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Influencing Factors and Improvement Strategies of IT Employees' Work Performance under the Background of Digital Transformation

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Abstract

With the deepening of digital transformation, IT enterprises are not only the core practitioners of technological innovation but also the active implementers of their own digital transformation. As key executors of technological implementation, the work performance of IT employees directly determines an enterprise's innovation outcomes and market competitiveness. This paper takes IT employees' work performance as the research object and focuses on the heterogeneous characteristics of employees in positions such as R&D, operations, product management, and project implementation. Through a combination of literature review and interviews, it systematically identifies the key influencing factors at the individual, organizational, leadership, and technological levels. It further proposes theoretical propositions explaining how these factors may interact to influence performance outcomes in different roles. Based on these conceptual insights, the paper develops role-specific performance improvement strategies. The study aims to provide theoretical foundations and practical guidance for IT enterprises to implement refined performance management in the digital era.

Keywords

Digital Transformation, IT Enterprises, Employee Work Performance, Influencing Factors, Employee Heterogeneity

1. Introduction

Digital transformation is profoundly reshaping corporate value creation and competitive structures. IT enterprises, while providing digital solutions for other in-

dustries, must also complete their own digital reconstruction. In this context, the rapid iteration of technology, rising project uncertainty, and blurred work boundaries intertwine, making the mechanism of employee performance formation more complex and dynamic. Unlike previous studies that focused on organizational performance, this paper emphasizes individual employee work performance, adopting Borman and Motowidlo's (1993) classic division of task performance and contextual performance. Task performance reflects the completion of core job responsibilities—such as code delivery quality for R&D staff or system stability for operations engineers—while contextual performance manifests in cross-team collaboration, knowledge sharing, and mentoring, which facilitate organizational synergy. This paper addresses three key research questions: 1) What new or altered factors affect employee work performance in a digital versus non-digital environment, and how have their mechanisms and strengths changed? 2) How do employees in different IT positions—R&D, operations, product, and project implementation—exhibit heterogeneity in these effects? 3) How should enterprises formulate precise, job-oriented performance improvement strategies based on the role of differentiation?

This study seeks to provide both theoretical and practical foundations for achieving synergy between employee capability development and organizational goals in the era of digital transformation.

2. Literature Review and Comparative Analysis

2.1. Studies on Influencing Factors of Employee Performance under Digital Transformation

Employee work performance refers to the extent to which an employee contributes to organizational goals through their behaviors and outcomes in a given role. Task performance emphasizes responsibility fulfillment and quality, while contextual performance focuses on cooperation and organizational support—both being crucial indicators of employee value.

Under digital transformation, researchers have explored influencing factors from multiple dimensions.

- Individual Level: Digital literacy is seen as the intrinsic driver enabling employees to adapt to new technologies and workflows, encompassing technical learning ability, data thinking, and digital problem-solving. These capabilities influence self-efficacy and learning transfer, thereby improving performance (Ma & Guo, 2023; Dang & Li, 2023).
- Organizational Level: An open, collaborative, and tolerant culture (Liu & Qin, 2025), as well as clear boundary management of after-hours communication (Cheng et al., 2023), enhances employee engagement and performance.
- Leadership Level: Digital leadership (Li et al., 2025), empowering leadership, and spiritual leadership (Liu et al., 2023; Li & Sheng, 2024) promote self-esteem and intrinsic motivation through empowerment and vision sharing, thereby improving performance.

- Technological Level: Wu et al. (2020) found that both frequent and overloaded use of enterprise social media positively affect performance, while technological complexity—by increasing learning cost and cognitive load—negatively impacts performance through job burnout (Liu et al., 2024).

2.2. Changes in Influencing Factors under Digital Transformation

Digital transformation has introduced new key factors and altered the strength and role of existing ones.

- New Key Factors: Digital literacy has become the foundational threshold for employees to adapt to new tools and workflows. Enterprise social media usage now serves as an important variable affecting information transmission and collaboration efficiency. Moreover, digital leadership has emerged as a distinct factor, functioning as the crucial link between organizational digital strategies and employee performance.
- Changes in Effect Strength: The negative impact of technological complexity has been amplified amid frequent framework updates and tool replacements. The importance of work-life boundary management has grown with remote collaboration and instant messaging.
- Shifts in Role: Leadership has evolved from traditional supervision and control toward digital empowerment and meaning-making. Similarly, organizational climate has shifted from encouraging business innovation to emphasizing collaboration and tolerance for technological experimentation.

Although existing studies identify influencing factors, few focus specifically on IT enterprises or account for employee heterogeneity. This paper therefore explores the mechanisms of these factors based on IT employee heterogeneity and proposes improvement strategies accordingly.

3. Identification of Influencing Factors in IT Employee Performance under Digital Transformation

This study adopts a qualitative exploratory approach to conceptualize how digital transformation affects IT employee performance across different roles.

Semi-structured interviews were conducted with 20 IT professionals across R&D (6), operations (5), product (5), and project (4) implementation roles, drawn from five companies (two large-scale enterprises, two SMEs, and one startup) and included both junior staff and senior managers to capture a range of perspectives on performance formation. Interview Focus on perceptions of performance challenges, leadership effectiveness, technological adaptation, and organizational support.

Interview data were transcribed and analyzed using thematic analysis. Initial open coding identified recurring concepts, which were then grouped into higher-order categories corresponding to the four analytical levels (**Table 1**). Triangulation with literature findings enhanced reliability, and contrasting views between employee groups were carefully examined to identify role-based heterogeneity.

Table 1. Influencing factors of IT employee performance under digital transformation.

Level	Factor	Core Concept	Possible Relationship	Typical Roles
Individual	Digital literacy	Technical learning, data thinking, digital problem-solving	Positive	All, esp. R&D&Ops
Organizational	Tolerant culture	Acceptance of trial and error	Positive	R&D
	Work-life boundary management	Rational boundary setting	Positive	Ops
Leadership	Digital leadership	Trend insight, goal decomposition, resource coordination	Positive	All
	Empowering leadership	Autonomy and decision-making delegation	Positive	R&D
	Spiritual leadership	Value-driven guidance and motivation	Positive	All
Technological	Enterprise social media	Information sharing & collaboration efficiency	Positive	Product, Project
	Tool adaptability	Tool-task compatibility	Positive	R&D, Ops
	Technological complexity	High learning cost, low compatibility	Negative	R&D, Ops

Within IT enterprises, employees in different positions vary greatly in job content, skill requirements, and performance standards. Based on literature and interviews: R&D employees are driven by innovation and problem-solving, sensitive to digital literacy, technological complexity, organizational tolerance, and empowering leadership. Operations employees focus on system stability and rapid response, highly influenced by tool adaptability and work-life boundary management. Product employees rely on information integration and communication, with enterprise social media as a critical factor. Project implementation employees emphasize coordination and client satisfaction, making spiritual leadership particularly vital. Digital leadership positively impacts all positions.

4. Discussion

4.1. Individual Level—Digital Literacy

Digital literacy, encompassing technical learning, data thinking, and digital problem-solving, enhances employees' adaptability and problem-solving, directly improving task performance. Employees with high digital literacy are also more likely to share knowledge and collaborate across teams, thus improving contextual performance.

For R&D staff, it facilitates mastery of new frameworks and data models, boosting code delivery and cross-team collaboration. For operations staff, it enhances tool use and risk prevention capabilities. For product staff, it enables data-driven decision-making and cross-department communication. For project staff, it improves the use of project management tools, enhancing client responsiveness.

4.2. Organizational Level—Tolerant Culture and Boundary Management

A collaborative and error-tolerant organizational culture fosters psychological security among employees. Given the inherently innovative and unpredictable nature of IT projects, staff inevitably incur trial-and-error costs during R&D or solution design. By creating a fault-tolerant environment, organizations can alleviate employees' fear of failure, encouraging bold experimentation with cutting-edge technologies and innovative ideas—particularly beneficial for R&D personnel. However, this positive impact requires coordination with boundary management. For operations staff, whose 24/7 readiness often leads to frequent nighttime alerts and off-duty communications, such an environment risks causing sleep deprivation and burnout. Inappropriate boundary management practices may ultimately undermine the benefits of a fault-tolerant culture.

4.3. Leadership Level—Digital, Empowering, and Spiritual Leadership

IT managers with digital leadership skills can translate macro technical trends into specific project goals and clarify the responsibilities of each role, such as the R&D role responsible for model integration and the product role responsible for demand alignment. This provides direction for all employees and makes them highly engaged in their work.

Empowering leadership empowers teams by granting decision-making authority and operational autonomy. For instance, allowing R&D teams to independently select development tools and schedule projects fulfills their need for autonomy while strengthening their sense of responsibility and ownership.

Spiritual leadership, on the other hand, enhances organizational pride across all roles by articulating the value and significance of work. This approach particularly stimulates enduring intrinsic motivation and creativity when tackling monotonous or high-stakes tasks.

4.4. Technological Level—Tool Adaptability, Enterprise Social Media and Technological Complexity

At the technical level, it affects the performance output by influencing the work efficiency and cognitive load of employees, and it presents the two-way characteristics of positive empowerment and negative interference.

Positively, adaptable tools and enterprise social media reduce operational costs and accelerate communication. For R&D employees, seamless, user-friendly tools reduce debugging time and increase code delivery rates. For operations employees, real-time monitoring and automation tools enhance system availability. For product and project employees, enterprise social media facilitates cross-department information sharing and experience exchange, improving collaboration and reducing delays.

Negatively, technological complexity increases learning costs and cognitive

burdens, impairing performance—particularly for R&D and operations staff. Frequent learning of new frameworks and compatibility challenges between systems heighten workload and indirectly harm performance by inducing burnout.

4.5. Interactions between Influencing Factors

A key insight emerging from interviews is that factors interact dynamically rather than operate in isolation. For instance, digital literacy moderates the negative effects of technological complexity—employees proficient in digital tools report reduced cognitive overload and better adaptability. Similarly, empowering leadership enhances performance primarily when paired with a tolerant organizational culture that allows for risk-taking and error recovery. Conversely, excessive technological change without adequate digital leadership may create stress and diminish contextual performance.

Therefore, the study further conceptualizes a multi-level performance ecosystem, where individual digital capabilities, leadership styles, and organizational systems jointly shape outcomes. Digital literacy not only drives task efficiency but also strengthens contextual collaboration when combined with supportive tools and leadership. Meanwhile, work-life boundary management moderates the strain from digital overload, particularly for operations staff facing constant availability pressures. These dynamic interactions imply that IT employee performance under digital transformation is an emergent result of cross-level synergies, not additive effects.

5. Performance Improvement Strategies Based on Employee Heterogeneity

Given the differentiated roles, IT enterprises should abandon one-size-fits-all management and adopt precise, position-specific strategies.

5.1. R&D: Building an Innovation-Tolerant and Capability-Enhancing Environment

The interviews suggest that R&D staff perform best when supported by a psychologically safe and experimentation-friendly environment. Therefore, enterprises are encouraged to institutionalize fault tolerance—for instance, through a trial-and-error record system that distinguishes exploratory failures from performance deficiencies. This structure not only legitimizes risk-taking but also enhances self-efficacy and intrinsic motivation.

In addition, structured mentorship and peer-learning mechanisms should be developed to strengthen digital literacy and adaptability to technological change. Pairing junior developers with senior engineers or architects helps sustain learning transfer and mitigates the negative influence of technological complexity. These initiatives are particularly critical in organizations experiencing rapid tool or framework turnover, where cognitive demands are high.

5.2. Operations: Establishing Intelligent Operations and Boundary Protection Systems

Operations employees face persistent tension between system stability requirements and work-life balance. Organizations may introduce AI-based monitoring and tiered alert mechanisms that automatically classify issues by severity, allowing on-call teams to respond proportionally. This reduces redundant interruptions and improves operational focus. Complementary policies—such as transparent scheduling, compensatory rest, and recognition for off-hour interventions to reinforce equitable workload distribution and protect employees' recovery time.

5.3. Product: Creating a Data-Driven and Asynchronous Collaboration Platform

Product teams depend heavily on information integration and cross-functional coordination. The interviews suggest that collaboration efficiency improves when enterprises implement centralized data platforms and asynchronous communication mechanisms.

By integrating diverse data sources—customer feedback, project metrics, and market analytics into a unified system, teams can base decisions on shared evidence rather than intuition. Asynchronous channels, such as enterprise social media and collaborative documents reduce meeting fatigue and accommodate flexible schedules across departments.

Enterprises should also institutionalize continuous data-literacy training that covers interpretation, visualization, and ethical data use. These initiatives support evidence-based decision-making while acknowledging variation in employees' analytical proficiency.

5.4. Project Implementation: Fostering Value Orientation and Emotional Support Systems

Project implementation staff often mediate between technical teams and clients, facing high relational and emotional demands. Interviews highlight the importance of value communication and emotional resilience as performance enablers.

Enterprises may regularly conduct project review sessions, client-feedback forums, and success-story sharing events to reinforce the tangible value of employees' efforts. When individuals see how their work contributes to client satisfaction or organizational growth, intrinsic motivation rises.

Moreover, establishing emotional support mechanisms—including team-building activities, access to counseling services, or open dialogues with supervisors—helps employees manage stress associated with project deadlines and client interactions. Such initiatives align with the broader principle of spiritual leadership, which emphasizes purpose and collective meaning.

5.5. Enterprise-Wide Adaptation and Alignment Systems

In the digital era, management should shift from a technology-centric to a human-

technology synergy approach (Xie et al., 2021). IT enterprises must build foundational systems supporting all positions and ensuring alignment between tools and organizational policies. Regularly host leadership training on digital trends, strategic visioning, and empowerment. Adopt employee-centered tool selection and testing mechanisms, prioritizing usability and compatibility. Continuously integrate systems and optimize workflows to provide seamless digital work experiences and reduce cognitive load. Finally, institutionalize a culture that supports experimentation and lifelong learning, translating tolerance into formal mechanisms that promote sharing and continuous skill development.

6. Conclusion

This paper explores the multifaceted and heterogeneous nature of IT employees' work performance under digital transformation. Through a combined literature and interview-based qualitative approach, it identifies potential influencing factors and proposes mechanisms at four interrelated levels: individual, organizational, leadership, and technological. It provides practical significance for refined performance management and human-machine collaboration in IT enterprises.

While the findings provide valuable conceptual insights, the study acknowledges limitations—such as a small interview sample, lack of quantitative validation and analysis based solely on employee heterogeneity without classifying IT enterprises by scale. These factors mean the findings should be treated as propositions rather than verified relationships. Future research should employ mixed-method or longitudinal designs to quantify these effects and validate cross-level interactions.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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