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A study on the impact of digital transformation on employee relations in listed companies

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Abstract: This study investigates how digital transformation influences employee relations in Chinese A-share listed companies and whether corporate cultural fit strengthens this relationship. Drawing on survey data from 482 valid employee questionnaires, we operationalize digital transformation, employee relations, and cultural fit as mean-based composite indices and assess measurement quality through reliability (Cronbach's α , CR) and validity tests (EFA, CFA, AVE, Fornell–Larcker). Hierarchical OLS regression results show that digital transformation is positively associated with employee relations ($b = 0.58, p < 0.001$). Cultural fit also has a significant positive effect ($b = 0.59, p < 0.001$) and moderates the main relationship: the interaction term is positive and significant ($b = 0.21, p = 0.001$), indicating that the effect of digital transformation on employee relations is stronger under high cultural fit. Simple slope analysis further confirms this pattern (high-fit $\beta = 0.68$ vs. low-fit $\beta = 0.32$). The findings highlight that digital transformation improves employee relations not only through technology adoption but also through culturally supported change processes, offering practical guidance for integrating digital initiatives with human-centered management.

Keywords: digital transformation; listed companies; employee relations; corporate culture compatibility; moderating effects

1. Introduction

Digital transformation has become a central pathway through which firms improve competitiveness and pursue sustainable development in the current wave of global digitalisation. In the context of Chinese A-share listed companies, prior research has shown that workforce dynamics are closely linked to the digital transformation process. For example, employee turnover at different organizational levels can significantly influence the degree of digital transformation within firms (Shi et al., 2025). At the same time, digital transformation is also associated with broader changes in employees' skills, roles, and working environments, particularly under the development of Industry 4.0 (Nadeem et al., 2023). In addition, organizational capabilities such as digital literacy have been identified as key drivers enabling firms to implement digital transformation strategies more effectively (Zhao et al., 2023). Evidence further suggests that digitalization reshapes employment structures within firms, including changes in sales-related employment in listed companies (Li, 2025). Moreover, digital transformation may also influence employee experiences within organizations, such as job satisfaction and perceptions of workplace change (Li, 2023). Collectively, these studies indicate that digital transformation is not merely a technological change but a broader organizational shift that can reshape how work is organized and how employees experience employment arrangements.

However, despite the growing body of evidence on the “digital transformation–workforce outcomes” link, a key gap remains: employee relations—including internal communication quality, employee participation, career development support, and collaboration climate—have received far less direct empirical attention as an integrated outcome of digital transformation, especially in listed-company settings. Existing employee-focused studies often concentrate on specific organizational outcomes under digital transformation. For instance, research has examined how digital transformation influences internal organizational structures and incentive systems, such as executive–employee pay gaps (Li et al., 2025). Other studies emphasize the changing strategic role of human resource management in supporting organizational adaptation during digital transformation (Luo, 2025). In addition, scholars have explored how employee learning processes and job performance are affected in digitally transforming organizational environments (Luo et al., 2025). While these studies provide important insights into employee experiences and organizational adjustments under digitalization, they do not explicitly examine whether and how digital transformation systematically improves (or strains) employee relations as a multidimensional organizational relationship construct, nor do they clarify the boundary conditions under which such effects are more likely to occur.

Moreover, emerging HR-oriented discussions emphasize that the success of digital transformation depends not only on technology adoption but also on whether organizational values and leadership practices support behavioral change and new work routines. This perspective implies a second gap in the literature: limited empirical testing of culture-based contingencies that may shape how digital transformation translates into employee-relational outcomes in listed companies. Existing research on digital transformation and human resource management highlights the need for strategic human resource planning to adapt to digital transformation processes in order to support organizational change (Lü, 2025). Similarly, studies have discussed how digital transformation reshapes human resource management models and requires corresponding organizational and managerial adjustments (Ma, 2025). However, it remains unclear whether a supportive cultural context strengthens employees' acceptance of transformation initiatives and thereby enhances day-to-day relations, cooperation, and participation mechanisms during implementation. To address these gaps, the present study examines the relationship between digital transformation and employee relations in listed companies and tests whether corporate cultural fit moderates this relationship. Using survey data from A-share listed companies in China, the study aims to clarify (a) whether digital transformation is associated with improved employee relations and (b) under what cultural conditions this association is stronger, thereby providing evidence-based implications for integrating technological innovation with human-centred organizational practices.

2. Theoretical framework and hypotheses

Digital transformation reshapes how work is organised, coordinated, and monitored. By introducing digital tools and redesigning workflows, firms can reduce information delays, improve cross-unit coordination, and increase process

transparency. These changes can facilitate more frequent and higher-quality interaction between employees and the organisation, thereby strengthening employee relations. In addition, digital transformation often requires HR-related adjustments (e.g., training, new performance practices, and revised work routines). When these changes improve employees' work experience and perceived support, employee relations are expected to improve accordingly. Therefore, we propose:

H1: *Digital transformation is positively associated with employee relations in listed companies.*

However, the impact of digital transformation on employee relations may depend on corporate cultural fit. Cultural fit reflects whether organisational values and leadership practices support change and encourage employees to adopt new tools and routines. When cultural fit is high, employees are more likely to interpret digital transformation as a legitimate and beneficial organisational initiative, which reduces resistance and supports cooperation during implementation. In contrast, when cultural fit is low, employees may perceive transformation requirements as inconsistent with existing values or managerial practices, increasing uncertainty and resistance; as a result, the positive effect of digital transformation on employee relations may weaken. Thus, we propose a moderation hypothesis:

H2: *Corporate cultural fit positively moderates the relationship between digital transformation and employee relations, such that the positive association is stronger when cultural fit is high.*

3. Materials and methods

3.1. Research framework

This study develops a theoretical model linking digital transformation, employee relations in listed companies, and corporate cultural fit. Digital transformation is specified as the independent variable, employee relations as the dependent variable, and cultural fit as a moderating variable. The model posits that digital transformation directly influences employees' work methods, communication processes, and career development opportunities through changes in business operations, thereby affecting employee relations. Cultural fit moderates this relationship by shaping employees' acceptance of and adaptation to digital change. **Figure 1** presents the theoretical framework illustrating how digital transformation influences employee relations, with cultural fit acting as a moderating variable that shapes employees' acceptance of and adaptation to digital change.

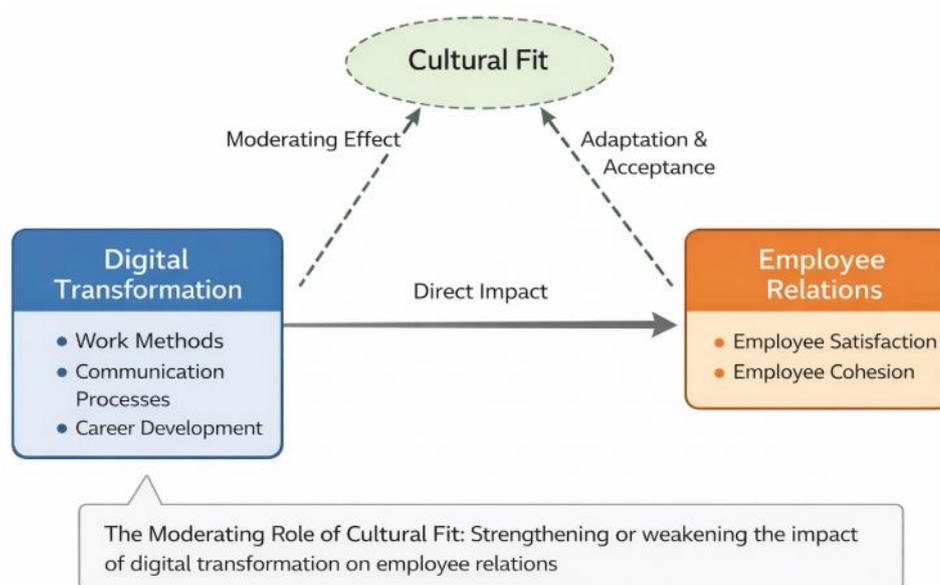


Figure 1. Theoretical Model of Digital Transformation, Employee Relations, and the Moderating Role of Cultural Fit.

3.2. Measurement of variables

3.2.1. Measurement of digital transformation

Digital transformation was measured using a five-item scale capturing employees' perceptions of digitalization within their organizations. The scale was designed to reflect three core aspects of digital transformation in listed companies: technology adoption, business process digitalization, and value creation through digital technologies.

Specifically, respondents were asked to evaluate the extent to which their company: (1) introduces digital technologies such as cloud computing and big data to optimize business processes; (2) encourages employees to use digital tools to improve work efficiency; (3) uses digital platforms to facilitate rapid and efficient information transmission; (4) applies digital technologies to support product or service innovation; and (5) allocates sufficient resources to support digital transformation initiatives. All items were measured on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree), with higher scores indicating a higher perceived level of digital transformation.

Before the formal survey, the scale items were reviewed for clarity and relevance and were pretested with a small group of employees. The final scale demonstrated satisfactory internal consistency and construct validity, as reported in the reliability and validity analysis section.

3.2.2. Measuring employee relations in listed companies

Employee relations were measured using a five-item scale assessing employees' perceptions of relational quality within the organization. Drawing on established employee relations and human resource management literature, the scale captured four key dimensions: internal communication, employee participation, career development support, and collegial relationships.

The items measured employees' satisfaction with: (1) the effectiveness of internal communication mechanisms; (2) the extent to which employee opinions are respected and incorporated into organizational decision-making; (3) the adequacy of the working environment and employee benefits; (4) the availability of career development and training opportunities; and (5) the quality of collaboration among colleagues. Responses were recorded on a five-point Likert scale (1 = strongly disagree; 5 = strongly agree), with higher scores reflecting stronger perceived employee relations. The scale was evaluated through exploratory and confirmatory factor analyses. The results indicated that all items loaded strongly on a single employee relations factor and exhibited satisfactory reliability and validity.

3.2.3. Measuring cultural fit

Cultural fit was measured using a four-item scale designed to assess the alignment between corporate culture and digital transformation initiatives. The scale focused on employees' perceptions of whether organizational values, leadership practices, and team climate support digital change. Prior studies on digital transformation and human resource management emphasize that effective HR practices and performance reforms are increasingly integrated with digital transformation processes (Pan, 2025). Research also highlights the importance of efficient human resource allocation in digitally empowered organizational systems (Sun, 2025). In addition, digital transformation has been shown to require innovation in human resource management approaches and organizational practices (Tang, 2024). Other studies further suggest that digital transformation reshapes human resource management models and organizational management mechanisms (Wang & Yu, 2025), and may also drive the reconstruction of HR management systems in traditional industries (Wang, 2025).

The four items assessed: (1) the alignment between corporate culture and the company's digital transformation strategy; (2) whether organizational values encourage employees to embrace change and innovation; (3) whether leadership styles are consistent with the requirements of digital transformation; and (4) whether the team atmosphere promotes knowledge sharing and collaboration. All items were measured using a five-point Likert scale (1 = strongly disagree; 5 = strongly agree). Factor analysis results confirmed that the four items loaded on a single cultural fit construct, and reliability and validity statistics indicated that the scale provided a reliable measure of cultural fit in the context of digital transformation.

3.2.4. Reliability and validity of measurements

To ensure the robustness of the measurement model, we assessed internal consistency reliability and construct validity for the three core constructs: Digital Transformation (DT), Employee Relations (ER), and Cultural Fit (CF).

(1) Internal consistency reliability

Cronbach's alpha and composite reliability (CR) were computed for each construct. As shown in **Table 1**, all Cronbach's alpha values exceeded the commonly accepted threshold of 0.70, indicating satisfactory internal consistency. Composite reliability values were also above 0.80, further supporting reliability.

(2) Construct validity (EFA and CFA)

We first conducted an exploratory factor analysis (EFA) on all measurement items to examine the underlying factor structure. Previous studies on digital transformation and human resource management have emphasized the need to examine structural relationships among organizational constructs when analyzing management changes in the digital era (Wang, 2025). Related research has also highlighted the importance of leadership adaptation and organizational management mechanisms in digitally evolving enterprises (Yao, 2024). In addition, studies on digital transformation in large enterprises stress the growing integration between digitalization and human resource management systems (Zhang & Fan, 2025).

The Kaiser–Meyer–Olkin (KMO) measure was 0.914, and Bartlett’s test of sphericity was significant ($\chi^2 = 2867.40$, $p < 0.001$), indicating that the data were suitable for factor analysis. Principal axis factoring with varimax rotation extracted three factors corresponding to DT, ER, and CF. All items loaded strongly on their intended factors (loadings ≥ 0.70) and showed no problematic cross-loadings (Table 2). We then performed a confirmatory factor analysis (CFA) to evaluate the three-factor measurement model. The model fit indices indicated good fit: $\chi^2/df = 2.21$, CFI = 0.962, TLI = 0.954, RMSEA = 0.050, and SRMR = 0.041 (Table 3). These results support the adequacy of the measurement structure.

(3) Convergent and discriminant validity.

Convergent validity was assessed using average variance extracted (AVE). As reported in Table 1, AVE values ranged from 0.61 to 0.69, exceeding the 0.50 threshold, suggesting that the constructs captured sufficient variance from their indicators. Discriminant validity was evaluated using the Fornell–Larcker criterion; the square roots of AVE (diagonal entries) were larger than the inter-construct correlations (Table 1), supporting discriminant validity.

Table 1. Reliability and Validity Statistics.

Construct	No. of items	Cronbach’s α	CR	AVE	$\sqrt{\text{AVE}}$	Correlation with DT	Correlation with ER	Correlation with CF
Digital Transformation (DT)	5	0.89	0.9	0.64	0.8	—	0.62	0.58
Employee Relations (ER)	5	0.91	0.92	0.69	0.83	0.62	—	0.65
Cultural Fit (CF)	4	0.87	0.88	0.61	0.78	0.58	0.65	—

Notes: CR = composite reliability; AVE = average variance extracted; $\sqrt{\text{AVE}}$ values (diagonal) exceed inter-construct correlations, supporting discriminant validity.

Table 2. Exploratory Factor Analysis Results (Rotated Factor Loadings).

Item	DT	ER	CF
DT1: Introduces cloud/big data to optimize processes	0.78	0.21	0.18
DT2: Encourages employees to use digital tools	0.81	0.19	0.16
DT3: Uses digital platforms for rapid information transmission	0.79	0.23	0.17
DT4: Leverages digital technologies for product innovation	0.74	0.2	0.22
DT5: Invests sufficient resources in digital transformation	0.7	0.18	0.24
ER1: Communication mechanisms keep me informed	0.22	0.8	0.19
ER2: Respects opinions and incorporates them into decisions	0.24	0.82	0.18
ER3: Provides working environment and benefits	0.19	0.74	0.25

ER4: Cares about career development and training	0.21	0.78	0.23
ER5: Collaborate smoothly with colleagues	0.18	0.77	0.22
CF1: Culture aligns with digital transformation strategy	0.22	0.2	0.8
CF2: Values encourage employees to embrace change	0.19	0.23	0.78
CF3: Leadership style matches transformation requirements	0.25	0.19	0.75
CF4: Team atmosphere promotes sharing and collaboration	0.2	0.24	0.73

Notes: Principal axis factoring; varimax rotation. KMO = 0.914; Bartlett's $\chi^2 = 2867.40$, $p < 0.001$. All primary loadings ≥ 0.70 ; no substantial cross-loadings.

Table 3. Confirmatory Factor Analysis Fit Indices (Three-Factor Model).

Fit index	Criterion (commonly used)	Result
χ^2/df	<3.00	2.21
CFI	>0.90 (preferably > 0.95)	0.962
TLI	>0.90 (preferably > 0.95)	0.954
RMSEA	<0.08 (preferably < 0.06)	0.05
SRMR	<0.08	0.041

3.2.5. Operationalization of key variables

To enable correct interpretation of the regression coefficients and to enhance reproducibility, this study explicitly defines how each key variable was operationalized and entered into the statistical models.

Digital Transformation (DT).

Digital transformation was measured using five Likert-type items (1 = strongly disagree, 5 = strongly agree) capturing technology adoption, workflow digitalisation, information transmission, innovation use, and resource commitment. We operationalized DT as a mean-based composite index, computed as the arithmetic average of the five items for each respondent:

$$DT_i = \frac{DT1_i + DT2_i + DT3_i + DT4_i + DT5_i}{5}$$

Thus, DT ranges from 1 to 5, with higher values indicating a higher perceived level of digital transformation. This mean-score approach preserves the original scale metric and facilitates interpretation of regression coefficients as the expected change in the dependent variable associated with a one-unit increase in the perceived DT level.

Employee Relations (ER).

Employee relations were measured using five Likert-type items covering communication mechanisms, employee participation, workplace support, career development, and colleague relations. ER was operationalized as a mean-based composite score:

$$ER_i = \frac{ER1_i + ER2_i + ER3_i + ER4_i + ER5_i}{5}$$

with higher scores indicating better perceived employee relations.

Cultural Fit (CF) is the moderating variable.

Cultural fit was measured using four Likert-type items assessing alignment between corporate culture and digital strategy, value support for change, leadership

alignment, and team climate for sharing and collaboration. CF was operationalized as a mean-based composite score:

$$CF_i = \frac{CF1_i + CF2_i + CF3_i + CF4_i}{4}$$

Centering and interaction term construction.

To test moderation and reduce multicollinearity, DT and CF were mean-centered before creating the interaction term. Specifically:

$$DTc_i = DT_i - \overline{DT}, \quad CFc_i = CF_i - \overline{CF}$$

The interaction term was then constructed as the product of the centered variables:

$$DT \times CF_i = DTc_i \times CFc_i$$

In the regression models, the coefficient on DT represents the effect of digital transformation on employee relations when cultural fit is at its sample mean (because CF is centered), and the coefficient on the interaction term represents how the DT–ER slope changes as cultural fit increases.

3.2.6. Common method bias

Because the study relies on self-reported questionnaire data collected at a single point in time, common method bias (CMB) may be a potential concern. We adopted both procedural and statistical remedies to mitigate and assess the risk of CMB.

(1) Procedural remedies

During questionnaire administration, respondents were informed that participation was voluntary and anonymous, and that there were no “right” or “wrong” answers. Items were worded in a clear and specific manner to reduce ambiguity and evaluation apprehension. In addition, the item blocks for the focal constructs were presented in separate sections to reduce respondents’ tendency to provide consistent answers across constructs.

(2) Statistical assessment

First, we conducted Harman’s single-factor test by loading all measurement items into an unrotated exploratory factor analysis. The results did not support a dominant single factor: multiple factors emerged, and the first factor accounted for 33.7% of the total variance, below the commonly used 40% threshold, suggesting that CMB is unlikely to be a serious threat.

Second, we tested a single-factor measurement model in CFA as a diagnostic check. The single-factor model fit the data poorly ($\chi^2/df = 6.18$, CFI = 0.71, TLI = 0.66, RMSEA = 0.121, SRMR = 0.102), and was substantially worse than the proposed three-factor model reported in the measurement validity section. This pattern provides additional evidence that the observed relationships are unlikely to be driven primarily by a common method factor.

Taken together, these procedural precautions and diagnostic tests indicate that common method bias is present at most at a limited level and is unlikely to invalidate the main conclusions. Nevertheless, we acknowledge that CMB cannot be completely ruled out in cross-sectional single-source designs, and future studies could further reduce this risk by using multi-source data, time-lagged designs, or objective digital transformation indicators.

3.3. Scale aggregation, index construction, and analytical procedures

This study reports questionnaire-based results. To improve transparency and reproducibility, we specify below how scale scores were aggregated and how the regression models were estimated.

3.3.1. Scale scoring and aggregation

All questionnaire items were measured on a five-point Likert scale (1 = strongly disagree, 5 = strongly agree). Item responses were coded so that higher values indicate higher levels of the corresponding construct. No reverse-coded items were used in the current instrument. For each construct—Digital Transformation, Employee Relations, and Cultural Fit—we computed a composite scale score by taking the arithmetic mean of its items. Respondents with missing values on any item within a construct were handled using listwise deletion for analyses involving that construct. Thus, the final analytical sample size for the main models remained $N = 482$.

3.3.2. Variable construction for moderation analysis

To test the moderating effect of Cultural Fit, we constructed an interaction term between Digital Transformation and Cultural Fit. Before forming the interaction, both variables were mean-centered (i.e., subtracting the sample mean from each respondent's score) to reduce multicollinearity and to facilitate interpretation of coefficients. The interaction term was then computed as:

$$DT \times CF = (DT_centered) \times (CF_centered).$$

For the simple slope analysis, the sample was split into high and low Cultural Fit groups using the conventional ± 1 SD criterion around the mean, and the conditional effect of Digital Transformation on Employee Relations was estimated within each group.

3.3.3. Regression model specification and estimation

We used hierarchical multiple regression to estimate the effects of Digital Transformation on Employee Relations and to test moderation. Control variables included Enterprise Size, Industry Type, and Transformation Stage. Industry Type and Transformation Stage were entered as categorical controls and were dummy-coded, with one category serving as the reference group. The models were estimated in SPSS 26.0 using ordinary least squares (OLS). The hierarchical steps were:

- (1) Model 1 (Controls): Employee Relations = Controls
- (2) Model 2 (Main effect): Employee Relations = Controls + Digital Transformation
- (3) Model 3 (Add moderator): Employee Relations = Controls + Digital Transformation + Cultural Fit
- (4) Model 4 (Interaction): Employee Relations = Controls + Digital Transformation + Cultural Fit + Digital Transformation \times Cultural Fit
- (5) We report the change in explained variance (ΔR^2) across models and the statistical significance of the added terms. All tests were two-tailed with significance levels set at $p < 0.05$.

3.4. Sampling methods and sample population

This study employed a two-stage sampling strategy combining stratified sampling and random selection. In the first stage, A-share listed companies in China were stratified by industry category, including manufacturing, information technology, finance, and service industries, to ensure adequate coverage of firms with heterogeneous digital transformation characteristics. In the second stage, companies were randomly selected within each industry stratum.

The survey respondents were employees working in the sampled listed companies. To capture diverse perspectives on digital transformation and employee relations, employees were drawn from multiple functional departments, including Human Resources, Finance, IT/Digital (information systems), Production/Operations, Marketing/Sales, Administration/General Affairs, and other functions. Respondents also represented different organizational levels (frontline employees, supervisors/team leaders, middle managers, and senior managers) and a wide range of tenure groups.

Data were collected using a mixed-mode approach. Online questionnaires were distributed through the Questionnaire Star platform, and paper-based questionnaires were administered on-site in selected companies to improve the response rate. Participation was voluntary and anonymous. Respondents were informed that the survey was for academic research purposes only and that there were no right or wrong answers. A total of approximately 500 questionnaires were distributed. After excluding responses with excessive missing values, abnormally short completion times, or evident response patterns (e.g., selecting the same option for all items), 482 valid questionnaires were retained for analysis. This final sample size satisfies common recommendations for multivariate statistical analysis and provides sufficient statistical power for testing the proposed hypotheses.

4. Results

4.1. Data collection

Data collection was conducted among employees of A-share listed companies in China using a structured questionnaire. The questionnaire consisted of three main sections measuring digital transformation, employee relations, and corporate cultural fit, along with demographic and firm-level background information. All core variables were measured using five-point Likert scales ranging from 1 (strongly disagree) to 5 (strongly agree). The survey was administered primarily through an online platform (Questionnaire Star), supplemented by paper questionnaires distributed on site in selected firms. This combined approach was used to enhance accessibility and improve the effective response rate. Data collection covered companies at different stages of digital transformation and of varying sizes, allowing for sufficient variability in the key constructs. A total of 482 valid responses were obtained after data screening, yielding an effective response rate of 96.4%. The final sample included employees from small, medium, and large enterprises, as well as firms at initial exploration, partial optimization, and full integration stages of digital transformation. The industry distribution comprised manufacturing (37.3%), information technology (24.9%), finance (18.7%), and service industries (19.1%). In addition, the respondent pool

exhibited broad representation across functional departments, organizational levels, and tenure groups. These characteristics support the representativeness of the sample and reduce the likelihood that the findings are driven by a specific department, hierarchical level, or career stage. The collected data provided a reliable basis for subsequent descriptive analysis, correlation analysis, and regression-based hypothesis testing. The specific distribution of the data collection samples is shown in **Table 4**.

Table 4. A Data collection sample distribution.

Variable	Category	Sample size	Proportion (%)
Enterprise Size	Fewer than 50 employees	120	24.9
	50–200 employees	210	43.6
	More than 200 employees	152	31.5
Industry Type	Manufacturing	180	37.3
	Information Technology	120	24.9
	Finance	90	18.7
	Services	92	19.1
Transformation Stage	Initial Exploration	150	31.1
	Partial Optimization	180	37.3
	Full Integration	152	31.5

In addition to firm-level characteristics, respondent-level information was collected to assess the breadth and representativeness of the sample. As shown in **Table 5**, respondents were drawn from a wide range of functional departments, including Human Resources, Finance, IT/Digital, Production/Operations, Marketing/Sales, and Administration, reducing the likelihood that the results reflect perceptions from a single functional perspective. The sample also covered multiple organizational levels, ranging from frontline employees to senior managers, as well as a balanced distribution of tenure groups, from newly hired employees to those with more than ten years of service. The detailed distribution of the collected samples is shown in **Table 5**.

Table 5. Data collection sample distribution.

Category	Group	Sample size (N)	Proportion (%)
Department	Human Resources	72	14.9
	Finance	68	14.1
	IT/Digital (Information Systems)	96	19.9
	Production/Operations	108	22.4
	Marketing/Sales	84	17.4
	Administration/General Affairs	34	7.1
	Other	20	4.2
Organizational Level	Frontline employees	196	40.7
	Supervisors/Team leaders	128	26.6
	Middle managers	112	23.2
	Senior managers	46	9.5

Years of Service	≤1 year	58	12
	1–3 years	132	27.4
	3–5 years	126	26.1
	5–10 years	108	22.4
	>10 years	58	12

These respondent characteristics were primarily used to describe the composition and representativeness of the sample and to provide contextual background for interpreting the results. They were not included in the main regression models to avoid excessive model complexity and over-parameterization, as incorporating multiple categorical variables would require a large number of dummy variables and could reduce statistical power. Nevertheless, these variables may serve as potential controls or moderators in future research aimed at exploring heterogeneity in how employees at different organizational positions or career stages experience digital transformation.

4.2. Descriptive statistical analysis

Table 6 reports the descriptive statistics for all scale items and composite variables. The mean value of the digital transformation scale was 3.62 (SD = 0.78), indicating a moderate level of perceived digital transformation among the sampled firms. Among the five digital transformation items, “encouraging employees to use digital tools” had the highest mean score (M = 3.85), whereas “allocating sufficient resources for digital transformation” had the lowest mean score (M = 3.41). The mean score for employee relations was 3.55 (SD = 0.82). The highest-rated item was “respecting employee opinions and incorporating them into decision-making” (M = 3.72), while “providing an adequate working environment and benefits” received the lowest mean score (M = 3.38). The mean score for cultural fit was 3.58 (SD = 0.79). The item means ranged from 3.55 to 3.61, indicating relatively consistent perceptions across the four cultural fit items.

Table 6. Descriptive statistical analysis results.

Construct	Item (short label)	M	SD
Digital Transformation ($\alpha = 0.89$)	DT1: Tech adoption for process optimization	3.68	0.81
	DT2: Encourages use of digital tools	3.85	0.76
	DT3: Digital platforms for fast information flow	3.71	0.79
	DT4: Digital tech for product innovation	3.52	0.83
	DT5: Resource investment for transformation	3.41	0.85
Employee Relations ($\alpha = 0.91$)	ER1: Timely internal communication	3.63	0.8
	ER2: Voice and participation in decisions	3.72	0.77
	ER3: Working environment and benefits	3.38	0.84
	ER4: Career development and training	3.59	0.81
	ER5: Collaboration with colleagues	3.67	0.78
Cultural Fit ($\alpha = 0.87$)	CF1: Culture–strategy alignment	3.61	0.8
	CF2: Values support embracing change	3.57	0.82
	CF3: Leadership alignment with transformation	3.59	0.79

4.3. Correlation analysis

Table 7 presents the Pearson correlation coefficients among the main variables and control variables. Digital transformation was positively correlated with employee relations ($r = 0.62$, $p < 0.01$). Cultural fit was also positively correlated with both digital transformation ($r = 0.58$, $p < 0.01$) and employee relations ($r = 0.65$, $p < 0.01$). Among the control variables, enterprise size, industry type, and transformation stage showed weak to moderate correlations with the core variables, with most correlation coefficients remaining below 0.30. These results provide preliminary support for the proposed relationships among the study variables.

To further examine whether multicollinearity might affect the stability of the regression estimates, tolerance values and variance inflation factor (VIF) statistics were calculated for the predictors included in Model 4. As shown in **Table 8**, all tolerance values were well above the commonly accepted minimum threshold of 0.10, ranging from 0.56 to 0.86, while all VIF values were below 2.0, ranging from 1.16 to 1.79. Specifically, the VIF values were 1.16 for enterprise size, 1.20 for industry type, 1.28 for transformation stage, 1.70 for digital transformation (centered), 1.79 for cultural fit (centered), and 1.39 for the interaction term between digital transformation and cultural fit. These results indicate that multicollinearity was not a serious concern in the regression analyses and that the estimated coefficients are likely to be stable and interpretable.

Table 7 Results of correlation analysis among variables.

Table 7. Correlation Matrix.

Variable	Digital transformation	Employee relations	Cultural fit	Enterprise size	Industry type	Transformation stage
Digital Transformation	1	-	-	-	-	-
Employee Relations	0.62**	1	-	-	-	-
Cultural Fit	0.58**	0.65**	1	-	-	-
Enterprise Size	0.12	0.09	0.11	1	-	-
Industry Type	0.15*	0.13*	0.14*	0.22**	1	-
Transformation Stage	0.28**	0.25**	0.26**	0.31**	0.33**	1

Notes: $p < 0.05$, $**p < 0.01$

Table 8. Multicollinearity Diagnostics (VIF and Tolerance).

Predictor (model 4)	Tolerance	VIF
Enterprise Size	0.86	1.16
Industry Type	0.83	1.2
Transformation Stage	0.78	1.28
Digital Transformation (centered)	0.59	1.7
Cultural Fit (centered)	0.56	1.79
Digital Transformation \times Cultural Fit	0.72	1.39

Notes: VIF = variance inflation factor. All VIF values are below the commonly used thresholds (e.g., 5 or 10), indicating that multicollinearity is unlikely to threaten the stability of the regression estimates.

4.4. Regression analysis

Table 9 reports the results of the hierarchical ordinary least squares regression analyses with employee relations as the dependent variable. In Model 1, only the control variables were included. Enterprise size, industry type, and transformation stage were significantly associated with employee relations, and the model explained 12.3% of the variance ($R^2 = 0.123$). In Model 2, digital transformation was added to the regression. Digital transformation was positively and significantly associated with employee relations ($b = 0.58$, $SE = 0.04$, $p < 0.001$). The inclusion of digital transformation increased the explained variance by 33.3% ($\Delta R^2 = 0.333$, $p < 0.001$). In Model 3, cultural fit was added to the model. Both digital transformation ($b = 0.52$, $SE = 0.04$, $p < 0.001$) and cultural fit ($b = 0.65$, $SE = 0.04$, $p < 0.001$) were positively associated with employee relations. The addition of cultural fit resulted in a significant increase in explained variance ($\Delta R^2 = 0.126$, $p < 0.001$). In Model 4, the interaction term between digital transformation and cultural fit was entered. The interaction term was positive and statistically significant ($b = 0.21$, $SE = 0.06$, $p = 0.001$). The inclusion of the interaction term further increased the explained variance ($\Delta R^2 = 0.039$, $p = 0.012$). The final model explained 62.1% of the variance in employee relations ($R^2 = 0.621$).

Table 9. Regression analysis results (DV: Employee Relations, N = 482).

Predictor	Model 1 b (SE)	Model 2 b (SE)	Model 3 b (SE)	Model 4 b (SE)
Enterprise Size	0.12* (0.05)	0.09 (0.05)	0.08 (0.05)	0.07 (0.05)
Industry Type	0.15** (0.05)	0.13* (0.05)	0.12* (0.05)	0.11* (0.05)
Transformation Stage	0.28** (0.05)	0.25** (0.05)	0.24** (0.05)	0.23** (0.05)
Digital Transformation (DT)	—	0.58*** (0.04)	0.52*** (0.04)	0.46*** (0.05)
Cultural Fit (CF)	—	—	0.65*** (0.04)	0.59*** (0.05)
DT × CF (centered)	—	—	—	0.21** (0.06)
R^2	0.123	0.456	0.582	0.621
ΔR^2	—	0.333***	0.126***	0.039*
F-change p	—	<0.001	<0.001	0.012

Notes: $p < 0.05$, ** $p < 0.01$

4.5. Moderating effect test

To further examine the moderating role of cultural fit, a simple slope analysis was conducted based on the interaction model reported in **Table 9**. Following conventional practice, cultural fit was dichotomized at one standard deviation above and below its sample mean to represent high and low cultural fit conditions.

Figure 2 plots the conditional relationship between digital transformation and employee relations using unstandardized regression coefficients derived from the full regression model. The vertical axis represents the predicted values of employee relations based on the estimated regression equation. The simple slope of digital transformation on employee relations was positive and statistically significant under both conditions. Specifically, under high cultural fit (+1 SD), the slope coefficient was 0.68 ($p < 0.01$), whereas under low cultural fit (−1 SD), the corresponding coefficient

was 0.32 ($p < 0.05$). These results indicate that the positive association between digital transformation and employee relations is stronger when cultural fit is higher.

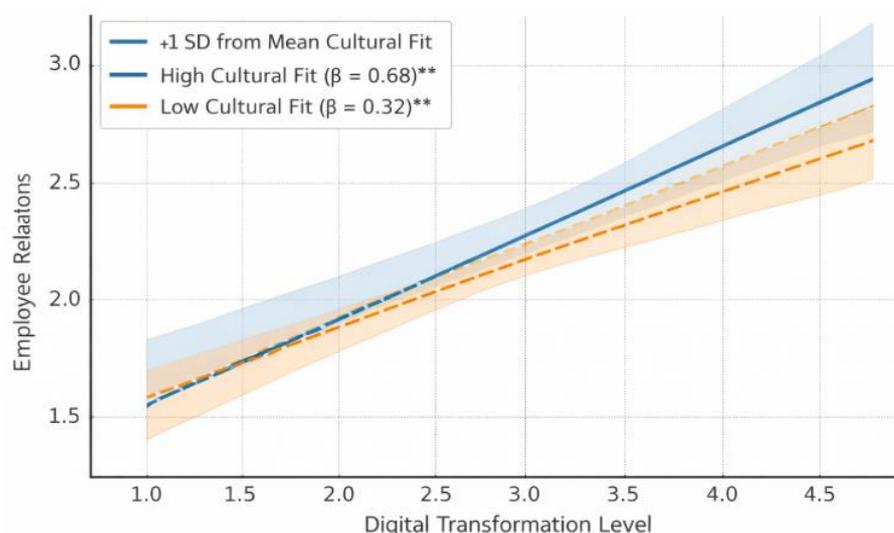


Figure 2. Moderating effect of corporate culture fit.

The figure presents simple slope estimates based on the interaction model reported in **Table 9**. The plotted lines are constructed using unstandardized regression coefficients from the ordinary least squares regression. The vertical axis represents the predicted values of employee relations, and the horizontal axis represents the observed range of digital transformation. High and low cultural fit correspond to values one standard deviation above (+1 SD) and below (-1 SD) the sample mean, respectively. Shaded areas around the lines indicate 95% confidence intervals for the simple slope estimates.

5. Discussion

5.1. Main findings and interpretation

This study provides empirical evidence that digital transformation is positively associated with employee relations in listed companies ($b = 0.58$, $p < 0.001$). This result supports the view that digital transformation is not merely a technological upgrade but also a structural change that reshapes coordination and communication in organizations. In our sample, the relatively high score for “digital platforms for fast information flow” ($M = 3.71$) suggests that digital tools may reduce information barriers, strengthen perceived alignment with organizational goals, and improve day-to-day collaboration. Meanwhile, the comparatively lower score for “resource investment” ($M = 3.41$) indicates that insufficient investment (e.g., training, change support, process redesign) may constrain the human-side benefits of transformation. These findings jointly imply that employee relations improve not simply because technology is adopted, but because digitalization changes how employees communicate, participate, and experience support in the workplace.

5.2. Comparison with prior studies and critical implications

(1) Main effect (DT → ER). Our findings are broadly consistent with employee-outcome research showing that digital transformation influences employees' work experience and HR outcomes. For example, existing studies link digital transformation to employee satisfaction and to performance-related mechanisms under digital transformation contexts. Related evidence also suggests that transformation affects workforce structure and employment patterns in listed firms and reshapes internal distribution and incentive systems. Compared with these studies, our contribution is to treat employee relations as a multidimensional relational construct (communication, participation, career development support, and collaboration climate) rather than a single outcome (e.g., satisfaction or performance). This expands the "digital transformation–employee outcomes" literature by showing that digital transformation can strengthen the quality of organizational relationships, not only individual attitudes or economic outcomes (Zhao, 2025).

(2) Moderating effect (Cultural Fit). Our moderation result (DT × CF: $b = 0.21$, $p = 0.001$) aligns with the broader change-management and HR literature emphasizing that cultural and leadership support shapes how employees respond to transformation initiatives. Prior HR discussions suggest that values, leadership alignment, and organizational support can reduce resistance and facilitate acceptance of new routines (Ma, 2025). Building on this perspective, we provide empirical evidence that cultural fit functions as a boundary condition: the positive association between digital transformation and employee relations is stronger in high-fit contexts (simple slope $\beta = 0.68$) than in low-fit contexts ($\beta = 0.32$). This contributes to the literature by validating culture–strategy alignment as a concrete contingency factor specifically in the listed-company setting, where transformation pressure and workforce stability concerns are typically great.

5.3. Why effects may differ across studies

Although our results are consistent with the general expectation that digital transformation improves employee-related outcomes, the magnitude of effects may differ from other studies for several reasons. First, context and sample characteristics may play an important role. In this study, the sample consists of A-share listed companies. Listed firms typically face stronger governance requirements, more standardized management systems, and higher performance pressure, which may make digital initiatives more visible and consequential for internal coordination. In such contexts, digital transformation may generate clearer organizational data flows and management insights, thereby strengthening internal decision-making and workforce-related management practices (Marler & Boudreau, 2016). As a result, the DT → ER relationship may be stronger compared with settings where digital change is less institutionalized.

Industry composition and transformation stage. Digital transformation may generate stronger employee-relational benefits in technology-intensive industries (e.g., manufacturing, IT), where digital workflows directly reduce coordination costs, but weaker or more complex effects in service settings where interpersonal interactions remain central. Likewise, companies at more advanced transformation stages may

have already resolved implementation barriers, allowing more of the relational benefits to materialize.

Measurement approach and subjective indicators. Our variables are based on perceptual survey measures. Perceptions may amplify observed relationships if respondents evaluate transformation and relational climate consistently; although our diagnostics suggest common method bias is not a dominant threat, perceptual measures may still yield stronger correlations than studies relying on objective indicators. Therefore, effect sizes should be interpreted as relationships among employees' perceived transformation experience and perceived relational outcomes.

5.4. Measurement differences and implications for interpretation

Differences in operationalization across studies may also explain divergent findings. In particular, the measurement of digital transformation varies across the literature. Some studies conceptualize digital transformation in terms of the digitization of HR processes and the broader transformation of human resource management practices (Meijerink et al., 2018). Other research emphasizes the role of digitalized talent management and automated decision-making systems in shaping organizational talent management processes (Wiblen & Marler, 2021). In addition, work on organizational leadership in digital transformation highlights the strategic role of digital leadership and executive-level coordination in promoting enterprise-wide transformation initiatives (Singh & Hess, 2020).

Compared with these approaches, some studies rely on objective firm-level proxies such as digital investment, text-mined reports, or technology adoption indices, whereas our measure captures employee-perceived transformation (technology use, process change, information flow, innovation use, and resource commitment). These approaches capture related but not identical constructs; subjective measures of digital transformation may be more tightly linked to relational outcomes because they reflect employees' lived experience of transformation.

Employee relations as a multidimensional construct. Many studies focus on single outcomes (satisfaction, turnover, pay disparity). Our employee relations scale integrates communication, participation, support, development, and collaboration. This multidimensional definition may capture "organizational relationship quality" more directly, but it also means the results are not strictly comparable to studies using narrower constructs. Factor structure and scale aggregation. Our EFA/CFA results support a three-factor structure (DT, ER, CF), and the composites are mean-based indices. Studies that use alternative factor structures, summed scores, or factor scores may obtain different parameter magnitudes. Hence, cross-study comparison should consider not only conclusions but also differences in construct boundaries and measurement granularity.

5.5. Practical implications for management

Beyond the general recommendation to "pay attention to culture," our findings suggest actionable management strategies that integrate technology and human-centered practices:

Leadership communication and change narrative. Leaders should communicate a clear transformation narrative explaining why digitalization is necessary, how it benefits employees' work, and what support is available. Regular two-way communication (e.g., Q&A sessions, feedback channels) can reduce uncertainty and strengthen participation mechanisms. Prior research suggests that organizational digital initiatives often require substantial employee reskilling and capability development to support technological change (Jaiswal et al., 2021). In addition, studies on electronic human resource management highlight how digital technologies reshape HR practices and require organizations to redesign communication and management processes in the digital era (Bondarouk & Ruđ, 2015). Research on AI adoption in HR further indicates that contextual organizational factors and management support play important roles in facilitating employee acceptance of digital technologies (Pan et al., 2021). Training and career-development mechanisms. Because transformation often increases skill requirements, firms should institutionalize training pathways (e.g., role-based digital skill training, mentoring, micro-credential programs) and link them to career development to reduce resistance and increase perceived support.

Collaboration platform governance. Digital collaboration tools should be accompanied by governance rules (e.g., response norms, knowledge-sharing incentives, and data transparency boundaries) to prevent overload and confusion and to ensure that platforms actually improve coordination rather than create new friction. Research on digital transformation in human resource management highlights that effective digital HR systems require supportive governance structures and organizational practices to function effectively (Akhtar, 2024).

Psychological safety and participation design. Cultural fit can be operationalized by creating a psychologically safe climate (e.g., non-punitive learning, tolerance for early-stage errors, and recognition for experimentation) and by embedding employee voice into transformation decisions (e.g., pilot groups, co-design workshops, and frontline feedback loops). Studies suggest that digital transformation can significantly influence employee well-being and workplace experiences, making supportive organizational environments particularly important during transformation processes (Zhou & Zhang, 2024). Related work also indicates that digital transformation interacts with governance mechanisms and organizational oversight structures, which can shape how transformation initiatives are implemented and experienced internally (Wang & Li, 2024). Furthermore, case-based research on digital transformation in HRM shows that organizational participation mechanisms and supportive management practices are essential for aligning digital initiatives with employee engagement and HR practices (Exarchou et al., 2024).

Resource allocation that matches transformation goals. The relatively lower perceived resource investment suggests that firms should allocate resources not only to technology procurement but also to change management: training budgets, internal champions, process redesign teams, and employee support programs. Such investments are likely to convert digital adoption into stable improvements in employee relations.

6. Conclusion

Overall, the study provides evidence that digital transformation is linked to better employee relations—improving internal communication, participation, career development support, and collaboration—especially when an organization’s culture aligns with and supports change. By strengthening methodological transparency (clear variable construction, reliability/validity reporting, multicollinearity checks, and common method bias diagnostics), the paper shows that culture–strategy alignment functions as a boundary condition that amplifies the benefits of digital transformation for workplace relationships. Practically, the results suggest that listed companies should pair digital investments with concrete cultural and managerial actions (leadership communication, training systems, platform governance, and psychological safety) to convert digital adoption into sustained relational improvements.

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