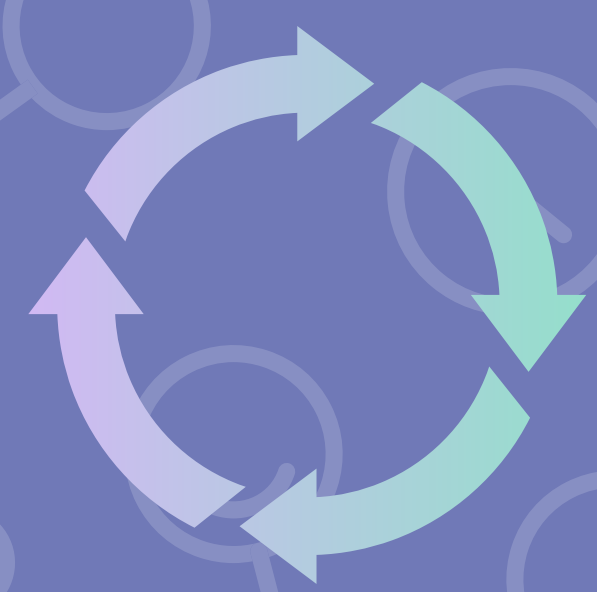




A Systems Lens on AI-Driven Job Redesign and Early-Career Adaptation

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INTRODUCTION:

The AI Paradox in Focus

Artificial intelligence is rapidly transforming work. Some employees use AI to enhance efficiency and autonomy, while others face increased workload, decreased trust, and weakened control (Babashahi et al., 2024; Schiavo et al., 2024; van den Broek, 2025). These differences cannot be fully explained by individual traits; the interaction between AI adoption and organizational environments forms dynamic feedback processes.

Problem Statement

For 24-30-year-old ICT workers, algorithmic workflows can either amplify workload and surveillance or foster autonomy and learning. Small early differences compound into divergent career paths. Yet existing research rarely examines how AI adoption and organizational governance interact over time to shape workload, trust, and autonomy.

Research Questions

RQ1: How do AI adoption and organizational governance mechanisms interact over time to shape the workload, trust, and autonomy of early-career ICT workers?
RQ2: What underlying feedback structures explain the divergent employee trajectories observed in AI-integrated workplaces (empowerment vs. control)?

METHOD:

Why System Dynamics?

Traditional cross-sectional surveys and linear models cannot capture the complex, dynamic relationships in AI-driven job design (e.g., time lags between skill development and autonomy, tipping points where empowerment turns into control). System Dynamics (SD) constructs causal feedback structures and simulates behavior over time (Jo et al., 2023).

Interviews



- Sample: 16 early-career ICT employees in China (ages 24–30, avg. 26.4; experience 3–8 years, avg. 3.9 years).
- Roles: Software developers, data analysts, product managers, operations, video editors, finance, project managers.
- Sectors: Internet platforms, telecom, software services, e-commerce, industrial automation.
- Ownership types: SOEs, private, Hong Kong capital, multinational subsidiary.
- Procedure: Online interviews (30–65 min), audio-recorded, transcribed, thematic analysis.

Results:

Key Variables & Behavior Over Time

Dimension	Key Variables
Workload	Task Automation, Algorithmic Monitoring, Work Pace, Error Rate
Trust	AI Transparency, Fairness Perception, AI Literacy, Anxiety, Delegation Intention
Autonomy	Task Discretion, Diversity of Skills, Algorithmic Prescription, Output Verification

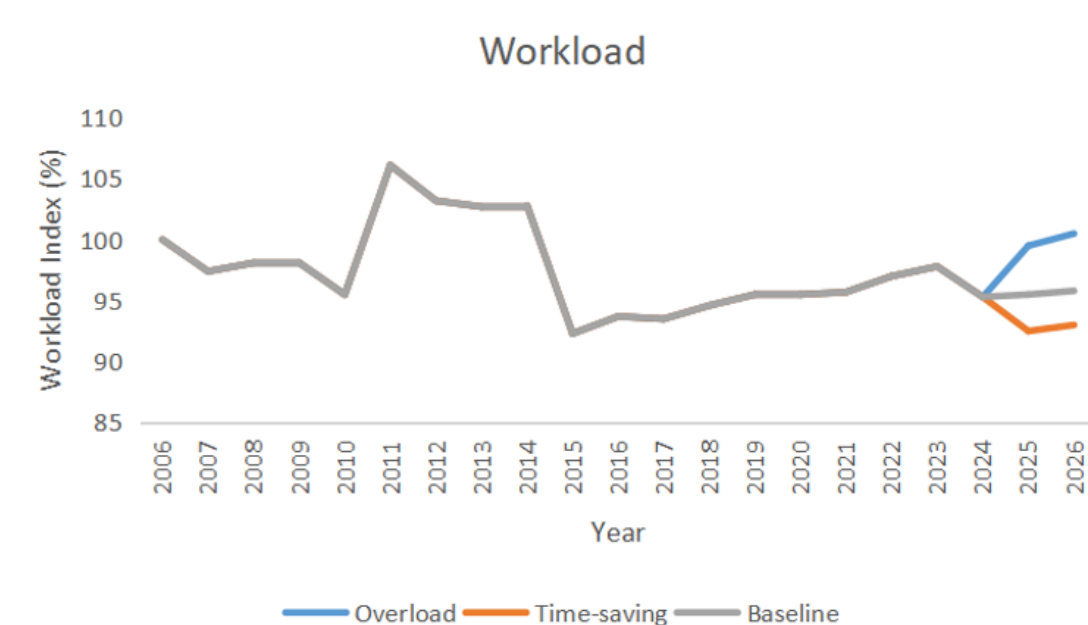


Fig 1. Based on the China Labor Statistical Yearbook from 2006 to 2024, the period from 2025 to 2026 is divided into the "overload" and "time-saving" paths. Qualitative evidence: "The boss knows that AI can assist..." and "will give you more tasks." (Interviewee 6)

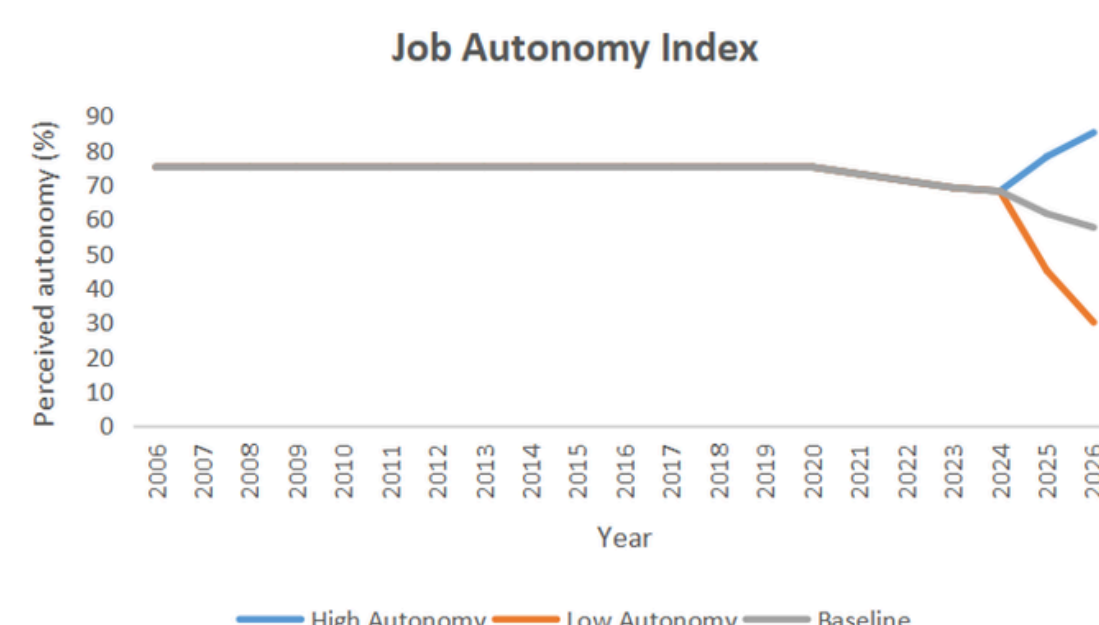


Fig 2. High autonomy from 2006 to 2020 (~80%), continued decline from 2021 to 2024, and split into empowerment path and control path from 2025 to 2026. Qualitative evidence: "The company stipulates that..." algorithms must be used... you do not have the authority to modify or adjust them." (Interviewee 16)

Analysis

Role Differentiation in Human-AI Collaboration

The interview data reveal two distinct roles among early-career workers:

- Monitors: "All we need to do is supervise its implementation and data effects" (Interviewee 8).
- Co-creators: "The AI program assistant I wrote helped me complete the task; efficiency has significantly improved" (Interviewee 6).

This differentiation corresponds to the human-machine labour division typology proposed by He & Yan (2024).

Key Findings: Feedback-Driven Divergence

- The CLD analysis indicates that the organizational feedback structure can lead to different development trajectories. The identified reinforcing cycles (R1, R2) and balancing cycles (B1, B2) are all based on our interview data and have received empirical support. This reveals that initial minor differences such as training, transparency, and workload gradually accumulate and eventually lead to an equilibrium state of empowerment, overload, or control.
- Behavior-over-time simulations forecast three equilibria in the coming years: empowerment, overload, and control.
- The policy environment for artificial intelligence in China and the market-driven skills upgrading have accelerated the dominance of the reinforcing cycle. National strategies may strengthen the reinforcing cycle by mandating skills upgrading.
- For ICT managers, proactive management support and transparency are necessary conditions for activating the reinforcing cycle.

System Dynamics Core: Reinforcing and Balancing Feedback Loops

Reinforcing loops drive the empowerment trajectory:

- Productivity loop (R1): Task automation elevates managerial performance expectations, increasing reliance and further automation.
- Skill empowerment loop (R3): Skill development investment amplifies perceived autonomy, creating upward mobility spirals.
- Trust building loop (R2): Positive use experiences enable exponential trust growth.

Balancing loops expose the dark side of AI adoption:

- Work intensification balancing loop (B1): Increased task volume generates negative attitudes, reducing AI reliance. This mechanism operates with a time delay, explaining why early empowerment narratives fail to capture mid-term burnout dynamics observed in our longitudinal coding.

Key Feedback Loops

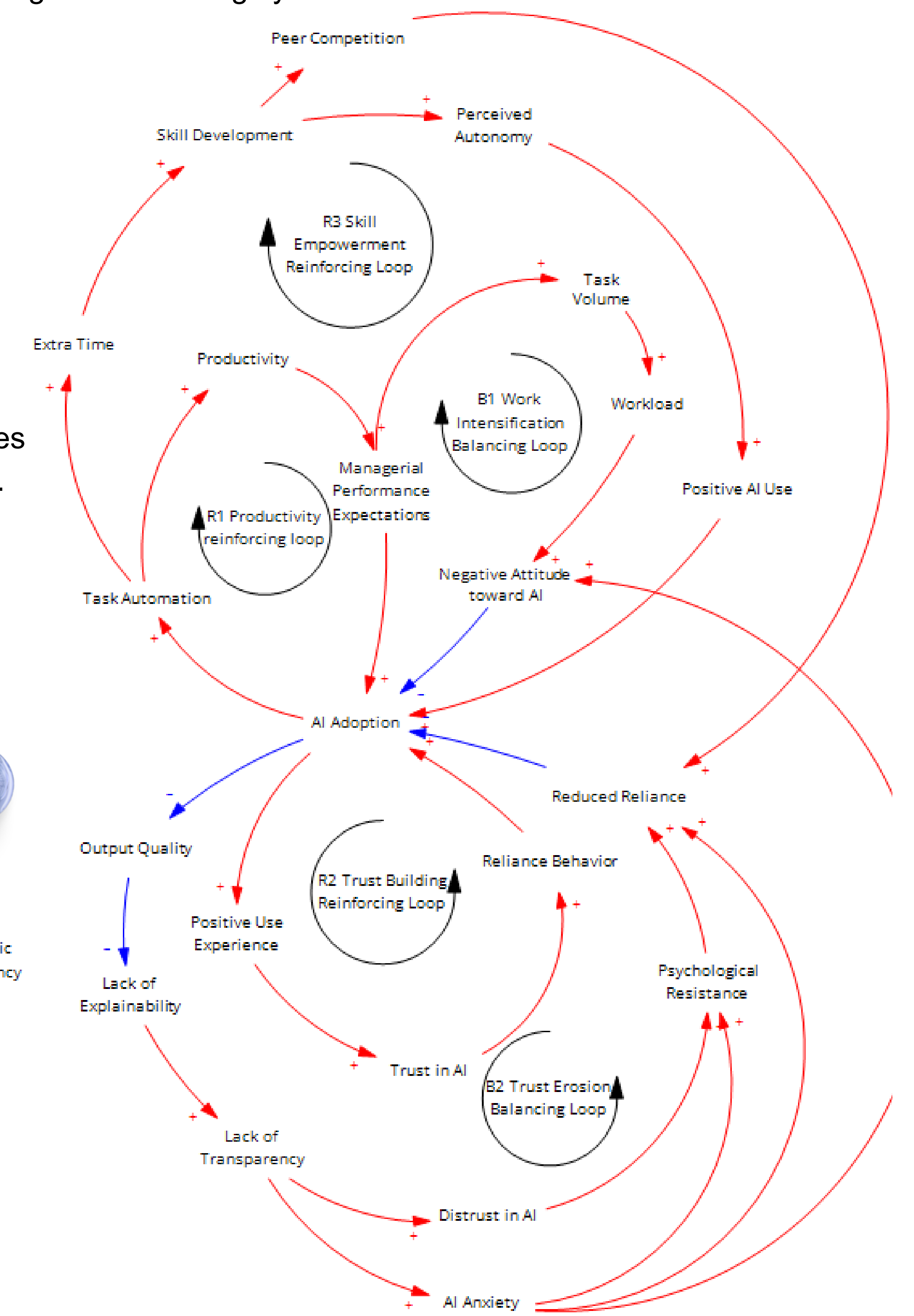
- R1 – Productivity-Expectation Reinforcement: Task automation → productivity gains → managerial expectations → further AI adoption.
- B1 – Work Intensification Balancing: Increased task volume → negative attitudes → reduced AI reliance.
- R2/B2 – Trust-Control Dynamics: Positive AI use → trust → reliance (R2); lack of transparency → distrust → psychological resistance (B2).

Loop	Interviewees	Core Themes
R1 (Productivity-Expectation)	5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16	task overload, tightened DDL
R2 (Trust-Skill)	4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16	role shift, skill upgrade, autonomy
B1 (Workload-Adjustment)	5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16	workload multiplication, stress feedback
B2 (Prescription-Autonomy)	4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16	algorithmic control, restricted discretion, no appeal

Based on 16 semi-structured interviews with early-career workers (aged 24–30), thematically coded into feedback loops.

System Archetype: Success to the Successful

Initial advantages in AI training or autonomy generate reinforcing loops (skill empowerment). Early workload increases or opacity trap employees in balancing loops. Small early differences compound into divergent career trajectories.



CONCLUSIONS:

- AI-driven job redesign is a dynamic feedback system, not a linear process.
- Without intervention, small early differences (training access, transparency, workload) widen into divergent career paths.
- Organizational governance (transparency, skills investment, workload caps) can shift the system toward stable adaptation.

Limitations

- Data from China's ICT sector may not generalize to other industries or countries.
- CLD is conceptual; future work should develop stock-flow simulation models.
- Cross-sectional interview data limits causal inference; longitudinal tracking needed.
- Policy recommendations not yet tested in real organizational environments.

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