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Research On Safeguard Mechanisms And Sustainability In The Digital Transformation Of Corporate Human Resource Management

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ABSTRACT

Safeguard mechanisms form the essential foundation for ensuring the digital transformation of human resource management progresses from short-term breakthroughs to sustained deepening. This study constructs a comprehensive safeguard system encompassing four dimensions: institutional, organisational, technological, and cultural. Centred on dynamic synergy as its core logic, this system provides a stable regulatory framework for transformation through institutional design; empowers implementing entities to enhance execution capabilities by leveraging organisational restructuring; establishes a robust material foundation through technological architecture; and fosters collective consensus on transformation via cultural shaping. These four dimensions do not operate in isolation but form a virtuous cycle: "institutional frameworks guide organisational behaviour; organisations deploy technological tools; technology facilitates cultural dissemination; and culture reinforces institutional commitment." Ultimately, this cycle assists enterprises in transforming fragmented digital practices into enduring organisational capabilities, thereby achieving the sustainable development of digital transformation.

INTRODUCTION

As enterprises deepen their understanding of digital transformation within human resource management, an increasing number of managers recognise that isolated digital tools struggle to generate enduring value. Consolidating and deepening transformation outcomes necessitates support from systematic safeguarding mechanisms. Early practice and research indicate that many corporate digital transformation projects stall after achieving initial success, or encounter significant resistance during rollout. The root cause lies in the absence of a comprehensive safeguarding system commensurate with transformation requirements. Current research on safeguarding mechanisms for digital transformation exhibits notable shortcomings: on the one hand, most studies focus on technological safeguards while neglecting the synergistic support provided by soft factors such as institutional

frameworks, organisational structures, and corporate culture; on the other hand, existing research often treats safeguarding mechanisms as static frameworks, paying insufficient attention to the necessity and sustainability of dynamic adjustments across different stages of transformation. Consequently, this study aims to address these gaps by constructing a multi-layered, dynamically adjustable support framework. This framework provides theoretical guidance and practical pathways for enterprises to achieve sustainable development in the digital transformation of human resource management.

1. Materials and Methods

This study employs a research methodology combining theoretical construction and systematic analysis. Firstly, by analysing relevant theories such as institutional theory,

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organisational learning theory, and the Technology Acceptance Model, it establishes the theoretical foundation for constructing support mechanisms. Building upon this, the study constructs a systematic support framework comprising four dimensions: institutional, organisational, technological, and cultural, elucidating its inherent dynamic synergistic logic. The research further integrates corporate practice, detailing the specific content and implementation pathways for each dimension's safeguarding mechanisms. These include measures such as establishing a digital transformation committee, implementing data governance protocols, and designing a tiered digital literacy development system to operationalise the framework. Finally, the study emphasises the need for dynamic optimisation of this safeguarding mechanism according to the enterprise's transformation stage, proposing a sustainable development approach involving periodic evaluation and feedback-driven adjustments.

2.Theoretical Foundations and Systemic Framework of Support Mechanisms

Effective support mechanisms require a robust theoretical foundation. Institutional theory posits that formal and informal institutional arrangements stabilise organisational operations by shaping behavioural expectations among members, providing theoretical grounding for constructing the rule systems necessary for transformation. Organisational learning theory emphasises that organisations must establish mechanisms for continuous learning and improvement to adapt to external environmental changes and internal management reforms, thereby supporting the cultivation of execution capabilities during transformation. The Technology Acceptance Model reveals that maximising technological utility depends on complementary support systems; mere technological investment cannot guarantee employees' proactive adoption and effective use of digital tools, highlighting the importance of synergy between technology and other factors. These theories collectively point to a core insight: the success of digital transformation in human resource management requires the coordinated action of multiple safeguarding factors.

Based on the above theoretical analysis, this study constructs a safeguarding framework comprising four interrelated dimensions: institutional, organisational, technological, and cultural. The institutional layer provides the rule-based

foundation for transformation, clarifying governance structures, resource allocation, and performance orientation. The organisational layer builds execution capabilities by adjusting organisational forms, strengthening talent reserves, and enhancing leadership to ensure effective implementation of transformation measures. The technological layer establishes the material foundation through rational planning of technical architecture, ensuring data security, and achieving system integration to support digital tool application. The cultural layer fosters shared values by communicating the transformation vision, establishing mechanisms for trial and error, and cultivating a learning organisation, thereby reducing resistance and strengthening collective commitment. These four layers form an organic whole rather than a simple juxtaposition: institutional frameworks guide organisational behaviour; organisations leverage technological tools to advance practices; technology provides an efficient vehicle for cultural dissemination; and culture, in turn, enhances employee acceptance of both institutional frameworks and technological adoption. This ultimately creates a virtuous cycle that drives the continuous deepening of transformation.

The innovation of this framework lies in its dynamism and systemic nature: it focuses not only on the adequacy of static configurations across each layer but also on the fluidity of interactions between them; it addresses current transformation support needs while reserving scope for future adjustments as the transformation progresses through its phases. This design enables the safeguarding mechanism to continuously optimise alongside the various stages of an enterprise's digital transformation in human resource management. It evolves from the initial "breakthrough safeguards" focused on technology implementation and foundational system establishment, gradually transitions to the mid-stage "deepening safeguards" that strengthen organisational synergy and cultural shaping, and ultimately forms "sustainable development safeguards" that underpin the long-term stability of the transformation.

3.Institutional Safeguards: Establishing a Stable Rule Foundation

Institutional safeguards serve as the "stabiliser" for digital transformation in human resources management, providing the legitimacy and normative foundation for advancing all

reform measures. Their core lies in designing clear rules to define governance responsibilities, performance orientation, and resource allocation logic for the transformation, thereby preventing chaos arising from a lack of established procedures. Firstly, enterprises must establish a governance structure suited to digital transformation, clearly allocating decision-making, execution, and oversight powers. This can be achieved by establishing a cross-departmental Digital Transformation Committee. Directly overseen by senior management, this committee should involve heads of HR, IT, business units, and finance. Its remit extends beyond formulating overarching transformation strategies and phased objectives to include regular coordination meetings. These meetings resolve cross-departmental conflicts of authority and responsibility during transformation. For instance, it addresses discrepancies between HR-proposed system functionalities and IT's technical implementation capabilities, ensuring alignment with the organisation's overarching business strategy. Simultaneously, it prevents "multiple layers of management" or "responsibility vacuums" by clearly defining each department's functional roles and accountability during transformation[1].

Secondly, establishing a performance evaluation system aligned with digital management is paramount. Traditional HR performance metrics often prioritise process efficiency and cost control. Within the digital transformation context, performance assessment must shift focus towards dimensions such as data value creation, user experience optimisation, and the implementation of innovative applications. This reorientation guides organisational and employee behaviour towards digitalisation. For instance, metrics such as the completeness of data collection within HR systems, the accuracy of analytical outcomes, the adoption rate of digital tools across recruitment, performance management, and training modules, and employee satisfaction with digital services should be incorporated into departmental and individual performance assessments. Concurrently, the weighting of traditional process-oriented indicators should be appropriately reduced. This performance-oriented adjustment will incentivise employees to proactively engage in digital practices.

Optimising budget management and resource allocation systems is equally vital for institutional safeguards. Digital transformation in HR management requires sustained long-term resource commitment rather than one-off investment. Enterprises should therefore establish dedicated

digital transformation budget categories within financial systems, specifying annual budget allocations and disbursement schedules to ensure stable funding for technology procurement, system maintenance, talent training, and other transformation needs. Concurrently, more flexible resource allocation methods should be adopted, such as establishing a dedicated digital transformation fund. This fund should be open to project proposals from both HR and business departments, supporting lightweight digital initiatives with innovative value. Examples include developing digital training tools for specific roles or building small-data-based early warning models for turnover risk. This approach prevents essential digital investments from being curtailed due to short-term performance pressures, providing a sense of resource security for the sustained advancement of transformation.

Furthermore, institutional development must incorporate standardised data governance protocols, which form the prerequisite for ensuring "data usability and reliability" in digital transformation[2]. Enterprises should establish unified data classification standards, clearly defining the scope and ownership of different data types—including employee basic information, remuneration data, performance metrics, and training records. Data quality standards must be established, setting quantifiable indicators across four dimensions: completeness, accuracy, consistency, and timeliness. Refine data security protocols by defining tiered employee access permissions—for instance, standard staff may only view personal details and salary breakdowns, HR administrators may edit employee records, while senior managers may access departmental summaries. Simultaneously, safeguard data confidentiality and integrity through encryption, operational logging, and periodic security audits. Establish a data lifecycle management system, defining comprehensive rules governing the entire process from data collection and storage through application to archiving or destruction. These protocols not only lay the groundwork for subsequent data analysis and intelligent applications but also provide a compliant framework for cross-departmental data sharing.

4. Technical and Cultural Safeguards: Fortifying Foundations and Fostering Consensus

Technical safeguards encompass not only investments in

hardware and software systems, but more crucially involve establishing a meticulous data governance framework and scenario-based system integration solutions. This addresses practical challenges in digital transformation such as "data silos" and "inefficient applications", ensuring technological tools genuinely enhance human resource management value, a concern also reflected in broader HRM system optimization research [5]. Cultural safeguards, meanwhile, require cultivating "tiered, measurable" digital literacy to transform the concept of embracing digitalisation into employees' voluntary action. This resolves the dilemma of "tools being usable yet underutilised or resisted," transforming digital culture from conceptual advocacy into capability support. Together, they form the "hard infrastructure" and "soft power" underpinning transformation, a synergy essential for Industry 4.0 and 5.0 paradigms [3, 1].

At the technical assurance level, refined data governance is paramount. This necessitates establishing operational protocols covering the entire data lifecycle -- from collection and validation through storage, application, to archiving -- based on the logic of "data lifecycle management". This provides rigid safeguards for the usability and reliability of HR data, which is foundational for data-driven decision-making [6]. During data collection, clearly define the "responsible parties" and "real-time synchronisation rules" for each HR data type: Performance data is submitted by department heads within specified working days after the appraisal cycle concludes. The system automatically sends data confirmation notifications to employees, safeguarding their right to information and ensuring data accuracy. Compensation data is jointly entered by Finance and HR departments, with cross-verification of the previous month's salary details and attendance records completed by the 5th of each month to prevent multiple data entries and inconsistent standards. Additionally, for personnel mobility data such as job transfers and resignations, a "triggered synchronisation" mechanism must be established. When employee role information is updated in the HR system, it automatically synchronises with the OA system to adjust approval permissions and with the finance system to update remuneration calculation standards. This ensures data consistency during cross-departmental circulation and prevents management vulnerabilities caused by data desynchronisation.

Data quality governance requires establishing a

"three-dimensional validation standard": for completeness, enforce non-null validation on mandatory fields such as employee ID numbers and employment contract durations, blocking submissions for incomplete entries. Generate monthly Data Integrity Reports, issuing performance alerts to departments exceeding a 5% data deficiency rate to compel greater attention to data collection. For accuracy, embed logical validation rules such as "compensation amounts must not fall below the local minimum wage standard" and "attendance days must not exceed the natural days in the month." The system automatically flags anomalous data and forwards it to HR data administrators, who must contact the responsible department within 24 hours to verify and correct it, ensuring no logical errors in the data. For consistency, establish cross-system data comparison mechanisms. For instance, the "number of active employees" in the HR system must be automatically compared monthly with the "number of employees receiving remuneration" in the finance system and the "number of attendance records" in the OA system. Discrepancies must generate an "Abnormal Analysis Report," clearly identifying causes (such as untimely deregistration of departures or differing statistical criteria for part-time staff) and implementing closed-loop resolution, ensuring data quality from multiple dimensions, a principle that aligns with robust scheduling and data management approaches seen in modern operations [8].

The ultimate objective of data governance is to achieve "asset conversion" — transforming HR data from "information records" into "decision-making assets". This necessitates defining scenario-based application pathways: for instance, constructing a "Capability-Performance Alignment Model" based on "employee performance data + training records". The system automatically identifies groups of employees with "low performance but high training participation", prompting HR to optimise training content and methods. It also identifies employees with "excellent performance but no promotion history", incorporating them into talent pipeline development programmes. Establishing "turnover risk prediction indicators" using "resignation data + role characteristic data" -- such as role satisfaction scores <60 points or monthly overtime exceeding 40 hours. The system generates monthly lists of high-risk resignations, enabling HR to proactively initiate one-to-one discussions and retention interventions. This ensures data governance outcomes directly translate into managerial decision value,

preventing data from remaining dormant, thereby supporting the shift towards a more analytical HR function known as Smart HR 4.0 [9].

System integration through scenario-based approaches is pivotal to overcoming "information silos". This requires focusing on core HR operational scenarios to achieve deep synergy between HR systems and other enterprise systems, rather than merely superficial technical integration. For the full employee lifecycle spanning onboarding, tenure, and departure, dedicated integration interfaces must be designed: During onboarding, once employee details are entered into the HR system, this automatically triggers the OA system to generate an "onboarding process package". This includes workflow nodes such as office equipment requests, access card issuance, and corporate culture training bookings. Employees need not resubmit applications; the system automatically routes requests to relevant departments for processing. Concurrently, it synchronises with the corporate knowledge base, automatically granting new hires access to role-specific operational manuals and policy documents, thereby shortening their adaptation period. In the departure scenario, when an employee submits a resignation request in the HR system, the system automatically pushes a "Departure Settlement List" to the finance system, detailing outstanding wages, social insurance and housing fund arrears, etc. It also pushes a "Device Recovery Reminder" to the IT department, covering items such as computers, employee badges, and deactivation of office software accounts. Furthermore, a "Process Node Interlocking" mechanism is established --- Only upon confirmation of equipment recovery by IT and settlement completion by finance will the HR system permit finalisation of resignation approval, preventing asset loss and financial risks arising from process disconnections.

Concurrently, accounting for the practical reality of "coexisting legacy and new systems," establish "System Compatibility Assessment Criteria": newly introduced HR digital tools must support API integration with existing core systems (e.g., SAP, Yonyou financial systems; WeCom, DingTalk collaboration platforms), with interfaces meeting three security requirements: "encrypted data transmission" (using SSL protocol), "tiered access permissions" (restricting sensitive data viewing to authorised administrators), and "traceable logging" (recording the time, entity, and content of each data call). This ensures data security and operational control during integration. Quarterly "system integration

performance audits" must be conducted, focusing on evaluating "data synchronisation latency" (target ≤ 1 hour) and "interface failure rate" (target $\leq 0.5\%$). Non-compliant items shall be promptly addressed through collaborative optimisation and iteration with the IT department to ensure system integration stability and efficiency, a process that benefits from a multi-modal and multi-skilled workforce approach [4, 7].

At the cultural assurance level, tiered cultivation of digital literacy is central. A "three-tier cultivation system" must be established based on the differing digital needs of employees across roles, ensuring training content precisely aligns with practical work scenarios and avoiding a "one-size-fits-all" approach. For senior executives, the core objective is to cultivate "understanding of digital value and proficiency in data-driven decision-making". This can be achieved through quarterly "HR Digital Transformation Benchmark Review Sessions" --- focusing on leading enterprises such as Huawei and Alibaba to examine practical cases like "data-driven talent reviews" and "AI-assisted recruitment". AI-assisted recruitment" to deeply analyse how their safeguarding mechanisms (such as senior leadership driving organisational restructuring and allocating resources to support digital projects) underpin decision-making, thereby helping managers develop a digital perspective. Concurrently, deliver "HR Data Dashboard Application Training" to guide managers in using systems to monitor real-time core HR metrics such as "per capita productivity, turnover rate, and training return on investment." This enables data-driven management optimisation proposals, leveraging the potential of AI and other technologies that are increasingly entering the HR domain [2].

For the HR team, the core objective of development is to cultivate them as "executors and enablers of digital transformation". Development content must focus on "hard skills + soft empowerment": Regarding hard skills, monthly "specialised training on HR digital tools" will be conducted, covering "advanced HR system functionalities" (such as custom report generation and bulk data import), "data analysis tools" (e.g., Excel PivotTables, Tableau visualisation), with a "practical assessment" requiring HR personnel to generate a "visualised report analysing reasons for departure" based on departmental turnover data within one week post-training to ensure tangible outcomes. For soft empowerment, regular "HR-Business Department Collaboration Workshops" simulate business requests like

"reducing time-to-hire" or "optimising performance evaluation processes". These guide HR staff to translate business needs into digital solutions—such as refining CV keyword screening, automating interview invitations, or designing online performance assessments—enhancing tool-business alignment and reinforcing HR's "business partner" role, which is crucial for effective talent management and navigating the complexities of diverse organizational structures [6, 10].

For general staff, the core objective is to eliminate "resistance" towards digital tools while enhancing foundational operational skills. Training content must balance "cognitive guidance" with "practical instruction": At the cognitive level, induction training for new employees should incorporate a module on "Understanding the Value of HR Digital Tools." Comparative case studies—such as "traditional paper leave requests requiring three days for approval versus system submissions completed within one hour"—should be used to illustrate the tangible efficiency gains delivered by these tools. Quarterly release of a 'Digital Tool Usage Feedback Report' showcasing typical cases where employees resolved issues via the system (e.g., swiftly accessing social security contribution records through self-service queries, flexible learning via online training platforms). This reinforces the perception that 'tools serve employees', thereby reducing resistance. At the operational guidance level, create "One-Minute Operation Guides" (e.g., "How to Submit Overtime Requests via the System," "How to Query Payroll Details") embedded on the system homepage for easy access. Simultaneously, establish a "Digital Tools Customer Support Role" to address employee queries in real-time via WeCom. Monthly statistics on high-frequency issues will inform updates to operation guides or drive system interface optimisation, further lowering usage barriers[4, 10].

5. Findings and Discussion

By constructing and analysing a four-dimensional safeguard mechanism framework, this study yields the following core findings and engages in an in-depth discussion of their value.

Firstly, the most significant finding is that the effectiveness of safeguard mechanisms is rooted in the systemic synergy of institutional, organisational, technological, and cultural dimensions, rather than the isolated influence of any single

factor. The framework reveals a dynamic cyclical logic among these four dimensions: "institutional frameworks guide organisational behaviour; organisational structures deploy technological tools; technology enables cultural dissemination; and culture reinforces institutional commitment." This finding theoretically explains why many enterprises, despite substantial technological investments, experience stagnation in their transformation—because they overlook the holistic nature of the safeguarding system. Unlike most current research focusing on technological safeguards, this framework emphasises the indispensable synergistic support between soft factors (such as systems and culture) and hard technology, offering a systematic approach to addressing multidimensional challenges like "poor execution and cultural resistance".

Secondly, this study clarifies that effective safeguarding mechanisms must possess dynamic adaptability. The framework introduces the logic of "stage adaptation" and "dynamic optimisation", indicating that safeguarding measures are not static. During the initial transformation phase, safeguarding prioritises technological implementation and foundational institutional establishment to achieve "breakthroughs". As transformation deepens, the focus must shift towards organisational synergy and cultural shaping to achieve "deepening". This finding addresses the limitation of existing research treating safeguarding mechanisms as static frameworks, emphasising their inherent requirement to evolve with the transformation process. It provides crucial theoretical explanations and practical guidance for the sustainability of safeguarding mechanisms.

Finally, the discussion indicates that the formulation of safeguarding strategies must fully account for individual enterprise differences. Research reveals that enterprises at different developmental stages—such as start-ups versus mature firms—exhibit distinct resource endowments, organisational complexities, and transformation objectives. Consequently, the focus of safeguarding mechanisms should also differ significantly. This confirms the absence of a universal, one-size-fits-all model. Organisations must tailor and refine the four-dimensional safeguarding framework according to their scale, industry characteristics, and transformation objectives to establish the most suitable safeguarding system, thereby ensuring successful transformation.

Conclusion

This study constructs a systematic four-dimensional safeguarding framework, demonstrating the critical role of synergistic coordination and dynamic adjustment across institutional, organisational, technological, and cultural dimensions in achieving sustainable digital transformation within human resource management.

Theoretically, this research enriches the theoretical framework for digital transformation, expanding the study of safeguarding mechanisms beyond a singular technological perspective to a multidimensional integration of institutional, organisational, and cultural dimensions. It provides new analytical tools for understanding the sustainability of transformation. At the practical level, this study offers comprehensive guidance for corporate managers in constructing support systems. It provides actionable pathways from specific institutional design provisions and operational technology governance processes to tiered cultural competency development. This facilitates enterprises in integrating fragmented safeguarding measures and avoiding transformation pitfalls such as "overemphasising technology while neglecting safeguards" or "prioritising initial stages over long-term sustainability".

Future research may deepen in several directions: firstly, exploring differentiated pathways for safeguarding mechanisms across industries (e.g., manufacturing versus internet sectors) to analyse how sector-specific characteristics influence safeguarding priorities; secondly, refining safeguarding strategies for distinct digital transformation phases (breakthrough, deepening, and stabilisation) by distilling replicable phased approaches from additional corporate case studies; Third, attention should be paid to the new demands emerging technologies like artificial intelligence place on safeguarding mechanisms. Research should examine how to integrate technological ethics and data privacy protection into institutional safeguards, and how to cultivate employees' capabilities in applying emerging technologies to address new challenges arising from technological advancement.

As the practice of digital transformation in human resource management continues to deepen, research into safeguarding mechanisms will persist in providing theoretical guidance and practical insights for enterprises to achieve digital and intelligent transformation. This will assist more organisations in overcoming transformation bottlenecks and realising sustainable development.

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