The Effect of Algorithmic Performance Appraisal on Employee Trust in Digital and Technology-Based Companies

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Informasi Artikel	Abstract
            Keywords: *Algorithmic Performance Appraisal, Employee Trust, Procedural Fairness, HR Technology, Organizational Justice Theory*	*This study examines how employees perceive and trust Algorithmic Performance Appraisal (APA) in digital-native and technology-driven companies. Adopting Organizational Justice Theory, the Trust in Technology Framework, and Cognitive Appraisal Theory, the research explores both the direct and indirect effects of APA on employee trust, with Perceived Procedural Fairness (PPF) as a mediating variable. The study uses a quantitative, cross-sectional approach, collecting data from 200 employees in technology-based organizations and analyzing the data with Partial Least Squares Structural Equation Modeling (PLS-SEM). Results show that APA significantly enhances both procedural fairness and employee trust, with PPF playing a partial mediating role in this relationship. These findings underscore the importance of transparency, procedural legitimacy, and avenues for employee voice in cultivating trust in algorithmic systems. The study's theoretical contribution lies in its integration of multiple perspectives on trust and fairness within algorithmic HR management. The practical implication calls for the careful design and implementation of APA systems that employees perceive as fair and trustworthy. Future research should investigate these relationships in longitudinal and multi-contextual settings to deepen the understanding of trust dynamics in evolving AI-mediated work environments.*

Abstrak

Studi ini menelaah bagaimana karyawan memandang dan mempercayai Penilaian Kinerja Berbasis Algoritma (APA) pada perusahaan digital-native dan berbasis teknologi. Dengan mengadopsi Teori Keadilan Organisasi, Kerangka Kerja Kepercayaan terhadap Teknologi, serta Teori Penilaian Kognitif, penelitian ini mengkaji pengaruh langsung dan tidak langsung dari APA terhadap kepercayaan karyawan, dengan Keadilan Prosedural yang Dirasakan (PPF) sebagai variabel mediasi. Penelitian ini menggunakan pendekatan kuantitatif dengan desain cross-sectional, mengumpulkan data dari 200 karyawan di organisasi berbasis teknologi dan menganalisis data tersebut menggunakan Partial Least Squares Structural Equation Modeling (PLS-SEM). Hasil penelitian menunjukkan bahwa APA secara signifikan meningkatkan keadilan prosedural maupun kepercayaan karyawan, dengan PPF berperan sebagai mediator parsial dalam hubungan tersebut. Temuan ini menegaskan pentingnya transparansi, legitimasi prosedural, dan saluran aspirasi karyawan dalam membangun kepercayaan pada sistem algoritmik. Kontribusi teoretis studi ini terletak pada integrasi berbagai perspektif mengenai kepercayaan dan keadilan dalam pengelolaan SDM berbasis algoritma. Implikasi praktisnya menuntut perancangan dan implementasi sistem APA yang dipersepsikan adil dan dapat dipercaya oleh karyawan. Penelitian selanjutnya dianjurkan untuk menelaah hubungan ini secara longitudinal dan dalam berbagai konteks guna memperdalam pemahaman dinamika kepercayaan pada lingkungan kerja yang dimediasi AI.

Kata Kunci : Penilaian Kinerja Berbasis Algoritma, Kepercayaan Karyawan, Keadilan Prosedural, Teknologi Sumber Daya Manusia, Teori Keadilan Organisasi.

INTRODUCTION

The integration of algorithmic systems into human resource management (HRM) has accelerated with the digital transformation of work, particularly within technology-intensive and digital-native firms.

Algorithmic Performance Appraisal (APA) represents a notable application in which data-driven algorithms evaluate employee performance using behavioral traces, output metrics, and predictive modeling (Kim et al., 2024; Noponen et al., 2023). Unlike traditional performance reviews that rely on subjective manager assessments, APA aims to increase objectivity, consistency, and timeliness in evaluations. These developments are embedded within broader trends in algorithmic management and AI-based decision systems that prioritize operational efficiency and standardized oversight (Garg et al., 2021; Prem, 2024). Despite its potential, APA introduces new dynamics in employee–system interactions that challenge conventional understandings of fairness, engagement, and psychological contract maintenance. Notably, AI-driven HR systems have been shown to be most prevalent in high-tech and large-scale organizations, where they coexist with human decision-making processes that may still retain elements of bias (Soekiman et al., 2023).

A growing body of research has acknowledged the dual-edge nature of APA systems. On one hand, algorithmic systems can enhance procedural justice by standardizing evaluation criteria, minimizing favoritism, and promoting transparency through features like real-time feedback and tamper-proof ledgers (Kim et al., 2024; Sun, 2024). Significant concerns have also emerged regarding algorithmic opacity, perceived dehumanization, data privacy breaches, and the institutionalization of historical biases. These factors can erode employee trust (Bandara et al., 2025; Noponen et al., 2023). APA is thus not merely a technical innovation but a sociotechnical system whose success depends on how employees cognitively appraise its fairness, transparency, and integrity. Trust in these systems is increasingly viewed as a cornerstone for achieving acceptance, engagement, and compliance in algorithm-governed workplaces (Moosa et al., 2023).

Trust in HR systems, especially in digital and AI-mediated contexts, is shaped by perceptions of competence, integrity, and data accuracy (Seeber et al., 2020). These dimensions align with broader frameworks in automation trust (McKnight et al., 2011) and organizational justice theory (Colquitt, 2001), suggesting that trust is not solely interpersonal but also structural and procedural. Empirical investigations remain limited on how APA influences employee trust, particularly through the mediating mechanism of Perceived Procedural Fairness (PPF). PPF is a multidimensional construct that involves transparency, procedural legitimacy, employee voice, and bias suppression (Kim et al., 2024; Moosa et al., 2023). This study positions itself within this emerging discourse to explore how APA shapes employee trust, directly and indirectly, in digital-first organizations.

Despite the promise of efficiency and fairness, Algorithmic Performance Appraisal systems risk undermining employee trust when perceived as opaque, biased, or overly mechanistic. The literature highlights a growing dissonance between the objective ideals of APA and the subjective experiences of employees subjected to algorithmic evaluations (Bandara et al., 2025; Noponen et al., 2023). The existing scholarship has predominantly focused on technical performance, predictive accuracy, and ethical AI governance, yet comparatively less attention has been paid to how employees interpret, react to, and emotionally evaluate these systems. As trust in HR systems becomes a critical determinant of digital transformation success, the lack of robust empirical models capturing the psychological mechanisms linking APA and trust constitutes a pressing gap in current knowledge.

To address this, the study integrates insights from Organizational Justice Theory (Colquitt, 2001), the Trust in Technology Framework (McKnight et al., 2011), and Cognitive Appraisal Theory to propose that Perceived Procedural Fairness mediates the relationship between APA and employee trust. By capturing how employees evaluate the transparency, consistency, and fairness of algorithmic evaluations, this mediating lens offers a theoretically grounded and empirically testable explanation for the acceptance or rejection of APA systems. The general solution proposed here is to reconceptualize algorithmic appraisal as a trust-sensitive practice and examine how fairness perceptions can bridge technological performance with psychological acceptance.

Recent literature proposes that trust in algorithmic systems is driven not only by their technical accuracy or efficiency but also by their perceived fairness and explainability. McKnight et al. (2011) theorize that trust in technology emerges from users' beliefs in the system's reliability, functionality, and helpfulness, which map closely onto APA features such as consistent scoring, real-time feedback, and predictive validity. Complementing this, automation trust literature emphasizes transparent feedback mechanisms and controllability as necessary precursors to trust (Seeber et al., 2020; Tomsett et al., 2020).

In APA systems, transparency of algorithmic decision rules and the ability to contest or interpret scores are key trust enablers, especially in high-autonomy, knowledge-intensive workplaces.

Colquitt's (2001) Organizational Justice Theory offers a multi-dimensional approach to understanding how fairness perceptions influence trust. Procedural justice, which is defined by procedural legitimacy, bias suppression, employee voice, and accuracy, has been shown to predict trust even when outcomes are unfavorable (Jung et al., 2021). Applied to APA, these dimensions explain why employees may trust or distrust algorithmic appraisal systems: if procedures are clear, rule-based, and inclusive, they are more likely to be deemed fair and, consequently, trustworthy. Empirical findings further confirm that when APA systems offer explainable outputs and maintain fairness in data use, employees report higher organizational commitment and lower resistance to automation (Moosa et al., 2023; Shim et al., 2024).

Cognitive Appraisal Theory deepens this understanding by explaining how employees interpret APA as either a threat or an opportunity. Primary appraisal determines whether algorithmic feedback is relevant and fair, while secondary appraisal gauges one's control over outcomes and system decisions (Almatrodi et al., 2023; Bigman et al., 2023). If APA systems are perceived as overly opaque or beyond one's influence, they are appraised as threats, eroding trust and engagement. Conversely, when employees feel they can understand and influence the algorithmic processes, the system is more likely to be viewed as an empowering tool. This appraisal-based framing is crucial for capturing the psychological mechanisms through which APA influences trust, beyond surface-level technical assessments.

Although prior research has illuminated the technical architecture of APA and its implications for HR efficiency, few studies have examined the employee-centric psychological impacts of these systems. For instance, Garg et al. (2021) and Prem (2024) detail how machine learning models enhance objectivity and consistency in performance appraisals, but they largely overlook how employees perceive these algorithmic evaluations in terms of fairness and trustworthiness. Zhu (2023) adds that big data HRM models can reduce appraisal variance, yet empirical evidence linking these features to trust-building processes within digital organizations remains sparse. There is, therefore, a lack of integrated models that position employee trust as a critical dependent variable shaped by both technical and procedural attributes of APA.

Further, while some research recognizes the role of procedural fairness in shaping perceptions of algorithmic governance (Kim et al., 2024; Moosa et al., 2023), this line of inquiry often remains fragmented. Studies tend to isolate components such as transparency or procedural legitimacy without situating them within a comprehensive justice-based framework. Moreover, few studies have examined how procedural fairness may function as a mediating mechanism that filters the effects of APA on trust through cognitive evaluations of fairness and ethical integrity. Given the rapid deployment of AI in HR, there is an urgent need for empirical studies that not only measure these constructs but also test their interrelationships using rigorous mediation analysis.

This research responds directly to these gaps by adopting a PLS-SEM approach to model the structural relationships between APA, Perceived Procedural Fairness, and Employee Trust. The study operationalizes APA through indicators such as automation level, objectivity, and consistency, while PPF is defined using validated justice metrics (Colquitt, 2001). In doing so, the research provides a novel, theory-driven explanation for trust formation in digital workplaces. It also offers practical implications for designing trustworthy algorithmic systems that align with employee expectations, thereby contributing both to academic discourse and managerial practice.

The primary objective of this study is to investigate how Algorithmic Performance Appraisal (APA) influences employee trust in HR systems, both directly and indirectly via Perceived Procedural Fairness (PPF), within digital and technology-based companies. Specifically, the study seeks to: (1) assess the direct relationship between APA and trust, (2) evaluate the mediating role of PPF, and (3) provide empirical evidence on how transparency, objectivity, and procedural legitimacy in algorithmic systems shape employees' cognitive and emotional evaluations. By adopting a quantitative, cross-sectional design and applying PLS-SEM techniques, the study offers statistically robust insights into the mechanisms of trust formation in technology-driven HR environments.

This study's novelty lies in its theoretical integration and empirical focus. It brings together Organizational Justice Theory, the Trust in Technology Framework, and Cognitive Appraisal Theory to

develop a comprehensive model of how algorithmic systems gain or lose trust. Unlike prior research that emphasizes technical accuracy or efficiency, this study centers the employee experience and highlights procedural fairness as a critical mediator. By focusing exclusively on digital-native workplaces and algorithmic HR tools, the study addresses a distinct and underexplored context, thereby contributing original knowledge to the fields of HRM, organizational behavior, and digital transformation.

Algorithmic Performance Appraisal (APA) represents a significant shift in HRM practices, where machine learning (ML) models and data-driven algorithms assess employee performance through continuous monitoring and evaluation (Garg et al., 2021; Kim et al., 2024). Unlike traditional human-mediated evaluations, APA promises enhanced objectivity, consistency, and real-time feedback by analyzing digital traces and applying algorithmic logic to derive performance outcomes (Prem, 2024; Zhu, 2023). The integration of APA systems is particularly prominent in technology-intensive firms, where scalability and standardization are essential. Empirical evidence indicates that AI-enabled HR systems are already widely adopted in technologically advanced organizations, yet these systems often operate alongside traditional evaluative processes that remain susceptible to human influence and subjective bias (Soekiman et al., 2023).

The implementation of APA is grounded in big data HRM frameworks and ML integration theories, which emphasize that algorithmic systems can mitigate human bias and increase the reliability of appraisal decisions (Zhu, 2023). For example, high levels of automation and AI involvement have been associated with greater appraisal accuracy and procedural legitimacy (Garg et al., 2021). Furthermore, transparency in algorithmic decision-making, including the communication of scoring logic and data provenance, has been linked to employees' perceived fairness and acceptance of the system (Kim et al., 2024; Федушко et al., 2020). Despite these benefits, the psychological impact of APA on employees remains contested. Research suggests that algorithmic bias, perceived dehumanization, and privacy concerns can erode trust (Bandara et al., 2025; Noponen et al., 2023). However, when APA systems are designed with transparency and predictability, they can serve as antecedents of trust by aligning with employees' expectations of procedural justice (Moosa et al., 2023). Thus, this study hypothesizes a direct, positive relationship between APA and employee trust in HR systems.

H1: Algorithmic Performance Appraisal positively influences Employee Trust in HR systems.

Perceived Procedural Fairness (PPF) is a central dimension of Organizational Justice Theory and refers to the degree to which employees view organizational procedures as fair, unbiased, transparent, and consistently applied (Kim et al., 2024). It encompasses four core components: transparency of procedures, procedural legitimacy of decision rules, employee voice, and the absence of bias in evaluations (Noponen et al., 2023). In algorithmic HR systems, these indicators play a critical role in how employees appraise the legitimacy and trustworthiness of automated decisions.

Transparency, as a key antecedent of fairness, is essential in mitigating the perceived opacity of algorithmic evaluations (Kim et al., 2024). Consistent application of performance rules across employees and over time enhances predictability and reduces uncertainty, further reinforcing fairness perceptions (Moosa et al., 2023). Allowing employees to provide input or feedback, commonly referred to as "voice," strengthens perceptions of respect and participation (Braganza et al., 2021). Finally, suppressing algorithmic and systemic biases through ethical design and auditing processes contributes to perceived impartiality and procedural integrity (Bandara et al., 2025). Emerging research highlights that APA systems, when designed with procedural fairness features, are more likely to be trusted by employees. This suggests that APA can directly enhance PPF, particularly when fairness features are embedded into the appraisal design.

H2: Algorithmic Performance Appraisal positively influences Perceived Procedural Fairness.

Employee trust in HR systems refers to the willingness of employees to accept vulnerability in relation to system-generated outcomes, grounded in beliefs about system competence, integrity, and accuracy (Seeber et al., 2020). Within the context of APA, trust is a multifaceted construct shaped by confidence in decision-making processes, the perceived ethical operation of systems, and the accuracy of performance data (Arrieta et al., 2020; Tomsett et al., 2020). Trust is crucial in technology-driven environments where human oversight is minimized and automated systems exert significant influence over careers and rewards.

Organizational trust literature and the Trust in Technology Framework (McKnight et al., 2011) emphasize that users' trusting beliefs, including perceptions of reliability, helpfulness, and transparency, drive trust intentions and behaviors. APA systems that demonstrate clear logic, auditability, and explainability are more likely to be trusted, especially when employees believe that the system reflects their true performance (Shen et al., 2020; Shim et al., 2024). Furthermore, empirical studies show that trust in automated HR systems mediates positive workplace behaviors such as engagement, compliance, and retention (Li et al., 2022; Moosa et al., 2023).

Perceived Procedural Fairness has been consistently identified as a key antecedent to trust in both human and automated systems. When appraisal processes are seen as transparent, unbiased, and inclusive, employees are more likely to perceive the HR system as legitimate and trustworthy (Kim et al., 2024). Accordingly, we propose that PPF serves as a direct predictor of employee trust.

H3: *Perceived Procedural Fairness positively influences Employee Trust in HR systems*

Building on Organizational Justice Theory and Cognitive Appraisal Theory, this study posits that Perceived Procedural Fairness also mediates the relationship between Algorithmic Performance Appraisal and Employee Trust. According to Cognitive Appraisal Theory, individuals engage in primary and secondary evaluations of stimuli, including APA systems, based on relevance, predictability, and control (Almatrodi et al., 2023; Bigman et al., 2023). When APA systems are perceived as fair, employees are more likely to cognitively appraise the system as beneficial, controllable, and trustworthy, thus facilitating trust formation.

Existing literature supports the view that fairness perceptions act as a cognitive filter through which algorithmic interventions are interpreted (Deng et al., 2022; Wu & Xu, 2024). In this framework, PPF is not merely a parallel construct to trust but a mediating mechanism that shapes how APA influences trust-related outcomes. APA features, including objectivity and consistency, enhance procedural fairness perceptions, which in turn generate trust in the system's competence and integrity (Kim et al., 2024; Moosa et al., 2023). This mediating role is especially relevant in digital-first organizations, where algorithmic appraisal systems are often perceived as impersonal or intrusive. By embedding fairness elements in system design, organizations can shape employees' appraisals and ultimately foster trust.

H4: *Perceived Procedural Fairness mediates the relationship between Algorithmic Performance Appraisal and Employee Trust in HR systems.*
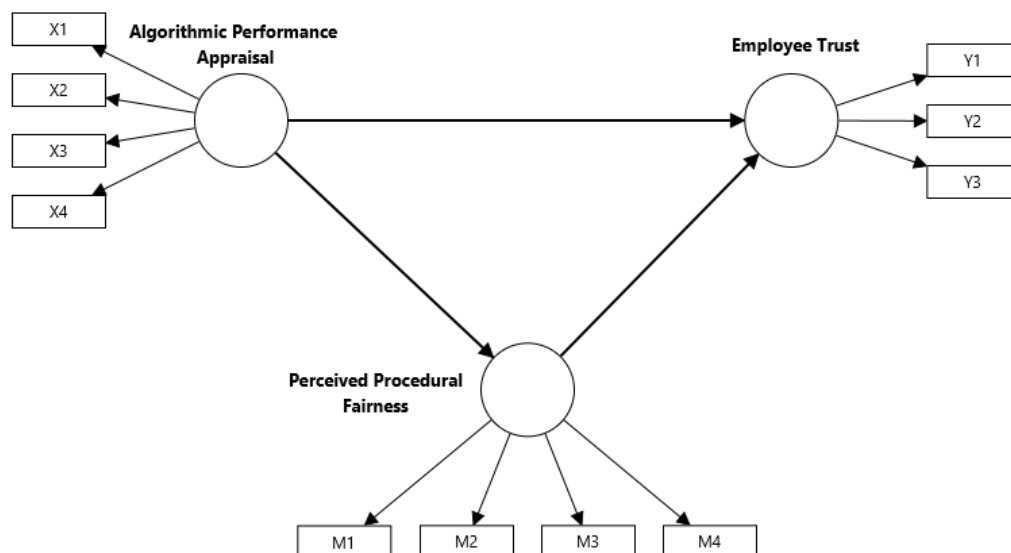
Figure 1. Conseptual Framework

METHOD

This study employed a quantitative, cross-sectional design using Partial Least Squares Structural Equation Modeling (PLS-SEM) to examine the relationships between Algorithmic Performance Appraisal (APA), Perceived Procedural Fairness (PPF), and Employee Trust (ET) in HR systems. A structured online questionnaire was developed based on validated instruments (Seeber et al., 2020), with items measured

on a five-point Likert scale. Data were collected through purposive sampling from 200 employees in digital and tech-based firms familiar with algorithmic appraisal systems. The analysis, conducted using SmartPLS 4, followed two-stage approach: the measurement model was assessed for reliability, convergent and discriminant validity, while the structural model evaluated path coefficients, R^2, f^2, Q^2, and mediation effects via bootstrapping using 5,000 subsamples (Hair et al., 2019; Hair & Tomas M Hult Christian M Ringle Marko Sarstedt, 2022; Sarstedt et al., 2021). This methodology ensured rigorous validation of constructs and provided robust insights into the mediating role of procedural fairness in algorithmic trust formation.

RESULTS AND DISCUSSION

Respondent Characteristics

Based on the demographic table several insights affirm the representativeness and relevance of the sample.

Table 1. Respondent Characteristics

Dimension	Category	Count
Gender	Male	112
	Female	88
Age Group	20-29	45
	30-39	78
	40-49	56
	>49	21
Job Role	Software Developer	62
	Data Analyst	38
	Product Manager	28
	HR Professional	25
	UX/UI Designer	24
	IT Support	23
Years of Experience	<1 year	18
	1-3 years	60
	4-6 years	48
	7-10 years	42
	More than 10 years	32
Company Type	Start-up	66
	Mid-sized Tech Company	82
	Large Tech Corporation	52

Region	Jakarta	110
	Surabaya	40
	Bandung	30
	Semarang	20

The gender distribution is relatively balanced, with 112 males (56%) and 88 females (44%), which enables gender-inclusive analysis of perceptions toward Algorithmic Performance Appraisal (APA). With respect to age, most respondents fall within the 30 to 39 age group (39%), followed by the 20 to 29 group (22.5%) and the 40 to 49 group (28%). This indicates that the workforce is largely composed of millennials and early Generation X employees, who are typically digitally fluent and familiar with AI-enabled human resource systems.

Measurement Models

The measurement model evaluation confirms that all constructs, namely Algorithmic Performance Appraisal (APA), Perceived Procedural Fairness (PPF), and Employee Trust in HR Systems (ET), demonstrate acceptable levels of reliability and validity. Internal consistency reliability was assessed using Cronbach's Alpha (α) and Composite Reliability (CR), with both metrics exceeding the recommended threshold of 0.70. This indicates that the items consistently measure their respective constructs (Hair et al., 2019).

Table 2. Measurement Model

Variables-Indicators	loadings	α	ρA	CR	AVE
Algorithmic Performance Appraisal		0.816	0.819	0.879	0.646
AI involvement	0.83				
Automation level	0.805				
Objectivity	0.847				
Consistency	0.729				
Perceived Procedural Fairness		0.851	0.894	0.909	0.768
Transparency	0.732				
Procedural legitimacy	0.786				
Voice	0.723				
Lack of bias	0.774				
Employee Performance		0.749	0.754	0.841	0.569
Confidence in HR	0.861				
System integrity	0.839				
Accuracy	0.927				

Specifically, Cronbach's Alpha values were 0.816 for APA, 0.851 for PPF, and 0.749 for ET, while the corresponding CR values were 0.879, 0.909, and 0.841, respectively. Convergent validity was evaluated through the Average Variance Extracted (AVE), and all constructs met the minimum recommended value of 0.50 (Fornell & Larcker, 1981). The AVE values for APA, PPF, and ET were 0.646, 0.768, and 0.569, respectively, indicating that each construct explains more than half of the variance of its indicators. The loadings of individual indicators ranged from 0.723 to 0.927, all of which surpass the commonly accepted threshold of 0.70, demonstrating adequate indicator reliability (Hair et al., 2021). Moreover, Dijkstra-Henseler's rho (ρA) values for APA, PPF, and ET were 0.819, 0.894, and 0.754, respectively, further supporting the internal consistency of the constructs, as each value exceeds the 0.70 benchmark

(Henseler et al., 2015). Overall, these findings confirm that the measurement model possesses satisfactory reliability and validity, thereby establishing a strong basis for subsequent structural model analysis.

The table below presents the results of the discriminant validity assessment for the constructs employed in the measurement model, using two widely accepted methods: the Fornell-Larcker criterion and the Heterotrait-Monotrait Ratio (HTMT). Discriminant validity is a crucial component of construct validity, as it ensures that each latent construct captures phenomena that are conceptually distinct from others within the model (Hair et al., 2019; Henseler et al., 2015).

The HTMT criterion, which offers a more stringent assessment of discriminant validity, further supports these findings. According to Henseler et al. (2015), HTMT values should fall below 0.85 (conservative threshold) or at least below 0.90 (liberal threshold) to confirm discriminant validity. The HTMT values in this model are all within the acceptable range: 0.608 for APA–Employee Trust, 0.556 for APA–PPF, and 0.608 for PPF–Employee Trust. These results provide strong evidence that the constructs are empirically distinct from one another.

Table 3. HTMT & Fornell Larcker Criterion

	Variables	APA	Employee Trust	PPF
HTMT	APA			
	Employee Trust	0.608		
	PPF	0.556	0.608	
Fornell-larcker Criterion	APA	0.804		
	Employee Trust	0.519	0.877	
	PPF	0.445	0.501	0.754

According to the Fornell-Larcker criterion, discriminant validity is established when the square root of the Average Variance Extracted (AVE) for a given construct is greater than the construct's correlations with other constructs. In this study, the square root of AVE for Algorithmic Performance Appraisal (APA) is 0.804, which is higher than its correlation with Employee Trust (0.519) and Perceived Procedural Fairness (0.445). Similarly, the square root of AVE for Employee Trust is 0.877, exceeding its correlations with APA (0.519) and PPF (0.501). For PPF, the square root of AVE is 0.754, also surpassing its correlations with APA (0.445) and Employee Trust (0.501). These results confirm that each construct shares more variance with its indicators than with other constructs, thus satisfying the Fornell-Larcker criterion (Fornell & Larcker, 1981).

The results from both the Fornell-Larcker criterion and the HTMT ratio demonstrate that the constructs of Algorithmic Performance Appraisal, Perceived Procedural Fairness, and Employee Trust in HR systems exhibit adequate discriminant validity. This confirms the uniqueness of each construct within the model and reinforces the validity of proceeding with the structural model analysis.

Structural Models

The structural model and hypothesis testing results provide strong evidence supporting the relationships among Algorithmic Performance Appraisal (APA), Perceived Procedural Fairness (PPF), and Employee Trust. All hypothesized paths show statistical significance, suggesting that APA influences both perceived fairness and trust within technology-based work environments.

Table 4. The Structural Model and Hypothesis Testing

Hypotheses	β	T-value	VIF	R^2	R^2 Adjusted	Q^2	f^2
H1: APA ->Employee Trust	0.369	7.648	1.247	0.36	0.354	0.261	0.17
H2: APA ->PPF	0.445	7.184	1	0.198	0.194	0.106	0.247
H3: PPF ->Employee Trust	0.337	5.21	1.247	0.36	0.354	0.261	0.142

| H4: APA ->PPF ->Employee Trust | 0.15 | 3.93 |

Notes: APA (Algorithmic Performance Appraisal); PPF (Perceived Procedural Fairness); one-tailed test, the critical T-value at the 5% significance level is 1.645; T-values are well above this threshold, confirming statistical significance for each path.

Specifically, APA positively affects Employee Trust directly (β = 0.369, T = 7.648, p < 0.001), with a moderate effect size (f^2 = 0.170), and also significantly shapes PPF (β = 0.445, T = 7.184, p < 0.001), showing a moderate-to-large effect (f^2 = 0.247) (Cohen, 1988). In turn, PPF significantly contributes to Employee Trust (β = 0.337, T = 5.210, p < 0.001) with a small-to-moderate effect size (f^2 = 0.142). The mediation analysis confirms an indirect effect of APA on trust via PPF (β = 0.150, T = 3.930, p < 0.001), indicating partial mediation. The explanatory power of the model is substantiated by R^2 values of 0.360 for Employee Trust and 0.198 for PPF, suggesting that 36% of trust and nearly 20% of fairness perceptions are explained by the model's predictors. According to Chin (1998), the R^2 for Employee Trust is substantial, while the R^2 for PPF is considered moderate. Predictive relevance is confirmed through Q^2 values of 0.261 (Employee Trust) and 0.106 (PPF), both above the zero-threshold recommended by Hair et al. (2019). Furthermore, multicollinearity is not a concern, as all VIF values are well below the threshold of 3.3, ensuring predictor independence (Hair et al., 2019). The model demonstrates theoretical and statistical robustness. APA exerts significant direct and indirect effects on Employee Trust, with PPF acting as a meaningful mediator. These findings emphasize the role of fairness perceptions in fostering trust in algorithm-based appraisal systems within digital-native organizations.

DISCUSSION

The findings from this study offer robust empirical support for the theoretical integration of Organizational Justice Theory (Colquitt, 2001), the Trust in Technology Framework (McKnight et al., 2011), and Cognitive Appraisal Theory (Almatrodi et al., 2023; Bigman et al., 2023), which together explain how Algorithmic Performance Appraisal (APA) influences Employee Trust, both directly and indirectly through Perceived Procedural Fairness (PPF). Organizational Justice Theory is substantiated by the evidence showing that procedural fairness, encompassing transparency, voice, legitimacy, and bias suppression is central to how employees evaluate algorithmic systems. APA enhances these fairness perceptions, which in turn mediate trust formation, affirming that trust is grounded not just in outcomes, but in fair processes. This aligns with recent findings that AI-driven HR tools are increasingly adopted in high-tech environments while continuing to coexist with human-centric evaluations, suggesting that algorithmic trust cannot be divorced from ongoing human judgment and potential residual biases in organizational processes (Soekiman et al., 2023).
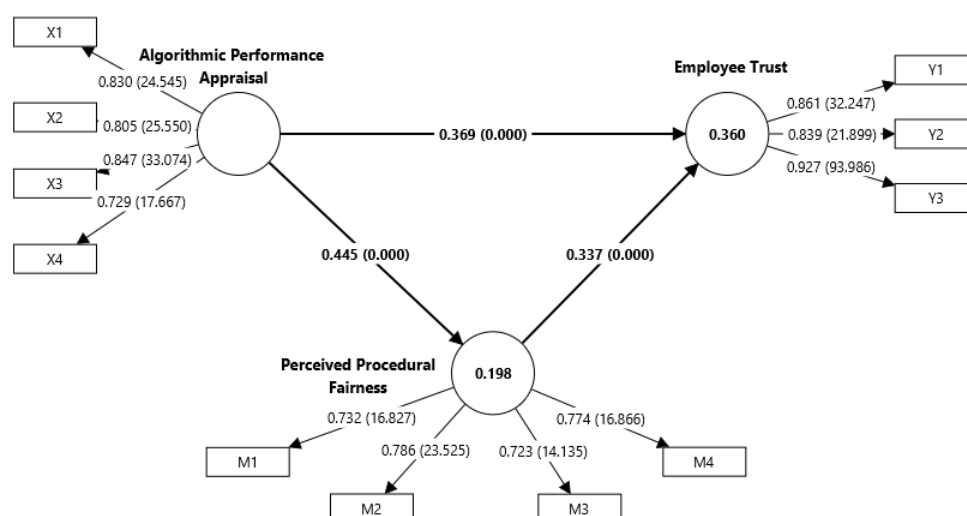

Figure 2. Inner Model

The Trust in Technology Framework is also validated, as employees' trust in APA systems appears to stem from perceived system reliability, helpfulness, and transparency. Features such as objectivity and automation in APA align with these trust antecedents. Notably, the framework's assumption that trust is shaped by system-level attributes is further supported by the finding that fairness perceptions (PPF) serve as interpretive filters through which these system features are evaluated before trust is formed.

Cognitive Appraisal Theory offers a psychological dimension to the interpretation of results. Employees assess APA systems based on perceived relevance, controllability, and predictability. The mediation role of PPF implies that algorithmic systems are appraised not only on technical grounds but also on how fair and just they appear. When fairness is perceived, APA is interpreted as a supportive rather than a threatening tool, thereby facilitating trust.

Together, these theories converge to explain why APA systems succeed or fail in building trust. Organizational Justice Theory clarifies why fairness matters, the Trust in Technology Framework identifies what system attributes drive trust, and Cognitive Appraisal Theory explains how employees mentally and emotionally process these systems. The validated mediation effect underscores that trust is not purely technical but psychological and procedural in nature. As such, the study offers both theoretical and practical contributions, highlighting that embedding fairness features in APA design is not merely an ethical choice but a strategic necessity for fostering employee trust in digital workplaces.

CONCLUSIONS

The study confirms that Algorithmic Performance Appraisal (APA) significantly influences Employee Trust, both directly and indirectly through Perceived Procedural Fairness (PPF), thereby supporting all proposed hypotheses. These findings affirm the theoretical integration of Organizational Justice Theory, the Trust in Technology Framework, and Cognitive Appraisal Theory, which collectively explain that employee trust in algorithmic HR systems is shaped not only by technical attributes such as objectivity and automation, but also by procedural fairness perceptions involving transparency, legitimacy, and employee voice. The study contributes to theory by offering a multidimensional model of trust formation in digital workplaces, while its practical and policy implications highlight the need for ethically designed APA systems that foster fairness to build trust. Despite its robust methodology, the study is limited by its cross-sectional design and industry-specific sample, suggesting future research should adopt longitudinal or comparative approaches, explore multi-level or demographic variations, and integrate qualitative insights to deepen understanding of employee experiences with algorithmic appraisals in evolving AI-driven contexts.

SUGGESTIONS

Organizations should ensure that all aspects of algorithm-based performance appraisal are transparent and comprehensible to employees. Prioritizing openness in algorithmic logic, data utilization, and decision-making procedures is essential to mitigate perceptions of unfairness or concealed bias. It is important to consistently communicate any changes in parameters or updates to the system.

Establishing formal mechanisms for employee input enables individuals to express feedback or raise objections concerning algorithmic appraisal outcomes. An accessible and impartial appeals process strengthens the legitimacy of the system and fosters greater trust among employees. Organizations must develop effective two-way communication channels, supported by clear standard operating procedures, to ensure that employee perspectives are meaningfully integrated into performance evaluations.

Regular independent audits of the algorithmic performance appraisal system are necessary to identify and address potential algorithmic bias, thereby maintaining procedural fairness. Engaging qualified external parties to conduct these assessments enhances objectivity and credibility. Incorporating ethical guidelines for artificial intelligence and comprehensive data privacy protections within corporate human resource policies is also imperative for responsible system management.

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