Jurnal Minds: Manajemen Ide dan Inspirasi
Vol. 12, No. 2 (December) 2025: 635-646

SMILES, SYSTEMS, AND SUPPORT: HOW TECHNOLOGY AND WORKPLACE CLIMATE SHAPE FRONTLINE EMPLOYEE GROWTH

[1]Moh. Zulkifli Murfat, [1]Moh. Zulfachmi Murfat, [1]Mahathir Mohamad, [2]Ali Anas
[1]Universitas Muslim Indonesia, Indonesia
[2]Universitas Bosowa, Indonesia

Citation (APA 7th): Murfat, M. Z., Murfat, M. Z., Mohamad, M., & Anas, A. (2025). Smiles, Systems, and Support: How Technology and Workplace Climate Shape Frontline Employee Growth. *Jurnal Minds: Manajemen Ide Dan Inspirasi*, *12*(2), 635–646. https://doi.org/10.24252/minds.v12i2.56641

Submitted: 06 May 2025
Revised: 05 October 2025
Accepted: 06 October 2025
Published: 06 October 2025

ABSTRACT: Frontline employees stand where technology meets human service. This study contributes to HRM scholarship by integrating Job Demands–Resources and Social Exchange theories to explain how technological support and a supportive working environment jointly uphold employee growth in service organizations. Using survey data from 329 Indonesian retail workers and partial-least-square structural-equation-modeling, results reveal that technology enhances growth both directly and through a supportive climate that nurtures trust and engagement. The findings extend socio-technical and JD–R perspectives by illustrating how digital tools become developmental resources only when embedded in caring organizational climates. Managers should treat technology not as automation but as a partner in human capability building through empathy, training, and supportive design.

Keywords: Employee Growth; Technological Support; Supportive Climate; Frontline Workers; HRM in Retail

*Corresponding Author: mohzulkifli.murfat@umi.ac.id
DOI: https://doi.org/10.24252/minds.v12i2.56641
ISSN-E: 2597-6990
ISSN-P: 2442-4951
http://journal.uin-alauddin.ac.id/index.php/minds
Publisher: Management Department, Universitas Islam Negeri Alauddin Makassar, Indonesia

INTRODUCTION

The accelerating digitalization of the global service sector has fundamentally altered how employees interact with customers, colleagues, and technology. In Southeast Asia alone, over 70% of frontline service organizations have adopted AI-enabled customer interfaces or digital support systems to manage consumer demand and service complexity (International Labour Organization, 2023). In Indonesia, the retail and hospitality industries now employ nearly 22 million workers, with 65% reporting daily interaction with digital systems for inventory, sales, and customer engagement (Badan Pusat Statistik, 2024). Yet, paradoxically, despite this widespread adoption, many organizations continue to report stagnation in employee development and service quality, suggesting a persistent "technology–human gap" in digital transformation outcomes. HR scholars have begun to note that technology's success depends not only on its technical sophistication but also on the social climate in which it is embedded (Parker & Grote, 2020). In developing economies, where relational norms and leadership behavior shape employee perceptions more strongly than formal structures, understanding how technological support interacts with the supportive working environment to promote employee growth has become an essential research priority.

The integration of technology into HRM practices has revived interest in the socio-technical systems perspective, which emphasizes the joint optimization of technical and social subsystems (Trist & Bamforth, 1951; Pasmore, 2015). Within this framework, technology serves as a "structural resource" that must align with the social processes of work to enhance motivation and development. The Job Demands–Resources (JD–R) theory (Bakker & Demerouti, 2017) provides a useful lens to interpret this alignment: technological infrastructure represents a job resource that fosters competence and engagement, while the supportive environment acts as a social resource that reinforces these motivational processes (Lesener, Gusy, & Wolter, 2019). When these resources co-exist, they not only enhance performance but also enable employee growth—defined as the acquisition of new knowledge, adaptive skills, and career progression opportunities. Complementing JD–R, Social Exchange Theory (SET) (Cropanzano et al., 2017) suggests that employees interpret organizational investments—such as digital tools or supportive climates—as indicators of trust and reciprocity. Employees, in turn, respond with heightened learning motivation and engagement (Eisenberger, Malone, & Presson, 2020). Yet despite their conceptual complementarity, empirical studies integrating JD–R, SET, and socio-technical perspectives in the context of technological support and employee growth remain limited, especially in emerging economies.

Recent scholarship on digital HRM highlights both opportunities and tensions. While digital systems can automate administrative work and enhance decision-making, they also risk depersonalization and overload if not supported by enabling climates (Strohmeier, 2020; Parent-Rocheleau & Parker, 2022). HRM system-strength theory (Farndale & Sanders, 2017) further posits that practices and technologies exert influence through the clarity and consistency of their signals. In other words, digital support tools only foster employee development when employees perceive them as coherent with managerial support, fairness, and autonomy. Empirical studies in hospitality and retail settings reveal that digital HRM strengthens perceived organizational support and engagement through resource provision and transparent feedback mechanisms (Hu, Kwan, & Zhang, 2024). However, research seldom examines how these dual resources—technological and social—interact to drive growth-related outcomes. Understanding this interaction is particularly relevant for labor-intensive, service-driven economies where technological capability is uneven and psychological safety remains an underdeveloped construct (Frazier et al., 2017).

Addressing these gaps, the present study develops and tests a model that links technological support for customer service, supportive working environment, and employee growth within the framework of JD–R and SET. Specifically, it proposes that technological support functions as both a direct enabler of employee development and an indirect catalyst through the creation of a supportive climate. The study contributes to theory by integrating motivational (JD–R), relational (SET), and socio-technical (Trist & Bamforth, 1951; Pasmore, 2015) perspectives into a unified model of employee growth. Empirically, it provides evidence from a developing-country context—Indonesia—where the success of digital transformation depends on the interaction between technology and climate. Conceptually, it extends HRM

system-strength theory by identifying supportive environment as a mediating mechanism through which digital resources translate into developmental outcomes. By articulating this mechanism, the study advances an emerging HRM discourse: that technology becomes a strategic enabler of human potential only when its deployment is socially contextualized and psychologically safe.

THEORETICAL REVIEW

The conceptual foundation of this study draws upon the Job Demands–Resources (JD–R) theory (Bakker & Demerouti, 2017) and Social Exchange Theory (SET) (Cropanzano et al., 2017), which together provide a robust lens through which to interpret how technological support and a supportive working environment jointly influence employee growth. JD–R theory posits that all occupations entail job demands (aspects of work requiring effort) and job resources (aspects that facilitate goal achievement, reduce demands, or stimulate growth). When employees perceive abundant resources—such as supportive supervision, developmental feedback, or effective technological tools—they experience greater motivation and engagement, leading to performance and development outcomes (Bakker & Demerouti, 2017; Lesener, Gusy, & Wolter, 2019). This motivational process becomes particularly salient in dynamic service environments where technology mediates much of the employee–customer interface.

SET complements this reasoning by emphasizing the reciprocity between employees and their organizations (Cropanzano et al., 2017). Employees interpret organizational provisions—whether material, structural, or relational—as signals of trust and care. In turn, they reciprocate through heightened effort, engagement, and loyalty. When technology and workplace climate together demonstrate organizational commitment to employee success, employees are likely to invest greater energy in self-development. This reciprocity mechanism, grounded in perceived organizational support (Eisenberger et al., 2020), offers a social-psychological pathway linking HR systems to individual growth outcomes.

Within the contemporary digital HRM discourse, scholars have argued that the integration of technology into HR processes must be interpreted not merely as automation but as an expansion of the resource base available to employees (Bondarouk & Brewster, 2022; Strohmeier, 2020). Properly designed technological systems serve as “job resources” that enhance autonomy, feedback, and learning opportunities. Yet, their potential depends on the surrounding climate: supportive environments moderate whether technological interventions are perceived as empowering or controlling (Parent-Rocheleau & Parker, 2022). Accordingly, the theoretical model conceptualizes technological support and supportive climate as complementary mechanisms operating through motivational and relational processes that culminate in employee growth.

Hypothesis Development

A supportive working environment embodies the social and structural conditions that enable learning, psychological safety, and performance. Psychological safety—the belief that one can speak up, take risks, and make mistakes without fear of negative repercussions—has been repeatedly identified as a precursor of growth and creativity (Newman, Donohue, & Eva, 2017; Frazier et al., 2017). Environments characterized by managerial support, open communication, and resource accessibility cultivate thriving, defined as the joint experience of vitality and learning (Kleine, Rudolph, & Zacher, 2019). These constructs correspond closely to the JD–R concept of “job resources,” which energize and sustain motivation (Bakker & Demerouti, 2017). When organizations invest in such climates, employees experience higher self-efficacy, greater adaptive capability, and more willingness to learn—key indicators of employee growth.

H1: A supportive working environment has a positive and significant effect on employee growth.

Technological support in customer-facing settings represents a vital job resource that shapes employees’ capacity for learning and development. The integration of digital platforms, analytics, and automation tools reduces task ambiguity, provides real-time feedback, and enhances service precision (Parker & Grote, 2020). Such systems improve employees’

perceptions of competence and control, which, in turn, stimulate learning motivation and engagement (Gibbs, Mengel, & Siemsen, 2021). Evidence from hospitality and service research confirms that frontline employees' effective interaction with digital systems and AI tools improves performance through enhanced knowledge acquisition and self-efficacy (Yang et al., 2025). Conversely, when technology is poorly designed or imposed without adequate support, it can increase strain and inhibit learning (Tarafdar, Cooper, & Stich, 2019). Thus, under conditions of adequate training and alignment with HRM practices, technological support functions as a resource that facilitates employee growth.
H2: Technological support for customer service has a positive and significant effect on employee growth.

Beyond its instrumental function, technology can alter employees' social perceptions of the work environment. When digital tools are deployed transparently and with participatory implementation, employees interpret these investments as organizational signals of trust and empowerment. This interpretation aligns with the Social Exchange Theory principle of reciprocity, whereby employees respond positively to perceived organizational support (Cropanzano et al., 2017). Empirical studies demonstrate that digital HRM practices enhance perceived organizational support and work engagement when employees view technology as a facilitator rather than a monitor (Hu, Kwan, & Zhang, 2024). Research on HRM system strength similarly finds that consistent, distinct, and consensual HR messages—of which technology is one—build a shared perception of support (Farndale & Sanders, 2017; Heffernan et al., 2022). Therefore, technology functions as both a tangible and symbolic resource, shaping the supportive climate through which employees interpret organizational care.
H3: Technological support has a positive and significant effect on the supportive working environment.

The relationship between technological support and employee growth is expected to be mediated by the supportive working environment. JD–R theory posits that resources—whether physical, cognitive, or social—trigger motivational processes that translate into performance and development only when they are perceived as supportive and meaningful (Bakker & Demerouti, 2017). Technological resources, therefore, contribute to growth indirectly by fostering an environment conducive to learning and collaboration. This mechanism is consistent with HRM system-strength theory, which asserts that HR practices influence outcomes through the climate they create (Farndale & Sanders, 2017). In socio-technical systems theory, organizational outcomes emerge from the joint optimization of technical and social subsystems (Trist & Bamforth, 1951; Pasmore, 2015). When technology is integrated into a supportive climate, it not only increases task efficiency but also promotes psychological empowerment and professional growth.
H4: The supportive working environment mediates the relationship between technological support and employee growth.

RESEARCH METHOD

This study adopted a quantitative research design to examine the structural relationships among technological support for customer service, supporting working environment, and employee growth within the retail sector of Makassar, Indonesia. The underlying model investigates both direct effects and the mediating role of supporting working environment in the linkage between technological support and employee growth. The context is grounded in retail organizations where frontline employees operate at the interface between firms and consumers, and where human-resource-enabled service delivery is exposed to the daily strains of customer-facing operations. Quantitative methodology was chosen for its ability to identify patterns, test causal relations, and generalize findings across organizational units with consistent exposure to standardized systems of technological and managerial support. Survey research provided the platform for primary data collection, allowing for structured, replicable insight into individual perceptions of workplace enablers and developmental outcomes.

The empirical setting centers on frontline workers in Makassar's retail industry, encompassing department stores, supermarkets, specialty shops, and convenience chains.

These establishments rely heavily on service employees to deliver consistent customer value under time constraints and fluctuating customer demands. A purposive sampling technique was used to target employees who engage directly with customers during their regular shifts, as their experiences are most relevant to the constructs under examination. A total of 500 questionnaires were distributed through managerial intermediaries and on-site visits, resulting in 329 valid responses (response rate = 65.8%). Respondents represented a cross-section of retail subsectors and were screened for tenure (minimum of 6 months) and direct service exposure. This selection criterion ensured data integrity by capturing informed evaluations of workplace technology, environmental support, and individual growth experiences.

Measurement scales were drawn from prior validated instruments. Technological support for customer service was measured using the construct developed by Ray, Barney, and Muhanna (2004), which captures the extent to which firm-level IT systems enhance frontline service delivery, including access to real-time information, integration of customer data, and task coordination. Supporting working environment was operationalized based on the scale from Russell and Russell (1992), originally published in Journal of Management. This construct assesses the psychological and structural attributes of the work environment that empower employees, including managerial backing, participative practices, and resource adequacy. Employee growth was assessed using the scale from Li, Huang, and Tsai (2008), which focuses on developmental opportunities, competence expansion, and perceived career progression. All items employed a five-point Likert scale (1 = strongly disagree, 5 = strongly agree), and underwent minor linguistic adjustments for contextual and cultural fit through a double translation process (English–Bahasa–English) overseen by bilingual experts.

Data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM), executed via SmartPLS 4. This method was appropriate due to the predictive orientation of the study, the model's mediation pathway, and the reflective nature of the latent constructs. PLS-SEM also accommodates non-normal data distributions and provides robustness for complex models with medium-sized samples. Prior to hypothesis testing, the measurement model was assessed for reliability and validity. Cronbach's alpha and composite reliability values exceeded the threshold of 0.70, while average variance extracted (AVE) for all constructs was above 0.50, indicating convergent validity. Discriminant validity was examined using the Fornell-Larcker criterion and HTMT ratio, both confirming construct distinctiveness. The structural model was then evaluated for path significance, effect size (f^2), and variance explained (R^2), alongside the indirect effect testing to determine mediation.

RESULTS

Outer Model Revelation

The study employed Partial Least Squares Structural Equation Modeling (PLS-SEM) using SmartPLS 4 to rigorously test the proposed relationships among technological support for customer service, supportive working environment, and employee growth within the retail sector of Makassar, Indonesia. This analytic technique was selected for its robustness in handling complex models with latent constructs, non-normal data, and relatively moderate sample sizes, aligning with recommendations by Hair et al. (2021) for predictive, theory-building research in management and social sciences. The evaluation followed a two-stage analytical procedure: first, the measurement model was examined to verify the psychometric soundness of each construct; second, the structural model was assessed to evaluate the hypothesized direct and mediating relationships. Results of the measurement model, summarized in Table 1, demonstrate that all observed indicators exhibited strong convergent representation of their latent constructs, with standardized loadings exceeding the recommended threshold of 0.70, indicating high indicator reliability. Internal consistency reliability was further supported as all Cronbach's alpha and composite reliability (ρC) coefficients surpassed 0.70, confirming satisfactory homogeneity across item measures. Convergent validity was established through Average Variance Extracted (AVE) values ranging from 0.572 to 0.840, well above the 0.50 criterion, signifying that each construct captured more than half of its indicator variance. Discriminant validity was additionally confirmed through the Fornell–Larcker criterion and Heterotrait–Monotrait (HTMT) ratios (all < 0.85), ensuring distinct conceptual boundaries among

constructs. Model fit diagnostics—SRMR = 0.072, d_ULS = 0.340, d_G = 0.148, Chi-square = 291.845, and NFI = 0.839—indicated an acceptable overall fit between the empirical data and the theoretical model. Collectively, these results affirm that the measurement model achieved the required standards of reliability, validity, and model adequacy, thereby providing a solid empirical foundation for subsequent structural path analysis.

Table 1. Measurement Model Assessment and Model Fit Indices

Constructs / Paths	Items	VIF	Loading/β	α	CR (ρA)	CR (ρC)	AVE
Employee Growth	Growth1	1.317	0.726	0.627	0.636	0.800	0.572
	Growth2	1.369	0.819				
	Growth3	1.145	0.721				
Supportive Working Environment	SupEnv1	2.616	0.841	0.854	0.864	0.896	0.635
	SupEnv2	2.803	0.875				
	SupEnv3	1.517	0.714				
	SupEnv4	1.986	0.812				
	SupEnv5	1.713	0.729				
Technological Support	TechCS1	2.287	0.879	0.904	0.905	0.940	0.840
	TechCS2	4.501	0.946				
	TechCS3	3.705	0.923				
Model Fit Indices	SRMR = 0.072		d_ULS = 0.340	d_G = 0.148	Chi-square = 291.845		NFI = 0.839

Notes: All item loadings exceed 0.70, and AVE values surpass the 0.50 benchmark, supporting convergent validity. Composite reliability (ρC) and Cronbach's alpha values exceed 0.70, confirming internal consistency. Model fit indices (SRMR = 0.072; NFI = 0.839) indicate an acceptable fit according to Hair et al. (2014).
Source: Adapted Smartpls 4 Output (2025)

The measurement outcomes confirmed that the indicators adequately captured their respective latent constructs, demonstrating that employees in the retail industry perceive technological resources, workplace support, and personal growth as distinct yet related dimensions of organizational experience. The construct of Technological Support exhibited particularly high reliability (α = 0.904, ρC = 0.940), reflecting consistent perceptions of technology's role in facilitating customer service efficiency and information access. The Supportive Working Environment construct (α = 0.854, AVE = 0.635) also displayed strong internal consistency, showing that employees recognize managerial backing, participative structures, and resource adequacy as integral to their work climate. Meanwhile, Employee Growth (α = 0.627, AVE = 0.572) demonstrated satisfactory reliability, indicating that perceptions of growth, competence expansion, and career progress were stable across the sample.

The finding provides empirical assurance that the constructs are both psychometrically sound and contextually valid for the Makassar retail workforce. The robustness of the measurement model strengthens confidence in the subsequent structural model testing, where direct and mediating relationships among technological support, supportive environment, and employee growth are evaluated. The established validity of the indicators also highlights that even within developing market contexts, HRM constructs rooted in established Western literature retain theoretical and operational relevance when appropriately adapted. Next, we provide the test of discriminant validity with the Heterotrait-Monotrait Measurement as indicated in Table 2.

Table 1. HTMT Test of Discriminant Validity

Constructs	Employee Growth	Supportive Working Environment
Employee Growth		
Supportive Working Environment	0.597	
Technological Support for CS	0.607	0.447

Source: Adapted Smartpls 4 Output (2025)

The Heterotrait–Monotrait (HTMT) analysis was conducted to assess discriminant validity among the three latent constructs: technological support, supportive working environment, and employee growth. The results indicate that all HTMT values remain below the conservative

threshold of 0.85, confirming that each construct captures a distinct conceptual domain despite their theoretical linkage. The clear separation of constructs provides strong empirical evidence for discriminant validity, ensuring that subsequent path analyses are free from construct overlap or measurement contamination. This validation step strengthens the credibility of the structural model by confirming that observed relationships are not artifacts of conceptual redundancy. With the measurement model firmly established, the analysis proceeds to the structural model results, where the direct and indirect effects among technological support, supportive working environment, and employee growth are evaluated using PLS-SEM.

Inner Model Revelation

Following the confirmation of discriminant validity, the structural model was evaluated to test the hypothesized relationships among technological support for customer service, supportive working environment, and employee growth. Using PLS-SEM, path coefficients were estimated to assess both direct and mediated effects, while the coefficient of determination (R^2) and effect size (f^2) provided insight into the model's explanatory power. The results, summarized in Table 3, demonstrate that all hypothesized relationships were statistically significant at the 0.001 level, confirming that the proposed model offers a strong empirical explanation for the mechanisms linking technology, workplace support, and employee development within the retail context of Makassar, Indonesia.

Table 3. Structural Model Results

Paths	Effect (β)	t-valu	p-value	Decision
Supportive Working Environment → Employee Growth	0.311	6.616	0.000	H1 Accepted
Technological Support for Customer Service → Employee Growth	0.339	7.492	0.000	H2 Accepted
Technological Support for Customer Service → Supportive Working Environment	0.395	7.928	0.000	H3 Accepted
Technological Support for Customer Service → Employee Growth (indirect via Supportive Working Environment)	0.123	5.634	0.000	H4 Accepted
Constructs		R^2	Interpretation	
Employee Growth		0.296	Moderate power	
Supportive Working Environment		0.156	Weak-to-moderate power	
Effect Size (f^2)				
Supportive Working Environment		0.116	—	
Technological Support for Customer Service		0.138	0.185	

Notes: All hypothesized paths are significant at $p < 0.001$ (5,000 bootstrap resamples).
R^2 values indicate that the model explains 29.6% of the variance in Employee Growth and 15.6% in Supportive Working Environment, demonstrating acceptable explanatory strength in HRM behavioral research.
Effect size (f^2) values reveal that Technological Support for Customer Service exerts the strongest impact on both endogenous constructs, underscoring the pivotal role of digital enablement in HRM systems.
Source: Adapted Smartpls 4 Result (2025)

The findings indicate that a supportive working environment exerts a significant positive effect on employee growth, confirming that managerial backing, participative practices, and adequate resources promote developmental outcomes for frontline retail employees. Technological support for customer service also shows a strong direct influence on employee growth, suggesting that access to effective digital tools and integrated customer systems enables workers to perform more efficiently and develop greater confidence and capability in their roles. Furthermore, technological support significantly predicts a supportive working environment, reinforcing the notion that the presence of reliable and user-friendly technology contributes to a more enabling organizational climate. The mediation path through the supportive environment further underscores technology's indirect role in fostering employee growth—its influence extends beyond operational facilitation to shaping perceptions of workplace fairness, control, and empowerment. Figure 1 presents the graphical findings of the bootstrap result.

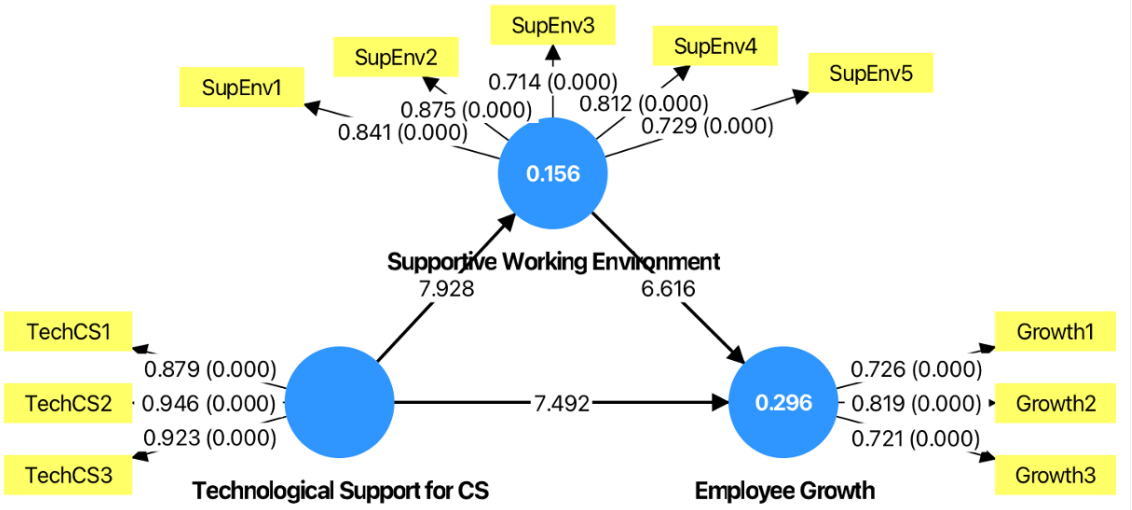

Figure 1. Model Presentation
Source: Smartpls 4 Output (2025)

The model explains approximately 29.6% of the variance in employee growth and 15.6% in supportive working environment, representing moderate explanatory power consistent with HRM field standards. The f^2 values also indicate meaningful effect sizes, with technological support exhibiting the largest impact on both endogenous constructs. These results collectively validate the theoretical model, confirming that technological infrastructure acts as both a direct enabler and an indirect catalyst for employee development through supportive organizational climates. This outcome advances the understanding of how technology and HRM systems interact to enhance employee growth in customer-centric environments, particularly in emerging market contexts where technological integration and human resource practices are still in transition.

DISCUSSION

The structural results provide robust support for all four hypothesized relationships. The hypothesis that a supportive working environment positively affects employee growth (H1) is accepted; so too is the direct effect of technological support for customer service on employee growth (H2). The effect of technological support on the supportive working environment (H3) is supported, and the mediated pathway from technological support → supportive environment → employee growth (H4) also holds. Together, these results position technological support as both a direct resource and an indirect climate shaper that channels its effects through work environment perceptions. This dual role is congruent with contemporary work design and JD–R thinking, which conceptualize technology as a potential job resource that can catalyze motivation and development when embedded in enabling contexts (Bakker & Demerouti, 2017; Parker & Grote, 2020).

The acceptance of H3—technology's positive influence on the supportive working environment—illuminates a mechanism of "resource signaling." In the retail context of Makassar, frontline employees plausibly read reliable service systems (e.g., integrated customer data and communication tools) as cues of organizational care and enablement. Emerging hospitality evidence shows that digital HRM strengthens perceived organizational support and engagement through resource gains (Hu, Kwan, & Zhang, 2024), and large-scale meta-analytic work indicates that perceived organizational support generalizes across cultures as a powerful predictor of positive attitudes and behaviors (Rockstuhl et al., 2020). This stream implies that when service technologies are introduced with coherent HR processes, employees infer supportive intent—amplifying climate perceptions beyond mere efficiency gains (Farndale & Sanders, 2017; Heffernan et al., 2022).

The confirmation of H1 and H2 reinforces a complementary view of growth. On one hand, supportive environments foster psychological safety and learning behaviors—conditions repeatedly tied to performance and development (Newman, Donohue, & Eva, 2017; Frazier et

al., 2017). On the other hand, when frontline employees are equipped with responsive, well-designed tools, they are better able to master tasks and accumulate competence, which translates into growth outcomes; recent service research shows how employee–AI interactions can enhance frontline performance when designed for augmentation (Yang et al., 2025), while broader analyses detail how automation and algorithmic tools reshape autonomy, feedback, and skill use—key job resources in the JD–R framework (Parker & Grote, 2020; Bakker & Demerouti, 2017).

The mediated effect (H4) sharpens the theoretical contribution. Rather than a simple "tech→growth" effect, a nontrivial portion of technology's influence is carried via the supportive climate, consistent with evidence that HRM and work systems affect outcomes through proximal psychological states and climates (Jiang, Lepak, Hu, & Baer, 2012) and with longitudinal meta-analytic confirmation of JD–R's motivational route from resources to positive outcomes (Lesener, Gusy, & Wolter, 2019). For HRM theory, this underscores socio-technical complementarities: technology investments realize their people outcomes to the extent that HRM system strength, supportive practices, and sense-giving around the tools convert "potential resources" into experienced resources** (Farndale & Sanders, 2017; Heffernan et al., 2022).

Explained variance from our model is meaningful for services research: approximately 30% of variance in employee growth and 15% in supportive environment are accounted for. The pattern of f^2indicates that technological support exerts the larger direct effect on growth, while the environment contributes substantively yet secondarily. This suggests that technology offers fast, visible returns; strategically, lasting leverage accrues when those tools are embedded in a climate that sustains learning and opportunity—precisely the JD–R logic of configuring resources to fuel motivational processes (Bakker & Demerouti, 2017).

At the same time, the findings invite careful managerial interpretation. First, technology is not self-justifying: managers should align rollouts with clear work-design choices (autonomy, feedback, skill development), participatory training, and visible endorsement so that employees experience the tools as empowering rather than controlling (Parker & Grote, 2020). Second, the double-edged nature of digitalization must be managed. The technostress literature distinguishes techno-eustress (energizing, growth-enhancing) from techno-distress (overload, invasion, complexity); design and implementation choices determine which side dominates (Tarafdar, Cooper, & Stich, 2019). Third, the growing reach of algorithmic management means that "algorithms are work designers": absent HR stewardship, monitoring and opaque decision rules can erode perceived support and climate even when tools raise efficiency (Parent-Rocheleau & Parker, 2022). These cautions converge on a managerial imperative of a strong HRM process so that employees construe technology as a resource embedded in a supportive system.

For practitioners in Makassar's retail sector and similar settings, the prescriptions are to deploy customer-service technologies (CRM dashboards, messaging platforms, AI assistants), ensure concurrent HR actions that stabilize the climate: participatory training cycles, feedback loops that surface pain points, and explicit framing that links the tools to development pathways (mentoring, rotation, stretch assignments). Cross-cultural evidence also suggests sensitivity to local norms around support and authority; supportive cues may carry heightened weight in more collectivist, tighter cultures (Rockstuhl et al., 2020; Farndale & Sanders, 2017).

Limitations temper causal claims. The cross-sectional design leaves open alternative explanations (e.g., growth-oriented employees rating technology and climate more favorably). Longitudinal or quasi-experimental research would strengthen inference, especially to track how climate evolves **after** tech adoption (Lesener et al., 2019). Moreover, the 15% R^2 on environment indicates omitted antecedents (leadership style, trust, equity perceptions) and potential cultural moderators; future work should test boundary conditions such as tech literacy and change readiness and should differentiate types of technological support (real-time analytics vs. AI co-pilots vs. workflow automation), given their distinct work-design signatures (Parker & Grote, 2020).

CONCLUSION AND FURTHER STUDY

This study advances the understanding of how technological support and a supportive working environment interact to foster employee growth within service organizations. Drawing

upon the Job Demands–Resources and Social Exchange frameworks, the findings confirm that technology functions both as a direct enabler of development and an indirect catalyst operating through the work environment. The results substantiate that when employees perceive technological systems as reliable and empowering, these systems amplify their sense of competence and stimulate learning; yet, these effects become sustainable only within climates characterized by trust, fairness, and managerial support. In theoretical terms, this research integrates the socio-technical and HRM system-strength perspectives, demonstrating that the co-evolution of digital infrastructure and supportive climate forms a dual-resource pathway to growth and engagement. Nonetheless, the study's cross-sectional design limits causal inference, and the moderate explanatory power for the supportive environment suggests that other antecedents—such as leadership behavior, organizational justice, and psychological empowerment—may complement the proposed model. Future research should employ longitudinal or multi-level approaches to trace dynamic effects over time and explore cultural contingencies that condition the perceived meaning of support in technology-mediated workplaces.

From a managerial standpoint, the results underscore that digital transformation and employee development must proceed in tandem. Managers should approach technology adoption as a human-resource intervention rather than a technical upgrade, ensuring that new systems are embedded within climates that foster psychological safety, feedback, and participatory learning. HR leaders should design implementation processes that communicate enabling intent, provide continuous training, and safeguard autonomy—thereby preventing technostress and enhancing engagement. Policymakers and practitioners in emerging economies may also view these findings as evidence that technological investment yields maximal developmental returns only when supported by coherent HRM policies that signal organizational care and equity. Building future organizations capable of both digital efficiency and human flourishing thus requires aligning technological resources with the social architectures that sustain growth.

ETHICAL DISCLOSURE

All participants provided written informed consent prior to participation. They were informed about the study's purpose, their voluntary participation, the right to withdraw at any time, and the confidentiality of their responses

CONFLICT OF INTERESTS

The authors declare no conflict of interest.

REFERENCES

Badan Pusat Statistik. (2024). *Labour force situation in Indonesia: 2024 report.* Jakarta: BPS-Statistics Indonesia.

Bakker, A. B., & Demerouti, E. (2017). Job demands–resources theory: Taking stock and looking forward. *Journal of Occupational Health Psychology, 22*(3), 273–285. https://doi.org/10.1037/ocp0000056

Bondarouk, T., & Brewster, C. (2022). The future of HRM and technology research. *Human Resource Management Review, 32*(3), 100873. https://doi.org/10.1016/j.hrmr.2021.100873

Cropanzano, R., Anthony, E. L., Daniels, S. R., & Hall, A. V. (2017). Social exchange theory: A critical review with theoretical remedies. *Academy of Management Annals, 11*(1), 479–516. https://doi.org/10.5465/annals.2015.0099

Eisenberger, R., Malone, G. P., & Presson, W. D. (2020). Optimizing perceived organizational support to enhance employee engagement. *Society for Human Resource Management and Society for Industrial and Organizational Psychology Research Report.* https://doi.org/10.1037/e518352020-001

Farndale, E., & Sanders, K. (2017). Conceptualizing HRM system strength through a cross-cultural lens. *The International Journal of Human Resource Management, 28*(1), 132–148. https://doi.org/10.1080/09585192.2016.1239124

Frazier, M. L., Fainshmidt, S., Klinger, R. L., Pezeshkan, A., & Vracheva, V. (2017). Psychological

safety: A meta-analytic review and extension. *Personnel Psychology, 70*(1), 113–165. https://doi.org/10.1111/peps.12183

Gibbs, J. L., Mengel, T., & Siemsen, E. (2021). Work design and digitalization: Implications for learning and development. *Human Resource Management, 60*(4), 473–489. https://doi.org/10.1002/hrm.22053

Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2021). *A primer on partial least squares structural equation modeling (PLS-SEM)* (3rd ed.). SAGE Publications.

Heffernan, M., Cafferkey, K., Harney, B., Townsend, K., & Dundon, T. (2022). HRM system strength and employee well-being: The role of internal process and open systems. *Asia Pacific Journal of Human Resources, 60*(1), 171–193. https://doi.org/10.1111/1744-7941.12302

Hu, J., Kwan, H. K., & Zhang, X. (2024). Digital HRM, perceived organizational support, and work engagement: A conservation of resources perspective. *International Journal of Hospitality Management, 119*, 103721. https://doi.org/10.1016/j.ijhm.2024.103721

International Labour Organization. (2023). *ASEAN digital transformation and the future of work.* Geneva: ILO.

Jiang, K., Lepak, D. P., Hu, J., & Baer, J. C. (2012). How does human resource management influence organizational outcomes? A meta-analytic investigation of mediating mechanisms. *Academy of Management Journal, 55*(6), 1264–1294. https://doi.org/10.5465/amj.2011.0088

Kleine, A.-K., Rudolph, C. W., & Zacher, H. (2019). Thriving at work: A meta-analysis. *Journal of Organizational Behavior, 40*(9–10), 973–999. https://doi.org/10.1002/job.2375

Lesener, T., Gusy, B., & Wolter, C. (2019). The job demands–resources model: A meta-analytic review of longitudinal studies. *Work & Stress, 33*(1), 76–103. https://doi.org/10.1080/02678373.2018.1529065

Li, Y.-H., Huang, J.-W., & Tsai, M.-T. (2008). Entrepreneurial orientation and firm performance: The role of knowledge creation process. *Industrial Marketing Management, 38*(4), 440–449. https://doi.org/10.1016/j.indmarman.2008.02.004

Newman, A., Donohue, R., & Eva, N. (2017). Psychological safety: A systematic review of the literature. *Human Resource Management Review, 27*(3), 521–535. https://doi.org/10.1016/j.hrmr.2017.01.001

Parent-Rocheleau, X., & Parker, S. K. (2022). Algorithms as work designers: Sociotechnical implications of algorithmic management for work and employees. *Human Resource Management Review, 32*(4), 100838. https://doi.org/10.1016/j.hrmr.2021.100838

Parker, S. K., & Grote, G. (2020). Automation, algorithms, and beyond: Why work design matters more than ever in a digital world. *Applied Psychology, 69*(4), 1280–1322. https://doi.org/10.1111/apps.12241

Pasmore, W. A. (2015). Research in socio-technical systems: Reflections on what we know and need to know moving forward. *Journal of Applied Behavioral Science, 51*(1), 32–59. https://doi.org/10.1177/0021886314559847

Ray, G., Barney, J. B., & Muhanna, W. A. (2004). Capabilities, business processes, and competitive advantage: Choosing the dependent variable in empirical tests of the resource-based view. *Strategic Management Journal, 25*(1), 23–37. https://doi.org/10.1002/smj.366

Rockstuhl, T., Eisenberger, R., Shore, L. M., Kurtessis, J. N., Ford, M. T., Buffardi, L. C., & Mesdaghinia, S. (2020). Perceived organizational support across 54 nations: A cross-cultural meta-analysis of POS effects. *Journal of International Business Studies, 51*(6), 933–962. https://doi.org/10.1057/s41267-020-00311-3

Russell, R. D., & Russell, C. J. (1992). An examination of the effects of organizational norms, organizational structure, and environmental uncertainty on entrepreneurial strategy. *Journal of Management, 18*(4), 639–656. https://doi.org/10.1177/014920639201800403

Strohmeier, S. (2020). Digital human resource management: A conceptual clarification. *German Journal of Human Resource Management, 34*(3), 345–365. https://doi.org/10.1177/2397002220921131

Tarafdar, M., Cooper, C. L., & Stich, J.-F. (2019). The technostress trifecta—Techno eustress, techno distress and design: Theoretical directions and an agenda for research. *Information Systems Journal, 29*(1), 6–42. https://doi.org/10.1111/isj.12169

Trist, E. L., & Bamforth, K. W. (1951). Some social and psychological consequences of the longwall method of coal-getting. *Human Relations, 4*(1), 3–38. https://doi.org/10.1177/001872675100400101

Yang, X., Guo, F., Chen, D., Li, J., Zhou, C., & Jiang, C. (2025). Understanding service performance of frontline employees from an employee–AI interaction perspective. *Journal of Service Management.* Advance online publication. https://doi.org/10.1108/JOSM-10-2023-0425