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Digital Transformation as a Buffer Against Job Insecurity: Evidence from Employee Well-being

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ABSTRACT

Digital transformation accelerates automation, role restructuring, and demands for new technological competencies, which may heighten employees' perceptions of job insecurity. This study examines the effect of job insecurity and green innovative work behavior on employee well-being, with digital transformation as a moderating variable, among employees of financial service organizations undergoing digital transformation. Drawing on Conservation of Resources Theory and the Job Demands-Resources Model, data were collected from 103 respondents through a five-point Likert questionnaire and analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS 4. The results show that job insecurity has a significant negative effect on employee well-being (β = -0.331; p = 0.001), while green innovative work behavior has no significant effect on employee well-being (β = 0.121; p = 0.266). Digital transformation has a significant positive effect on employee well-being (β = 0.424; p < 0.001) and significantly buffers the negative effect of job insecurity on employee well-being (β = 0.294; p = 0.002) but does not moderate the effect of green innovative work behavior on employee well-being (β = 0.112; p = 0.221). The structural model explains 42.15 percent of the variance in employee well-being (R^2 = 0.4215). These findings suggest that organizations need to actively manage job insecurity while leveraging supportive digital transformation as a job resource that sustains employees' psychological well-being amid technological change.

Keywords: Job insecurity, Employee well-being, Green innovative work behavior, Digital transformation, PLS-SEM.

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Introduction

Digital transformation has fundamentally changed the way organizations design work processes, manage human resources, and create value, encompassing not only technology adoption but also changes in strategy, structure, business processes, and organizational capability in responding to a dynamic environment (Vial, 2019; Matt et al., 2015; Verhoef et al., 2021; Kraus et al., 2022; Feroz et al., 2021). In the context of work, digitalization brings efficiency, automation, and flexibility, but at the same time creates new psychological pressure for employees, particularly when employees feel that their role,

competence, or job may be replaced by technology (Tarafdar et al., 2007; Ragu-Nathan et al., 2008; Trenerry et al., 2021; Liu et al., 2024).

Technology-driven organizational change has the potential to increase employees' perceptions of job insecurity, defined as a subjective perception of threat to the continuity of one's job and uncertainty about one's future at work (Sverke et al., 2002; Vander Elst et al., 2014; Shoss, 2017; Jiang & Lavaysse, 2018). Recent studies show that the presence of robots, artificial intelligence, and intelligent automation consistently increases employee job insecurity across industries and cultures, even in sectors that have not yet been directly touched by automation (Yam et al., 2023). Meta-analytic and integrative reviews further show that job insecurity is negatively related to psychological health, job satisfaction, commitment, and job performance (Sverke et al., 2002; Cheng & Chan, 2008; Piccoli et al., 2017; Wang et al., 2015).

One important consequence of job insecurity is a decline in employee well-being, a state of employee welfare that encompasses psychological aspects, work experience, and quality of life within the organization (Zheng et al., 2015; Grant et al., 2007; Danna & Griffin, 1999; Ryff, 1989; Warr, 1990). When employees feel that their job future is insecure, their psychological resources tend to be depleted, reducing their sense of comfort, positive energy, and calm at work. Based on Conservation of Resources Theory, individuals strive to protect resources they consider valuable when facing the threat of losing those resources, including the threat of job loss (Hobfoll, 1989). Recent empirical studies also confirm that employees' psychological well-being moderates or is mediated by job insecurity perceptions in relation to job performance and commitment (Kundi et al., 2021; Basyouni & El Keshky, 2021).

On the other hand, contemporary organizations are also required to encourage innovative behavior that supports environmental sustainability. Green innovative work behavior is employees' behavior in generating, promoting, and implementing new ideas that support resource efficiency, waste reduction, and environmentally friendly work practices (Scott & Bruce, 1994; Janssen, 2000; Norton et al., 2015; Song et al., 2023; Khan et al., 2025). The green human resource management and green behavior literature shows that employees' green behavior is strongly influenced by positive psychological conditions, organizational support, and work well-being (Dumont et al., 2017; Kim et al., 2019; Al-Swidi et al., 2021; Darvishmotevali & Altinay, 2022; Farooq et al., 2022).

Although digital transformation has the potential to accelerate green innovation through process efficiency and the use of digital technology, the success of such innovation still depends on supportive employee psychological conditions (Feroz et al., 2021; He et al., 2021; Chen & Chang, 2013). Employees with good well-being are more likely to have the energy, sense of security, and motivation to propose new ideas, including environmentally oriented ideas (Ahmed et al., 2020; AlSuwaidi et al., 2021; Afsar et al., 2016). Conversely, employees with high job insecurity tend to avoid risk, conserve psychological energy, and are reluctant to engage in extra-role behaviors such as green innovation (Hobfoll, 1989; Shoss, 2017; Jiang & Lavaysse, 2018). A remaining research gap is the scarcity of integrated models that simultaneously test job insecurity, employee well-being, and green innovative work behavior, while also considering digital transformation as a contextual condition that shapes the strength of these relationships (Trenerry et al., 2021; Salem et al., 2023; Galanakis & Tsitouri, 2022; Zhou et al., 2025).

This study is designed to address this gap by empirically testing the effect of job insecurity and green innovative work behavior on employee well-being, and by positioning digital transformation as a moderating variable that explains why the strength of the effect of job insecurity on employee well-being may differ across levels of digitalization intensity.

Research Questions

1. Does job insecurity affect employee well-being?
2. Does green innovative work behavior affect employee well-being?
3. Does digital transformation moderate the effect of job insecurity on employee well-being?

4. Does digital transformation moderate the effect of green innovative work behavior on employee well-being?

Research Objectives

This study aims to: (1) analyze the effect of job insecurity on employee well-being; (2) analyze the effect of green innovative work behavior on employee well-being; (3) examine the moderating role of digital transformation on the relationship between job insecurity and employee well-being; and (4) examine the moderating role of digital transformation on the relationship between green innovative work behavior and employee well-being.

Theoretically, this study is expected to enrich the organizational behavior and green behavior literature by integrating job insecurity, employee well-being, and green innovative work behavior within a single framework contextualized in the era of digital transformation, while extending the Job Demands-Resources Model by testing the dual role of digital transformation as both a direct predictor and a moderating variable. Practically, the findings are expected to inform organizations, particularly in the financial services sector undergoing intensive digital transformation, in formulating humane technological change management policies that protect employees' psychological well-being without sacrificing green innovation capacity or the pace of digital transformation.

Literature Review

Conservation of Resources Theory explains that individuals strive to acquire, maintain, and protect resources they consider valuable, such as employment, stability, and psychological energy (Hobfoll, 1989). When individuals face the threat of resource loss, they tend to experience stress and limit the use of resources for activities deemed risky or non-urgent. The Job Demands-Resources Model complements this perspective by explaining that job demands can deplete employee energy, while job resources can increase motivation, buffer the negative impact of job demands, and drive positive work outcomes (Bakker & Demerouti, 2007; Schaufeli & Bakker, 2004; Galanakis & Tsitouri, 2022).

In this study, job insecurity is positioned as a job demand that depletes employees' psychological resources, green innovative work behavior is positioned as a form of meaningful work engagement that may itself become a psychological resource for the actor, and employee well-being is positioned as an outcome variable reflecting the balance between employees' demands and resources. Digital transformation is positioned as a contextual condition that functions as a moderating job resource, strengthening or weakening the effects of job insecurity and green innovative work behavior on employee well-being, consistent with the job demands-resources interaction proposition that the availability of job resources can buffer the impact of job demands on employee outcomes (Bakker & Demerouti, 2007).

Job Insecurity and Employee Well-being

Job insecurity is a work stressor that can reduce employee well-being because it creates uncertainty, worry, and a threat to an important resource, namely the job itself. Empirical evidence and meta-analyses consistently show that job insecurity is negatively related to psychological health, job satisfaction, and positive work attitudes (Sverke et al., 2002; Cheng & Chan, 2008; Jiang & Lavaysse, 2018; Kundi et al., 2021; Basyouni & El Keshky, 2021). Based on Conservation of Resources Theory, the threat of job loss depletes psychological resources, thereby reducing employee well-being (Hobfoll, 1989; Yam et al., 2023). Accordingly, the first hypothesis proposed is:

H_1: *Job insecurity has a negative effect on employee well-being.*

Green Innovative Work Behavior and Employee Well-being

Green innovative work behavior is a form of extra-role work engagement that requires initiative, creativity, and meaningful contribution to both the organization and the environment (Scott & Bruce, 1994; Janssen, 2000; Norton et al., 2015). Based on Self-Determination Theory, engagement in activities that are meaningful and aligned with personal values can fulfill basic psychological needs for competence, autonomy, and relatedness, which in turn enhance individual psychological well-being (Deci & Ryan, 2000).

Employees who actively generate, promote, and implement environmentally friendly ideas tend to gain a sense of meaningfulness, recognition, and satisfaction from their contribution, consistent with the concept of eudaimonic well-being (Ryff, 1989) and the psychological benefits of meaningful work engagement (Grant et al., 2007; Danna & Griffin, 1999). Thus, engagement in green innovative work behavior is presumed to be not only an outcome of positive psychological conditions but also a psychological resource that enhances employee well-being (Zheng et al., 2015; Salem et al., 2023). Accordingly, the second hypothesis proposed is:

H_2: *Green innovative work behavior has a positive effect on employee well-being.*

The Moderating Role of Digital Transformation on Job Insecurity and Employee Well-being

Although job insecurity is generally negatively related to employee well-being, the strength of this relationship is not uniform across all employees but rather depends on the availability of contextual resources that can buffer the impact of such job threats (Bakker & Demerouti, 2007; Galanakis & Tsitouri, 2022).

Digital transformation, when managed supportively through improved work efficiency, flexibility, and the mastery of new competencies, has the potential to function as a job resource that dampens the negative impact of job insecurity on employee well-being (Feroz et al., 2021; He et al., 2021). Conversely, under conditions of digitalization with minimal support, job insecurity may be felt more intensely because employees lack additional resources to offset the threat (Trenerry et al., 2021; Zhou et al., 2025; Liu et al., 2024). Accordingly, the third hypothesis proposed is:

H_3: *Digital transformation moderates the effect of job insecurity on employee well-being.*

The Moderating Role of Digital Transformation on Green Innovative Work Behavior and Employee Well-being

The contribution of green innovative work behavior to employee well-being is also presumed to be influenced by the extent to which the organization provides digital tools that support the realization of innovative ideas. Digital transformation that provides collaboration platforms, feedback systems, and visibility of employee contributions has the potential to strengthen the psychological benefits of engaging in green innovation, as employees can see the real impact of their ideas more quickly and receive broader recognition (Al-Swidi et al., 2021; Darvishmotevali & Altinay, 2022; He et al., 2021). Conversely, in organizations with low digitalization intensity, employees' green innovation contributions may lack adequate infrastructural support or recognition, making the benefits to employee psychological well-being less than optimal (Dumont et al., 2017; Kim et al., 2019). Accordingly, the fourth hypothesis proposed is:

H4: *Digital transformation moderates the effect of green innovative work behavior on employee well-being.*

Research Model

Based on the theoretical review and hypothesis development above, the research framework positions job insecurity (X1) and green innovative work behavior (X2) as independent variables directly affecting

employee well-being (Y), with digital transformation acting as a moderating variable that strengthens or weakens both effects. This framework is consistent with the Job Demands-Resources Model, which views digital transformation as a contextual resource that interacts with job demands (job insecurity) and meaningful work engagement (green innovative work behavior) in affecting employee well-being (Bakker & Demerouti, 2007; Vial, 2019; Verhoef et al., 2021). The research model is presented in Figure 1.

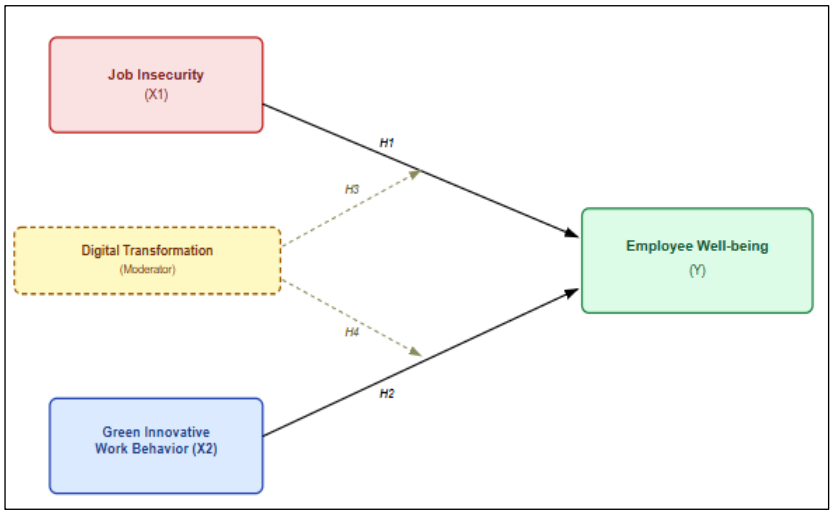


Figure 1. Research Model

Figure 1 shows the four hypothesized paths tested in this study: the direct effect of job insecurity on employee well-being, hypothesized to be negative (H1); the direct effect of green innovative work behavior on employee well-being, hypothesized to be positive (H2); and the moderating role of digital transformation on the relationship between job insecurity and employee well-being (H3) and between green innovative work behavior and employee well-being (H4). All hypotheses H1 through H4 are tested empirically through the PLS-SEM approach described in the Method section, with the results and discussion presented in the Results and Discussion sections.

Method

Research Design

This study uses a quantitative explanatory approach because it aims to test causal relationships between variables through the hypotheses formulated in the Literature Review. The research design used is a cross-sectional survey, in which data are collected at a single point in time from respondents who meet the study criteria. This design is appropriate for testing the relationship model among job insecurity, employee well-being, and green innovative work behavior within the context of digital transformation (Vial, 2019; Trenerry et al., 2021).

Population and Sample

The population of this study is employees working in organizations undergoing or implementing digital transformation, such as higher education institutions, banking, financial services, start-ups, government agencies, or service companies that use digital systems in their work processes. The sample consists of employees who have experience using digital technology in their daily work and who understand the changes in work processes within their organization.

The sampling technique used is purposive sampling with the following criteria: (1) respondents are active employees; (2) have worked for at least six months at their current organization; (3) use digital

systems, work applications, or online platforms in their work; and (4) are willing to complete the research questionnaire.

Following PLS-SEM guidelines, the recommended minimum sample size is ten times the largest number of arrows pointing to a single construct, or a minimum of 100-150 respondents for more stable estimation results (Hair et al., 2022). This study successfully collected data from 103 respondents who met all of the above criteria, thereby satisfying the required minimum sample threshold.

Data Sources and Collection Technique

The data source is primary data obtained through an online questionnaire using a five-point Likert scale (1 = strongly disagree to 5 = strongly agree). The questionnaire was divided into four sections: respondent identity, digital transformation context, measurement of job insecurity and employee well-being, and measurement of green innovative work behavior. To minimize common method bias, items were randomized, respondent confidentiality was affirmed in the questionnaire introduction, and statistical tests such as Harman's single-factor test and full collinearity test were conducted at the analysis stage (Podsakoff et al., 2024).

Operational Definition of Variables

The operational definitions of the research variables are presented in Table 1.

Table 1. Operational Definition of Variables

Variable	Operational Definition	Indicators	Source
Job Insecurity (X1)	Employees' subjective perception of threats to the continuity of their job, position, and future due to organizational and digital technology change.	Fear of job loss; uncertainty about work future; threat of automation/AI; competence relevance; changes in work processes.	Sverke et al. (2002); Vander Elst et al. (2014); Shoss (2017); Jiang & Lavaysse (2018); Yam et al. (2023)
Green Innovative Work Behavior (X2)	Employees' behavior in generating, promoting, and implementing new ideas that support resource efficiency and environmentally friendly work practices.	Environmentally friendly ideas; resource efficiency; paperless digitalization; support for green practices; green innovation engagement.	Scott & Bruce (1994); Janssen (2000); Norton et al. (2015); Song et al. (2023); Khan et al. (2025)
Employee Well-being (Y/M)	Employees' state of welfare encompassing psychological comfort, job satisfaction, positive energy, and work-life balance.	Work comfort; meaningfulness; positive energy; psychological support; work-life balance.	Zheng et al. (2015); Ryff (1989); Warr (1990); Grant et al. (2007); Kundi et al. (2021)
Digital Transformation (Z)	The organizational change context marked by the use of digital technology, online platforms, automation, and digital systems in work processes.	Use of digital applications; changes in work processes; demands for technological adaptation; process efficiency.	Vial (2019); Matt et al. (2015); Verhoef et al. (2021); Kraus et al. (2022); Trenerry et al. (2021)

Research Instrument

The job insecurity questionnaire items were adapted from the Job Insecurity Scale (Vander Elst et al., 2014), contextualized to the threat of automation and work digitalization. Employee well-being items

were adapted from the multidimensional construct of Zheng et al. (2015), covering life well-being, workplace well-being, and psychological well-being. Green innovative work behavior items were adapted from the generation, promotion, and realization of ideas dimensions of Scott and Bruce (1994), contextualized to environmentally friendly work practices following Norton et al. (2015) and Khan et al. (2025). Digital transformation items were developed based on the dimensions of technology use, changes in work processes, and demands for digital adaptation (Vial, 2019; Matt et al., 2015). All items were validated through a readability test and expert judgment prior to field data collection.

Data Analysis Technique

The analysis technique used is Partial Least Squares Structural Equation Modeling (PLS-SEM) using SmartPLS 4 software (Ringle et al., 2022), as the research model involves latent constructs and tests both mediating and moderating relationships (Hair et al., 2022).

Measurement Model (Outer Model) Evaluation

(1) Convergent validity through outer loading values (> 0.70, with a tolerance of 0.60-0.70 provided the AVE remains satisfied) and Average Variance Extracted/AVE (> 0.50); (2) construct reliability through Cronbach's Alpha and Composite Reliability (> 0.70); (3) discriminant validity through the Fornell-Larcker Criterion and Heterotrait-Monotrait Ratio (HTMT); and (4) indicator collinearity testing through the Variance Inflation Factor (VIF).

Structural Model (Inner Model) Evaluation

(1) R-square (R^2) and adjusted R-square to assess the model's predictive ability for the dependent variable; (2) effect size (f^2) to assess each predictor's relative contribution; (3) path coefficients to assess the direction and strength of the relationships among variables, including the moderating interaction effect of digital transformation; (4) t-statistics and p-values through bootstrapping (5,000 subsamples) to test hypothesis significance, including the significance of the interaction (moderation) coefficients; and (5) model fit through the Standardized Root Mean Square Residual (SRMR) and Normed Fit Index (NFI).

Table 2. Hypothesis Testing Criteria

Hypothesis	Relationship	Expected Direction	Acceptance Criteria
H1	Job Insecurity → Employee Well-being	Negative	p-value < 0.05 and negative coefficient
H2	Green Innovative Work Behavior → Employee Well-being	Positive	p-value < 0.05 and positive coefficient
H3	Digital Transformation moderates Job Insecurity → Employee Well-being	Significant (strengthening/weakening)	p-value of interaction coefficient < 0.05 (bootstrapping)
H4	Digital Transformation moderates Green Innovative Work Behavior → Employee Well-being	Significant (strengthening/weakening)	p-value of interaction coefficient < 0.05 (bootstrapping)

Research Ethics

This study upholds the principle of respondent data confidentiality. Respondents were informed that participation was voluntary (informed consent), that responses would be used solely for academic purposes, and that personal identities would not be published. Questionnaire items were not used to

evaluate the performance of any specific individual, but rather to obtain an aggregate overview of the relationships among the research variables.

Results

This section presents the results of the field data processing that operationalizes the conceptual framework and research hypotheses, following the analysis procedures established in the Method section. Data were collected from 103 respondents who met the purposive sampling criteria, thereby satisfying the recommended minimum sample threshold for Partial Least Squares Structural Equation Modeling (PLS-SEM) estimation (Hair et al., 2022). Data processing was carried out using SmartPLS 4 software (Ringle et al., 2022) in two stages, namely the Algorithm stage to obtain measurement and structural model estimates, and the Bootstrapping stage with 5,000 subsamples to test the significance of the path coefficients.

The structural model estimated in this section positions job insecurity (X1) and green innovative work behavior (X2) as direct predictors of employee well-being (Y), with digital transformation (Z) as a moderating variable on both paths, consistent with the model and hypotheses H1 through H4. Following standard practice in PLS-SEM moderation analysis, the main effect of digital transformation on employee well-being was also estimated together with the two moderation interaction terms, so that the interaction coefficients would not be biased by an unaccounted direct effect of the moderator (Hair et al., 2022). This main effect is not part of hypotheses H1 through H4, but is reported as an additional finding because it provides theoretically and practically relevant information.

Measurement Model (Outer Model) Evaluation

Convergent Validity

Convergent validity was assessed through the outer loading value of each indicator and the Average Variance Extracted (AVE) value of each construct. The results in Table 3 show that all indicators have outer loadings ranging from 0.622 to 0.899. Most indicators meet the ideal threshold of 0.70 (Hair et al., 2022), while three indicators, namely EWB-02 (0.622), GIWB-01 (0.663), and GIWB-03 (0.670), fall within the 0.60-0.70 range, which remains marginally acceptable because the AVE value of the related construct remains above the 0.50 threshold; these three indicators were therefore retained in the model.

Table 3. Indicator Outer Loadings (Summary)

Construct	Outer Loading Range	Number of Indicators	Note
Digital Transformation	0.795 – 0.899	5	All valid
Employee Well-being	0.622 – 0.844	10	2 marginals (EWB-01, EWB-02)
Green Innovative Work Behavior	0.663 – 0.825	8	2 marginals (GIWB-01, GIWB-03)
Job Insecurity	0.695 – 0.854	6	1 marginal (JI-01)

Convergent validity at the construct level is confirmed by AVE values that are all above 0.50: Digital Transformation 0.710, Employee Well-being 0.564, Green Innovative Work Behavior 0.573, and Job Insecurity 0.632 (Table 4). These values indicate that the average variance of the indicators explained by each latent construct exceeds the measurement error variance, so that the model's convergent validity is satisfied (Hair et al., 2022; Fornell & Larcker, 1981).

Construct Reliability

Construct reliability was tested through Cronbach's Alpha and Composite Reliability (rho_c) values. Table 4 shows that all constructs have Cronbach's Alpha values between 0.884 and 0.915 and Composite Reliability values between 0.911 and 0.928, far exceeding the required 0.70 threshold (Hair et al., 2022). All research instruments are therefore reliable and internally consistent in measuring the constructs of job insecurity, employee well-being, green innovative work behavior, and digital transformation.

Table 4. Construct Reliability and Average Variance Extracted (AVE)

Construct	Cronbach's Alpha	Composite Reliability (rho_a)	Composite Reliability (rho_c)	AVE
Digital Transformation	0.898	0.913	0.924	0.710
Employee Well-being	0.915	0.923	0.928	0.564
Green Innovative Work Behavior	0.894	0.905	0.914	0.573
Job Insecurity	0.884	0.903	0.911	0.632

Discriminant Validity

Discriminant validity was tested using two approaches: the Fornell-Larcker Criterion and the Heterotrait-Monotrait Ratio (HTMT). Based on the Fornell-Larcker Criterion, the square root of AVE for each construct (0.843 for Digital Transformation, 0.751 for Employee Well-being, 0.757 for Green Innovative Work Behavior, and 0.795 for Job Insecurity) is larger than that construct's correlation with any other construct in the model, with the highest correlation found between Digital Transformation and Green Innovative Work Behavior at 0.622. This result is reinforced by HTMT values that are all below the conservative threshold of 0.85 (Henseler et al., 2015), with the highest value also found between Digital Transformation and Green Innovative Work Behavior at 0.669. Discriminant validity among the constructs is therefore satisfied, indicating that job insecurity, employee well-being, green innovative work behavior, and digital transformation are empirically distinct constructs.

Collinearity Test (VIF)

Prior to structural model testing, a collinearity test was conducted to ensure no multicollinearity among predictors. The Variance Inflation Factor (VIF) values in the inner model range from 1.055 to 1.935, far below the threshold of 5, and even below the conservative threshold of 3 (Hair et al., 2022). These results indicate that job insecurity, green innovative work behavior, digital transformation, and their two moderation interaction terms do not statistically overlap, so that the structural model's path coefficient estimates can be reliably interpreted.

Structural Model (Inner Model) Evaluation

Coefficient of Determination (R^2)

The results show an R-square value for Employee Well-being of 0.4215 and an adjusted R-square of 0.3917 (Table 5). Referring to the criteria of Chin (1998), an R^2 value of 0.4215 falls into the moderate category, meaning that job insecurity, green innovative work behavior, digital transformation, and their two moderation interactions jointly explain approximately 42.15 percent of the variance in employee well-being, while the remainder is explained by other factors outside the model, such as organizational support, leadership, or individual characteristics not tested in this study.

Table 5. Coefficient of Determination (R^2)

Dependent Variable	R-square	R-square Adjusted
Employee Well-being	0.4215	0.3917

Effect Size (f^2)

Effect size (f^2) is used to assess the relative contribution of each predictor to the R^2 of Employee Well-being. Based on Cohen's (1988) criteria, an f^2 value of 0.02 is categorized as small, 0.15 as medium, and 0.35 as large. Table 6 shows that job insecurity ($f^2 = 0.180$) and digital transformation ($f^2 = 0.161$) make medium-category contributions to employee well-being, the interaction between digital transformation and job insecurity ($f^2 = 0.168$) also contributes at a medium level, while green innovative work behavior ($f^2 = 0.015$) and the interaction between digital transformation and green innovative work behavior ($f^2 = 0.028$) contribute only a small to negligible amount.

Table 6. Effect Size (f^2)

Relationship	**f-square**	**Category**
Digital Transformation → Employee Well-being	0.161	Medium
Green Innovative Work Behavior → Employee Well-being	0.015	Small (negligible)
Job Insecurity → Employee Well-being	0.180	Medium
Digital Transformation × Green Innovative Work Behavior → Employee Well-being	0.028	Small
Digital Transformation × Job Insecurity → Employee Well-being	0.168	Medium

Model Fit

Model fit was evaluated through the Standardized Root Mean Square Residual (SRMR) and Normed Fit Index (NFI). The results show an SRMR value of 0.0995, slightly above the conservative threshold of 0.08 recommended by Hu and Bentler (1999), but still within the more lenient 0.10 threshold acceptable for PLS-SEM (Henseler et al., 2014). The NFI value of 0.644 is also below the 0.90 threshold commonly used in covariance-based SEM. Given that NFI tends to be overly conservative when applied to PLS-SEM (Hair et al., 2022), both indicators are more appropriately interpreted as a note of caution rather than as evidence of model failure.

Hypothesis Testing (Bootstrapping)

Hypothesis testing was carried out through bootstrapping with 5,000 subsamples, with the acceptance criterion being a p-value < 0.05. Figure 2 presents the structural model path diagram from the SmartPLS 4 output, showing the constructs of job insecurity, digital transformation, employee well-being, and green innovative work behavior along with their reflective indicators. Table 7 summarizes the path coefficient estimates (original sample), t-statistics, and p-values for the five relationships tested in the structural model.

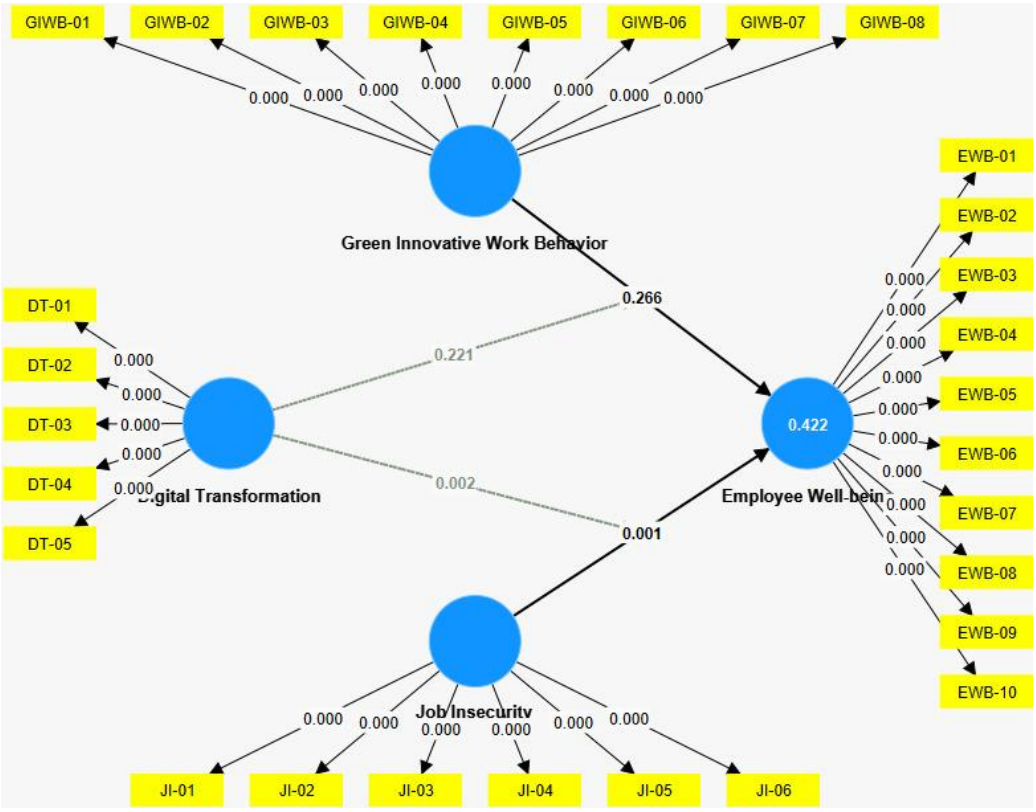


Figure 2. Path Diagram of the SmartPLS 4 Structural Model Output

Note: the path coefficients, t-statistics, and p-values underlying hypothesis testing in this section refer to the full Algorithm and Bootstrapping report of SmartPLS 4 (Table 7), because the path diagram canvas displays rounded values that may differ depending on the analysis stage and settings active at the time the screenshot was taken.

Table 7. Path Coefficient Test Results via Bootstrapping

Relationship	Path Coefficient (O)	T Statistics	P Values	Note
Digital Transformation → Employee Well-being	0.424	3.721	0.000	Significant (positive)
Green Innovative Work Behavior → Employee Well-being	0.121	1.112	0.266	Not significant
Job Insecurity → Employee Well-being	-0.331	3.464	0.001	Significant (negative)
Digital Transformation × Green Innovative Work Behavior → Employee Well-being	0.112	1.225	0.221	Not significant
Digital Transformation × Job Insecurity → Employee Well-being	0.294	3.076	0.002	Significant (positive)

A summary of the hypothesis testing decisions is presented in Table 8. All four hypotheses formulated in the Literature Review were estimated directly through the structural model in this section. Hypotheses H1 and H3 are supported, while hypotheses H2 and H4 are not supported because their path coefficients are not statistically significant. The main effect of digital transformation on employee well-being, although not part of hypotheses H1 through H4, is also presented as an additional finding because it is methodologically necessary for estimating the moderation interactions (Hair et al., 2022).

Table 8. Summary of Hypothesis Testing

Hypothesis	Relationship	Decision	Result Summary
H1	Job Insecurity → Employee Well-being (negative)	Supported	β = -0.331; t = 3.464; p = 0.001
H2	Green Innovative Work Behavior → Employee Well-being (positive)	Not supported	β = 0.121; t = 1.112; p = 0.266 (not significant)
H3	Digital Transformation moderates Job Insecurity → Employee Well-being	Supported	β interaction = 0.294; t = 3.076; p = 0.002
H4	Digital Transformation moderates Green Innovative Work Behavior → Employee Well-being	Not supported	β interaction = 0.112; t = 1.225; p = 0.221
Additional finding	Digital Transformation → Employee Well-being (main effect)	Significant (positive)	β = 0.424; t = 3.721; p < 0.001

Discussion

The Effect of Job Insecurity on Employee Well-being (H1)

The results show that job insecurity has a significant negative effect on employee well-being (β = -0.331; t = 3.464; p = 0.001), such that hypothesis H1 is empirically supported. This finding is consistent with Conservation of Resources Theory, which explains that the threat of job loss depletes employees' psychological resources, thereby reducing their well-being (Hobfoll, 1989). This finding is also consistent with prior empirical evidence showing a negative relationship between job insecurity and employees' psychological health and job satisfaction (Sverke et al., 2002; Kundi et al., 2021; Yam et al., 2023). Thus, the higher employees' perceived threat to job continuity due to organizational and digital technology change, the lower their perceived comfort, positive energy, and job satisfaction.

The Effect of Green Innovative Work Behavior on Employee Well-being (H2)

The results show that green innovative work behavior has a positive effect on employee well-being, consistent with the hypothesized direction, but the effect is not statistically significant (β = 0.121; t = 1.112; p = 0.266), such that hypothesis H2 is not empirically supported. One possible explanation is that the psychological benefit of engaging in green innovation for employee well-being is indirect or conditional, only truly felt when employees' contributions receive adequate organizational recognition or support (Grant et al., 2007; Al-Swidi et al., 2021), making its direct effect weaker than the more direct and universal effect of job insecurity. Another possibility is that engaging in green innovative work behavior demands additional energy and time that, for some employees, may offset the psychological benefits gained (Danna & Griffin, 1999), resulting in a non-significant net effect on well-being in this sample. This finding suggests the need for further research to explore the mechanisms or boundary conditions under which green innovative work behavior genuinely contributes to employee well-being.

The Moderating Role of Digital Transformation on Job Insecurity and Employee Well-being (H3)

The results show that digital transformation significantly moderates the effect of job insecurity on employee well-being (β interaction = 0.294; t = 3.076; p = 0.002), such that hypothesis H3 is empirically supported. Given that the main effect of job insecurity on employee well-being is negative (H1), this positive and significant interaction coefficient indicates that the intensity of digital transformation tends to weaken, or buffer, the negative impact of job insecurity on employee well-being. In other words, among employees who perceive the digitalization process as running supportively and easing their work,

the negative impact of job insecurity threat on psychological well-being tends to be lighter compared to employees who do not perceive such digitalization support. This pattern is consistent with the job demands-resources interaction principle, namely that the availability of job resources can buffer the relationship between job demands and employee outcomes (Bakker & Demerouti, 2007; Galanakis & Tsitouri, 2022), and reinforces the argument that digital transformation can function as a contextual resource, not merely a job demand, when managed appropriately (Feroz et al., 2021; He et al., 2021).

The Moderating Role of Digital Transformation on Green Innovative Work Behavior and Employee Well-being (H4)

The results show that digital transformation does not significantly moderate the effect of green innovative work behavior on employee well-being (β interaction = 0.112; t = 1.225; p = 0.221), such that hypothesis H4 is not empirically supported. This finding indicates that the intensity of digitalization does not necessarily strengthen the contribution of green innovation engagement to employee well-being, even though conceptually digital transformation is presumed to provide collaboration and recognition tools that strengthen the psychological benefits of green innovation (Al-Swidi et al., 2021; Darvishmotevali & Altinay, 2022). This non-significance is consistent with the non-significant main effect of green innovative work behavior on employee well-being in H2, suggesting that the relationship between green innovative work behavior and employee well-being is likely influenced by other variables not tested in this study, such as organizational support or a green innovation culture, rather than by digitalization intensity alone (Dumont et al., 2017; Kim et al., 2019).

Additional Finding: The Main Effect of Digital Transformation on Employee Well-being

Beyond the four hypothesized paths, the results also show that digital transformation has a significant positive effect on employee well-being (β = 0.424; t = 3.721; p < 0.001). This result is notable because, in the Introduction, digital transformation is generally associated with psychological pressure and threat for employees (Tarafdar et al., 2007; Trenerry et al., 2021). However, this finding offers a nuanced perspective consistent with the Job Demands-Resources Model: digital transformation does not always function solely as a job demand, but can also become a job resource when accompanied by improved work efficiency, flexibility, and mastery of new competencies (Bakker & Demerouti, 2007; Feroz et al., 2021). This finding reinforces the interpretation of the H3 test results, namely that in this study, digital transformation consistently functions as a resource that supports employee well-being, both through its direct effect and through its role in buffering the negative impact of job insecurity.

Theoretical Implications

Theoretically, this study reinforces the relevance of Conservation of Resources Theory in explaining the impact of job loss threats on employee well-being in the context of digital transformation (Hobfoll, 1989). This study also extends the Job Demands-Resources Model by showing that digital transformation can play a dual role, functioning as both a direct predictor and a moderating variable that buffers the negative impact of job insecurity on employee well-being (Bakker & Demerouti, 2007). Conversely, the non-support of H2 and H4 provides an important theoretical contribution, showing that engagement in green innovative work behavior does not automatically enhance employee well-being nor is it strengthened by digitalization intensity alone, indicating the need for additional theoretical frameworks, such as organizational recognition or social support, to explain the boundary conditions of the psychological benefits of green innovation (Grant et al., 2007; Al-Swidi et al., 2021).

Managerial Implications

For organizations, these findings offer several practical insights. First, organizations need to actively manage employees' job insecurity perceptions through transparent change communication, clear career

pathways, and technology adaptation training, given that job insecurity significantly reduces employee well-being (H1). Second, given that digital transformation has a positive effect on employee well-being while also buffering the negative impact of job insecurity (H3), organizations are advised to accelerate the implementation of supportive digital technology, such as efficient and intuitive work systems, accompanied by adequate assistance, rather than delaying digital transformation out of concern that it will create psychological pressure. Third, because the contribution of green innovative work behavior to employee well-being has not been shown to be significant, either directly (H2) or through the moderation of digital transformation (H4), organizations need to consider other supporting factors, such as recognition of green innovation contributions and resource support, so that employee engagement in green innovation genuinely contributes to their well-being (Dumont et al., 2017; Kim et al., 2019).

Limitations

Several limitations should be noted when interpreting the results of this study. First, an SRMR value of 0.0995 and an NFI value of 0.644 indicate that the structural model fit remains marginal, so that generalization of the results should be made with caution, and the model is recommended for refinement in future research, for example by adding relevant control variables. Second, the cross-sectional design and single-source self-report data collection limit strong causal inference and may introduce common method bias, although several procedures were undertaken to minimize this risk (Podsakoff et al., 2024). Third, the interpretation of the moderation direction in H3 in this study is based on the sign of the interaction coefficient, while an explicit simple slope test at high and low levels of digitalization is not yet available in the analysis output used, so future research is recommended to also present simple slope analysis to further clarify this moderation pattern both visually and numerically.

Conclusion

Based on the results and discussion above, this study draws the following conclusions. (1) The measurement model (outer model) in this study satisfies the criteria of convergent validity, construct reliability, and discriminant validity, so that the instruments for job insecurity, employee well-being, green innovative work behavior, and digital transformation are declared valid and reliable for structural model testing. (2) Job insecurity has a significant negative effect on employee well-being, such that hypothesis H1 is empirically supported; this finding confirms that threats to job continuity triggered by digital transformation can deplete psychological resources and reduce employee well-being, consistent with Conservation of Resources Theory. (3) Green innovative work behavior has a positive effect on employee well-being consistent with the hypothesized direction, but the effect is not statistically significant, such that hypothesis H2 is not empirically supported.

(4) Digital transformation significantly moderates (buffers) the negative effect of job insecurity on employee well-being, such that hypothesis H3 is empirically supported; this finding shows that digital transformation, when managed supportively, can dampen the negative impact of job insecurity on employee well-being. (5) Digital transformation does not significantly moderate the effect of green innovative work behavior on employee well-being, such that hypothesis H4 is not empirically supported. (6) Beyond the four hypotheses, digital transformation has a significant positive main effect on employee well-being, indicating that digital transformation is not always threatening, but can also function as a job resource that supports employee well-being. (7) The tested structural model explains 42.15 percent of the variance in employee well-being ($R^2 = 0.4215$), a moderate category, with job insecurity and digital transformation (both its main effect and its moderating interaction with job insecurity) as the main contributors.

Recommendations

Theoretical Recommendations

Given that hypotheses H2 and H4 are not empirically supported, future research is recommended to explore mediating variables or boundary conditions that explain when and how green innovative work behavior genuinely contributes to employee well-being, for example by including organizational recognition, social support, or a green innovation culture as additional variables. Future research is also recommended to explicitly present simple slope analysis to further clarify the moderation pattern of digital transformation on the relationship between job insecurity and employee well-being (H3) at high and low levels of digitalization intensity, and to consider a longitudinal or time-lagged design to strengthen causal inference, given that the cross-sectional design in this study limits strong causal conclusions.

Practical (Managerial) Recommendations

Organizations, particularly in the financial services sector undergoing intensive digital transformation, are advised to manage employee job insecurity through transparent change communication, reskilling and upskilling programs, and clear career path certainty amid technological change. Organizations are advised to accelerate the implementation of supportive and user-friendly digital technology, accompanied by adequate implementation assistance, given that well-managed digital transformation has been shown to enhance employee well-being while buffering the negative impact of job insecurity. Organizations are also advised to provide adequate recognition and resource support for employees engaged in green innovative work behavior, given that the contribution of this behavior to employee well-being was not shown to be significant in this study and therefore requires reinforcement through more explicit organizational policy.

Methodological Recommendations

Future research is recommended to refine the structural model to improve the model fit values (SRMR and NFI), which remain marginal in this study, for example through the addition of relevant control variables. Future research is also recommended to expand the sample coverage across various industry sectors undergoing digital transformation, not limited to the financial services sector, to assess the generalizability of these findings, and to consider data sources other than self-report to reduce the risk of common method bias.

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