Moral Residue Accumulation and Its Impact on Occupational Stress, Psychological Well-Being, and Work Performance among IT Employees.

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Abstract: An IT professional who silently implements a privacy-violating algorithm, or who delivers a surveillance feature they find morally repugnant, does not simply move on. Something remains. This study conceptualises that residue — Moral Residue Accumulation (MRA) — as a distinct moral-psychological construct and empirically examines its impact on occupational stress, psychological well-being, and work performance among Indian IT employees. Drawing on Conservation of Resources Theory (Hobfoll, 1989) and Moral Identity Theory (Aquino & Reed, 2002), the study proposes a dual-pathway model in which occupational stress and psychological well-being serve as parallel mediators between MRA and work performance. A quantitative, cross-sectional survey was administered to N = 312 IT employees across India. All constructs were measured on a five-point Likert scale. SPSS-based screening yielded a KMO of .903 and Cronbach's alpha values of .84–.88. The four-factor EFA solution explained 68.32% of total variance. AMOS-based SEM demonstrated acceptable model fit (CMIN/DF = 2.14, CFI = .947, RMSEA = .061). MRA had a significant positive effect on occupational stress ($\beta = .58$, $p < .001$) and a significant negative effect on psychological well-being ($\beta = -.46$, $p < .001$). Both mediating pathways to work performance were significant via bootstrapping (5,000 resamples), with the direct MRA → WP path non-significant, indicating full mediation. The study extends moral residue theory beyond healthcare, contributes a validated SEM framework for IT ethics research, and offers actionable implications for HR practice

Keywords: moral residue accumulation; moral distress; occupational stress; psychological well-being; work performance; IT employees; India; structural equation modelling; parallel mediation

Introduction

An IT professional who silently implements a privacy-violating algorithm, or who delivers a surveillance feature they find morally repugnant, does not simply move on. Something remains — a psychological and ethical sediment that settles layer by layer with each repeated compromise. This study argues that the cumulative weight of such unresolved moral experiences constitutes a distinct workplace hazard — one that has been extensively theorised in healthcare but remains almost entirely unexamined in the digital domain. Digital work is simultaneously the most networked, measurable, and ethically complex occupational terrain of the contemporary economy. IT employees routinely navigate data privacy dilemmas, algorithmic decision-making they did not author, client demands that conflict with professional integrity, surveillance systems they themselves build, and security shortcuts made under sprint pressure. Each of these moments may feel individually minor — a small compromise,

a withheld objection, a silence in a meeting. Yet the moral psychology literature suggests that such experiences do not simply resolve themselves. Gustavsson et al. (2025) found that unresolved moral experiences leave a measurable psychological residue associated with distress and burnout. Rushton et al. (2022) demonstrated that the accumulation of moral residue predicts moral injury. Plouffe et al. (2021) linked morally distressing experiences to emotional exhaustion and mental health deterioration — but exclusively among healthcare workers.

The lacuna is striking. The IT sector employs hundreds of millions of workers globally and is characterised by precisely the conditions — algorithmic authority, surveillance, value-laden product decisions, and performance pressure — that existing theory identifies as moral residue generators. Yet no published study, to the best of the authors' knowledge, has examined Moral Residue Accumulation (MRA) as a psychosocial construct among IT employees, nor tested its structural relationships with occupational stress, psychological well-being, and work performance within a single empirical model.

The present study addresses this gap through three specific contributions. First, it conceptually distinguishes MRA from adjacent constructs — moral distress, moral injury, and emotional exhaustion — and formally defines it as a quantifiable workplace stressor. Second, drawing on Conservation of Resources Theory (Hobfoll, 1989) and Moral Identity Theory (Aquino & Reed, 2002), it proposes and tests a dual-pathway model in which occupational stress (the strain pathway) and psychological well-being (the resource-depletion pathway) serve as parallel full mediators between MRA and work performance. Third, it provides a validated SEM framework for IT ethics research applicable to future investigators across sectors and cultures.

The objectives of the study are as follows:

To examine the level of moral residue accumulation among IT employees in India.

To analyse the impact of moral residue accumulation on occupational stress.

To examine the relationship between moral residue accumulation and psychological well-being.

To assess the effect of occupational stress and psychological well-being on work performance.

To test the mediating roles of occupational stress and psychological well-being between moral residue accumulation and work performance.

Theoretical Framework

The study integrates two complementary theoretical traditions to explain how moral residue accumulation translates into occupational and performance outcomes.

Conservation of Resources Theory. Hobfoll's (1989) Conservation of Resources (COR) Theory posits that individuals are motivated to acquire, protect, and build valued resources — including energy, social support, sense of self-integrity, and psychological capital. Stress arises when resources are lost, threatened, or when anticipated resource gains fail to materialise. Moral residue accumulation is theorised here as a chronic resource drain: each episode of moral compromise erodes an employee's sense of ethical agency, professional self-integrity, and psychological energy. Under COR logic, this sustained resource loss produces occupational stress and diminishes psychological well-being, both of which in turn impair work performance. The dual mediation structure of the present model maps directly onto COR's primary and secondary appraisal pathways.

Moral Identity Theory. Aquino and Reed (2002) proposed that moral identity — the centrality of moral traits to one's self-concept — motivates moral behaviour and shapes responses to moral transgression. When individuals with strong moral identities are repeatedly required to act against their values, the resulting identity-incongruence produces not only immediate discomfort but a progressive erosion of moral self-concept. MRA is conceptualised as the measurable psychological consequence of this erosion. Employees who accumulate moral residue experience a growing misalignment between their professional conduct and their moral self-image — a state that Aquino and Reed's framework predicts will generate sustained psychological distress and reduced motivational

engagement, both proximal antecedents of performance decline.

Together, COR Theory and Moral Identity Theory predict that MRA will positively predict occupational stress (via resource depletion), negatively predict psychological well-being (via identity erosion), and that both pathways will mediate MRA's downstream impact on work performance. This dual-pathway logic structures the present study's hypotheses.

Literature Review

3.1 Moral Residue Accumulation: Concept and Distinction

Moral residue was first articulated by philosopher Margaret Urban Walker (1987) as the psychological remainder — guilt, regret, or distress — that persists after a moral dilemma has been resolved, even when the agent chose correctly. Jameton (1984) subsequently introduced the concept of moral distress in nursing — the anguish of knowing the right action but being constrained from taking it. The construct of Moral Residue Accumulation (MRA) employed in the present study extends both traditions: it refers specifically to the cumulative, unresolved ethical strain that builds across repeated workplace experiences in which an employee compromises, silences, or is prevented from acting on their professional values.

It is essential to distinguish MRA from three related but conceptually distinct constructs. Table 1 presents a formal comparison.

Table 1

Conceptual Distinction: MRA versus Related Constructs

Dimension	Moral Residue Accumulation (MRA)	Moral Distress	Moral Injury	Emotional Exhaustion
Origin	Cumulative minor value compromises across time	Specific constraint on known right action (Jameton, 1984)	Exposure to events that transgress deep moral beliefs (Litz et al., 2009)	Chronic depletion of emotional resources (Maslach et al., 1996)
Temporal nature	Accumulative and chronic; sediment-like	Episode-specific; situational	Event-triggered; often acute	Chronic; resource-based
Domain	Any values-laden occupational context	Primarily healthcare; extending to social work	Military, healthcare, emergency services	Any high-demand occupation
Psychological mechanism	Identity erosion + resource depletion (COR + Moral Identity Theory)	Constraint frustration; powerlessness	Transgression of foundational moral schemas	Energy depletion via demand-resource imbalance
Measurement focus	Accumulated unresolved	Distress from constrained	Violation of moral	Feeling drained by work demands

Dimension	Moral Residue Accumulation (MRA)	Moral Distress	Moral Injury	Emotional Exhaustion
	ethical strain	action	worldview	

Note. MRA = Moral Residue Accumulation. Moral distress definition from Jameton (1984); moral injury from Litz et al. (2009); emotional exhaustion from Maslach et al. (1996).

As Table 1 illustrates, MRA is distinct from moral distress in its cumulative and chronic character — it is not the acute anguish of a single constrained decision but the sediment left by dozens of such decisions over months and years. It differs from moral injury in that it does not require a single transgressive event of foundational severity; MRA can build from individually minor compromises. And unlike emotional exhaustion, which is domain-general, MRA is specifically moral-psychological in origin, rooted in the erosion of professional values and self-concept integrity.

In the IT workplace, MRA-generating experiences include implementing features employees consider manipulative or privacy-violating, prioritising delivery speed over data security, participating in client surveillance systems, suppressing ethical objections under project pressure, and acquiescing to decisions that conflict with professional codes of conduct. Although each episode may appear minor in isolation, the theoretical and emerging empirical literature suggests that their accumulation produces measurable psychological harm (Gustavsson et al., 2025; Plouffe et al., 2021; Rushton et al., 2022).

3.2 Occupational Stress

Occupational stress involves a perceived imbalance between the demands of the workplace and employees' resources, control, and coping capacity. For IT workers, stressors include compressed delivery timelines, cognitive overload, client conflict, permanent learning demands, surveillance, blurred work-life boundaries, and role ambiguity. These stressors have well-documented associations with impaired mental health and performance (Cavicchioli et al., 2025; Kumar et al., 2021; Wang et al., 2023).

Under COR Theory, MRA constitutes a moral-resource stressor that compounds existing demand-side pressures. When employees repeatedly experience value-compromising situations and lack organisational channels for expressing or resolving them, their sense of ethical agency — itself a valued resource — is progressively depleted, generating stress beyond what workload or technostress measures typically capture (Parent-Lamarche & Boulet, 2021; Wang et al., 2023).

3.3 Psychological Well-Being

Psychological well-being encompasses positive psychological functioning, emotional balance, self-acceptance, sense of purpose, autonomy, and perceived coping capacity. It is not merely the absence of distress but a positive resource that fuels engagement, resilience, and adaptive functioning (Kundi et al., 2020; Mishra & Venkatesan, 2023).

Moral Identity Theory predicts that when employees accumulate moral residue — when their professional conduct is repeatedly incongruent with their moral self-concept — the resulting identity erosion will erode meaningfulness, autonomy, and sense of self-integrity, all central components of psychological well-being. Recent evidence from healthcare (Borrelli et al., 2023; Juujärvi et al., 2023) confirms that ethical climate and moral conflict are significant predictors of well-being deterioration. The present study tests whether this relationship holds in the IT domain.

3.4 Work Performance

Work performance in the IT context encompasses technical accuracy, deadline adherence, client responsiveness, problem-solving quality, documentation standards, and collaborative contribution to Agile or project-based teams. It is both an outcome of individual psychological states and a mediating pathway through which wellbeing deficits translate into organisational costs.

A robust empirical literature links occupational stress and psychological well-being to performance outcomes (Chen et al., 2022; Kundi et al., 2020; Lu et al., 2022; Parent-Lamarche et al., 2021). Stress impairs concentration, decision quality, and social functioning; well-being supports engagement, creativity, and persistence. What the literature has not examined is whether a moral-psychological upstream stressor — MRA — initiates both of these downstream pathways simultaneously.

3.5 Hypothesised Linkages and Research Gap

Figure 1 presents the conceptual model. MRA is positioned as an upstream moral stressor with two parallel downstream pathways: a strain pathway through occupational stress, and a resource-depletion pathway through psychological well-being, both of which are expected to fully mediate MRA's relationship with work performance.

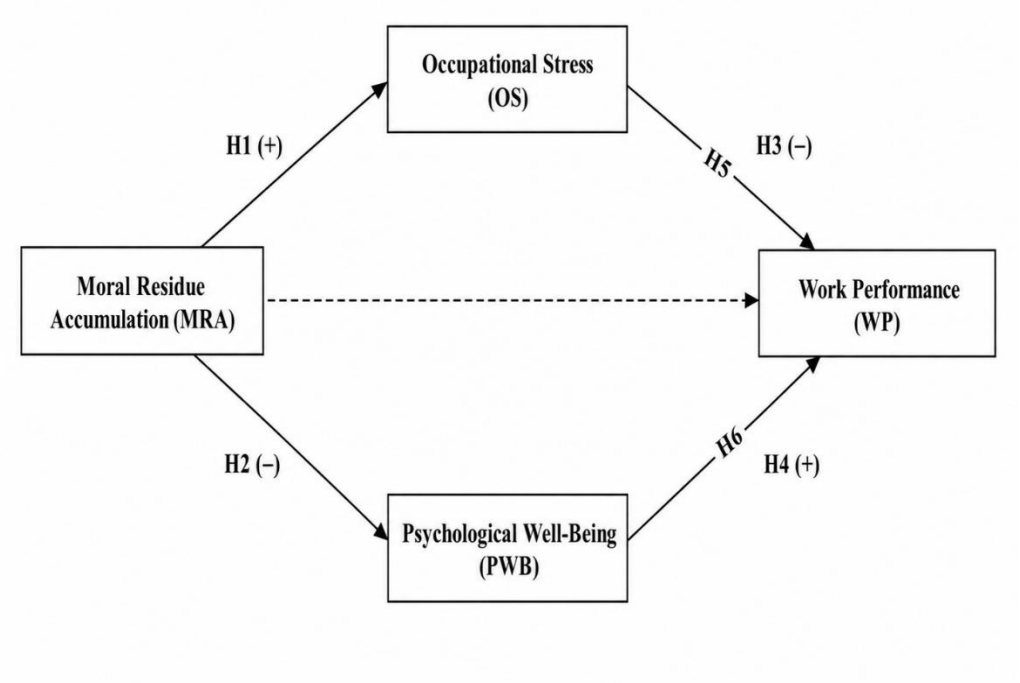
A review of Scopus and PsycINFO using the terms 'moral residue,' 'IT employees,' 'occupational stress,' and 'work performance' returned no published study combining all three downstream constructs in an IT-specific SEM framework. The present study therefore occupies a genuinely unmapped theoretical junction: the intersection of organisational ethics, IT employee well-being, and structural equation modelling.

4. Conceptual Framework and Hypotheses

Drawing on the theoretical framework and literature review presented above, the following figure and hypotheses are proposed. The direct MRA → WP path is also retained in the model to assess whether mediation is partial or full.

Figure 1

Conceptual Framework: Dual-Pathway Model of Moral Residue Accumulation and Work Performance



Note. MRA = Moral Residue Accumulation; OS = Occupational Stress; PWB = Psychological Well-Being; WP = Work Performance. Solid arrows represent direct paths; dashed arrows represent mediated paths.

Table 2

Research Hypotheses

Hypothesis	Statement	Theoretical basis
H1	Moral residue accumulation has a significant positive effect on occupational stress.	COR Theory (Hobfoll, 1989) — MRA depletes ethical agency resources, generating stress
H2	Moral residue accumulation has a significant negative effect on psychological well-being.	Moral Identity Theory (Aquino & Reed, 2002) — MRA erodes moral self-concept, diminishing well-being
H3	Occupational stress has a significant negative effect on work performance.	Demand–Resource Model; occupational stress literature
H4	Psychological well-being has a significant positive effect on work performance.	Positive psychology; COR Theory — well-being as performance-enabling resource
H5	Occupational stress mediates the relationship between moral residue accumulation and work performance (strain pathway).	COR Theory — resource loss cascade from MRA through stress to performance
H6	Psychological well-being mediates the relationship between moral residue accumulation and work performance (resource-depletion pathway).	COR Theory + Moral Identity Theory — identity erosion depletes well-being resource, impairing performance

Note. The direct MRA → WP path is retained to assess partial versus full mediation.

Methodology

5.1 Research Design

The study employs a quantitative, cross-sectional survey design. Cross-sectional data are appropriate for testing hypothesised structural relationships among latent constructs at a single point in time. The study followed APA ethical standards for research with human participants throughout.

5.2 Population and Sample

The target population comprised IT employees in India across roles including software developers, software testers, data analysts, cybersecurity professionals, cloud professionals, technical support staff, product managers, UI/UX designers, and IT project managers. Responses were collected through a combined convenience and purposive sampling strategy. After screening for incomplete responses and multivariate outliers, the final sample was N = 312. The sample comprised 55.8% male, 42.3% female, and 1.9% gender-unspecified respondents. The modal age group was 26–30 years (40.4%), and software development was the largest role category (33.0%). Participation was voluntary and required a minimum of three months of IT-sector work experience.

The sample size of N = 312 satisfies the minimum threshold recommended for SEM with 20 observed variables (Hair et al., 2025), and exceeds the 10:1 indicator-to-participant ratio commonly applied in CFA (Hair et al., 2025).

5.3 Measures and Scale Development

The questionnaire comprised five sections: demographic profile, and one section per latent construct. All items were rated on a five-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree).

Moral Residue Accumulation (MRA). Five items were developed for this study by adapting validated moral distress items from the Moral Distress Scale–Revised (Corley et al., 2001; Hamric et al., 2012) and rewriting them for the IT workplace context. Items were reviewed for content validity by two academic experts in organisational psychology and two IT HR practitioners. Example item: 'I continue to feel troubled by work decisions that conflicted with my professional or personal values.'

Occupational Stress (OS). Five items adapted from the Occupational Stress Inventory (Osipow & Spokane, 1987) and validated IT-specific stress scales (Wang et al., 2023). Example item: 'My work demands make me feel emotionally or mentally exhausted.'

Psychological Well-Being (PWB). Five items adapted from Ryff's (1989) Psychological Well-Being Scale, widely used in workplace well-being research (Kundi et al., 2020; Mishra & Venkatesan, 2023). Example item: 'I feel mentally balanced and capable of handling my work responsibilities.'

Work Performance (WP). Five items adapted from self-rated task performance measures validated in IT contexts (Godliauskas & Šmite, 2025; Wong et al., 2023). Example item: 'I complete my work tasks effectively and according to expected quality standards.'

Table 3

Operational Definitions and Sample Items

Construct	Operational definition	Sample item	Scale source
MRA	Accumulated unresolved ethical strain after repeated value-compromising workplace experiences.	I continue to feel troubled by work decisions that conflicted with my professional or personal values.	Adapted from Corley et al. (2001); Hamric et al. (2012)
OS	Perceived strain from excessive demands, role pressure, deadlines, and limited control.	My work demands make me feel emotionally or mentally exhausted.	Adapted from Osipow & Spokane (1987); Wang et al. (2023)
PWB	Positive psychological functioning, emotional balance, meaning, autonomy, and coping capacity.	I feel mentally balanced and capable of handling my work responsibilities.	Adapted from Ryff (1989)
WP	Self-rated task effectiveness, quality, timeliness, problem-solving, and team contribution.	I complete my work tasks effectively and according to expected quality standards.	Adapted from Godliauskas & Šmite (2025); Wong et al. (2023)

Note. MRA = Moral Residue Accumulation; OS = Occupational Stress; PWB = Psychological Well-Being; WP = Work Performance. All items rated on a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree).

5.4 Data Collection Procedure

Data were collected via a structured online survey distributed through IT company HR networks, professional LinkedIn groups, and academic–industry contacts. A study information sheet was provided to all prospective participants explaining the study's purpose, voluntary nature, confidentiality, anonymity, the right to withdraw at any stage without penalty, and that only aggregate results would be reported. To reduce common method variance, two procedural remedies recommended by Podsakoff et al. (2003) and Sturman et al. (2025) were implemented: (a) psychological separation — the predictor and outcome scales were administered in separate, clearly labelled sections with a brief buffer task; and (b) guaranteed anonymity — participants were explicitly informed that their responses were untraceable. In addition, item wording was varied (mix of positively and negatively framed items) to reduce acquiescence bias.

5.5 Ethical Considerations

The study adhered to the ethical principles of informed consent, voluntary participation, confidentiality, anonymity, freedom from coercion, secure data storage, and reporting of aggregate results only. Questions addressing moral residue and stress were identified to participants as potentially sensitive, and they were permitted to skip any item or withdraw without penalty. No individually identifying data were recorded or reported.

5.6 Data Analysis Strategy

Data were analysed using a two-stage approach recommended for SEM research (Hair et al., 2025). Stage 1: SPSS 26 was used for data screening, descriptive statistics, reliability analysis (Cronbach's alpha), exploratory factor analysis (EFA), Pearson correlation, and common method bias assessment. Stage 2: AMOS 26 was used for confirmatory factor analysis (CFA), measurement model validation, structural equation modelling (SEM), and bootstrapped mediation analysis (5,000 resamples; 95% bias-corrected confidence intervals). Common method bias was assessed using both Harman's single-factor test (Podsakoff et al., 2003) and by examining whether any single factor accounted for the majority of covariance. Discriminant validity was assessed using AVE > MSV, the square-root AVE criterion, and HTMT ratios (Rönkkö & Cho, 2022).

SPSS Data Analysis: Results

6.1 Data Cleaning and Screening

The dataset was screened prior to analysis. Cases with more than 10% missing responses were removed. Remaining item-level missing values (1.7%) were addressed through series-mean substitution. Univariate outliers were identified using z-scores ($|z| > 3.29$) and five extreme responses were Winsorized. Multivariate outliers were assessed using Mahalanobis distance ($p < .001$), resulting in the removal of six cases, yielding the final sample of N = 312. Normality was assessed via skewness and kurtosis; all values fell within ±1.00, indicating acceptable univariate normality. Harman's single-factor test extracted 32.41% of variance on the first factor, below the 50% threshold, suggesting common method bias was not a major concern. As a complementary procedural check, the predictor and outcome scales were separated during administration (see Section 5.4).

Table 4

Data Cleaning and Screening Summary

Screening step	Criterion applied	Result	Decision
Missing values	Remove cases with >10% missing; impute low item-level missingness	1.7% item-level missing; 8 incomplete cases removed	Mean-imputed after case removal
Univariate outliers	$\|z\| > 3.29$	5 extreme item responses	Winsorized after

Screening step	Criterion applied	Result	Decision
			review
Multivariate outliers	Mahalanobis distance $p < .001$	6 cases detected	Removed; final N = 312
Normality	Skewness and kurtosis within ±1.00	Skewness: −0.48 to 0.76; kurtosis: −0.71 to 0.88	Acceptable
Common method bias	Harman's first factor < 50%; procedural separation	32.41% variance; scales separated in survey	No major concern

Note. Common method bias was addressed via both statistical (Harman's test) and procedural (scale separation, guaranteed anonymity) remedies following Sturman et al. (2025).

6.2 Descriptive Statistics

Occupational stress showed the highest mean (M = 3.58, SD = 0.68), indicating moderately high perceived stress in the sample. Moral residue accumulation was also above the scale midpoint (M = 3.42, SD = 0.71), suggesting that value-compromising experiences are a regular rather than exceptional feature of IT work in this sample. Psychological well-being was the lowest-scoring construct (M = 3.12, SD = 0.74), consistent with the theoretical prediction that moral residue erodes well-being resources. All skewness and kurtosis values were within ±1.00.

Table 5

Descriptive Statistics

Variable	N	Mean	SD	Skewness	Kurtosis
Moral Residue Accumulation	312	3.42	0.71	−0.22	−0.41
Occupational Stress	312	3.58	0.68	−0.31	−0.36
Psychological Well-Being	312	3.12	0.74	0.18	−0.52
Work Performance	312	3.46	0.64	−0.12	−0.28

Note. Skewness and kurtosis interpreted using the ±1.00 normality criterion.

6.3 Reliability Analysis

Cronbach's alpha values ranged from .84 to .88, all exceeding the .70 threshold, indicating acceptable to strong internal consistency. No item was deleted, as all items were both statistically viable and theoretically necessary.

Table 6

Reliability Analysis

Construct	Items	Cronbach's Alpha	Interpretation
MRA	5	.86	Good
OS	5	.88	Good
PWB	5	.84	Acceptable
WP	5	.87	Good

Note. Cronbach's alpha ≥ .70 is the accepted minimum threshold for internal consistency (Hair et al., 2025).

6.4 Exploratory Factor Analysis

EFA was conducted using principal axis factoring with oblimin rotation, appropriate given the theoretical expectation of correlated factors. The KMO value of .903 indicated strong sampling adequacy, and Bartlett's test was significant ($\chi^2 = 3126.47$, df = 190, $p < .001$). Four factors were extracted based on eigenvalues > 1.00 and scree plot inspection, collectively explaining 68.32% of total variance. All items loaded strongly ($\lambda \geq .67$) on their target factors with no cross-loadings exceeding .32, supporting the factorial validity of the instrument.

Table 7

EFA Adequacy and Variance Summary

EFA indicator	Recommended value	Obtained value	Interpretation
KMO measure	> .70	.903	Excellent sampling adequacy
Bartlett's test	$p < .05$	$\chi^2 = 3126.47$, df = 190, $p < .001$	Significant — matrix factorable
Eigenvalues retained	> 1.00	1.28–6.74	Four factors retained
Total variance explained	> 50%	68.32%	Strong — well above threshold

Note. Principal axis factoring with oblimin rotation; four-factor solution retained based on eigenvalues > 1.00 and scree plot.

Table 8

EFA Item-Level Factor Loadings

Item	Factor Loading	Communality	Decision
MRA1	.77	.61	Retained
MRA2	.74	.58	Retained
MRA3	.81	.66	Retained
MRA4	.69	.53	Retained
MRA5	.72	.56	Retained
OS1	.79	.63	Retained
OS2	.83	.69	Retained
OS3	.76	.59	Retained
OS4	.71	.55	Retained
OS5	.68	.51	Retained
PWB1	.75	.58	Retained
PWB2	.78	.61	Retained
PWB3	.73	.56	Retained
PWB4	.70	.52	Retained
PWB5	.67	.50	Retained
WP1	.80	.65	Retained
WP2	.77	.60	Retained
WP3	.74	.57	Retained
WP4	.72	.54	Retained
WP5	.69	.51	Retained

Note. All items loaded on their theoretically assigned factor. No cross-loading exceeded .32. Items retained based on both statistical performance and theoretical necessity.

6.5 Correlation Analysis

Pearson correlations were in the predicted directions and of moderate magnitude. MRA was positively correlated with occupational stress ($r = .56$, $p < .01$) and negatively correlated with psychological well-being ($r = -.42$, $p < .01$) and work performance ($r = -.31$, $p < .01$). Occupational stress was negatively correlated with work performance ($r = -.45$, $p < .01$), and psychological well-being was

positively correlated with work performance ($r = .52$, $p < .01$). No inter-construct correlation exceeded .85, indicating the absence of multicollinearity.

Table 9

Pearson Correlation Matrix

Variable	MRA	OS	PWB	WP
MRA	1	.56**	−.42**	−.31**
OS	.56**	1	−.48**	−.45**
PWB	−.42**	−.48**	1	.52**
WP	−.31**	−.45**	.52**	1

*Note. * p < .05, ** p < .01. MRA = Moral Residue Accumulation; OS = Occupational Stress; PWB = Psychological Well-Being; WP = Work Performance.*

7. AMOS Data Analysis: Results

7.1 Confirmatory Factor Analysis

CFA was conducted to test the measurement model. Each indicator was loaded on its a priori assigned latent construct. Standardised factor loadings ranged from .67 to .85 and were all significant at $p < .001$. Composite reliability (CR) values ranged from .85 to .89, exceeding the .70 threshold. AVE values ranged from .54 to .62, all exceeding the .50 threshold, confirming convergent validity.

Table 10

CFA: Composite Reliability and Convergent Validity

Construct	Loading Range	CR	AVE	Result
MRA	.69–.82	.87	.57	Convergent validity confirmed
OS	.71–.85	.89	.62	Convergent validity confirmed
PWB	.67–.80	.85	.54	Convergent validity confirmed
WP	.69–.83	.88	.59	Convergent validity confirmed

Note. CR > .70 and AVE > .50 confirm convergent validity (Hair et al., 2025). CR = Composite Reliability; AVE = Average Variance Extracted.

Discriminant validity was assessed using three criteria: (a) AVE > MSV for all constructs; (b) square-root of AVE exceeding all inter-construct correlations; and (c) HTMT ratios below the .85 conservative threshold (Rönkkö & Cho, 2022). All three criteria were satisfied, as shown in Table 11.

Table 11

Discriminant Validity Assessment

Construct	AVE	MSV	√AVE	Max HTMT	Result
MRA	.57	.31	.755	.68	Discriminant validity confirmed
OS	.62	.31	.787	.70	Discriminant validity confirmed
PWB	.54	.27	.735	.65	Discriminant validity confirmed
WP	.59	.27	.768	.66	Discriminant validity confirmed

Note. Discriminant validity confirmed: AVE > MSV for all constructs; √AVE exceeds all inter-construct correlations; HTMT < .85 threshold (Rönkkö & Cho, 2022).

7.2 Model Fit

The structural model demonstrated acceptable fit across all primary indices. No modification indices were applied without theoretical justification.

Table 12

Model Fit Indices

Fit Index	Recommended threshold	Obtained value	Interpretation
CMIN/DF	< 3.00	2.14	Good fit
CFI	> .90	.947	Good fit
TLI	> .90	.938	Good fit
GFI	> .90	.921	Good fit
AGFI	> .80	.887	Acceptable fit
RMSEA	< .08 (ideally < .06)	.061	Acceptable — near excellent
SRMR	< .08	.052	Good fit

Note. Thresholds from Hair et al. (2025). RMSEA < .08 is acceptable; < .06 is excellent. The obtained value of .061 approaches the excellent threshold.

7.3 SEM Path Results

The SEM path model tested all six hypotheses. H1 through H4 were supported. The direct MRA → WP control path was non-significant ($\beta = -.11$, $p = .055$), which is theoretically meaningful: it suggests that MRA does not directly impair performance but does so entirely through the internal psychological states of stress and well-being — a finding that speaks directly to the mechanisms proposed by COR Theory and Moral Identity Theory.

Table 13

Hypothesis Testing: SEM Path Estimates

Hypothesis	Path	β	S.E.	C.R.	p-value	Decision
H1	MRA → OS	.58	.07	8.31	< .001	Supported
H2	MRA → PWB	−.46	.06	−7.14	< .001	Supported
H3	OS → WP	−.33	.07	−5.02	< .001	Supported
H4	PWB → WP	.41	.06	6.44	< .001	Supported
Control	MRA → WP	−.11	.06	−1.92	.055	Not significant

Note. Standardised path coefficients reported. S.E. = standard error; C.R. = critical ratio. Non-significance of the MRA → WP direct path indicates full mediation.

7.4 Mediation Analysis

Bootstrapped mediation with 5,000 resamples and 95% bias-corrected confidence intervals confirmed significant indirect effects through both pathways. The direct MRA → WP path remained non-significant after mediators were entered (β = −.11, p = .055), indicating full mediation. This is a theoretically important finding: MRA's impact on performance is not independent of internal psychological states but operates entirely through them — suggesting that organisations can interrupt this causal chain by addressing stress and well-being rather than solely targeting ethical climate.

Table 14

Bootstrapped Mediation Analysis

Mediation path	Direct effect (β)	Indirect effect (β)	95% CI	Mediation type
MRA → OS → WP (H5)	−.11 (n.s.)	−.19**	[−.28, −.11]	Full mediation — H5 supported
MRA → PWB → WP (H6)	−.11 (n.s.)	−.19**	[−.27, −.10]	Full mediation — H6 supported

*Note. ** p < .01. Bootstrap based on 5,000 resamples; 95% bias-corrected confidence intervals. Mediation is significant when the CI excludes zero. n.s. = not significant.*

Discussion

This study set out to test whether Moral Residue Accumulation — the cumulative psychological sediment of repeated workplace value-compromise — constitutes a meaningful predictor of occupational stress, psychological well-being, and work performance among IT employees. The results answer that question affirmatively, and in doing so generate several findings that warrant substantive theoretical discussion.

The strain pathway (H1, H3, H5). The strong positive relationship between MRA and occupational stress (β = .58) — the largest path coefficient in the model — indicates that the moral-psychological burden of accumulated value-compromise is at least as potent a stress driver as the workload and technostress factors that dominate IT well-being research. Under COR Theory, this is explicable: ethical agency and professional self-integrity are valued resources, and their repeated depletion through moral compromise initiates a resource loss spiral (Hobfoll, 1989) that registers as stress. This finding extends the moral distress literature (Gustavsson et al., 2025; Plouffe et al., 2021) into IT contexts and suggests that existing occupational stress models for digital workers may be systematically underspecified by omitting moral-psychological antecedents.

The resource-depletion pathway (H2, H4, H6). MRA's significant negative relationship with psychological well-being (β = −.46) is consistent with Moral Identity Theory's prediction that identity-incongruent conduct erodes the self-concept resources that sustain positive psychological functioning. The IT sector's specific moral landscape — algorithmic authority, surveillance features, privacy trade-offs — creates precisely the conditions of sustained identity incongruence that Aquino and Reed (2002) theorised as well-being-depleting. The subsequent positive effect of well-being on performance (β = .41) confirms that psychological well-being functions as a performance-enabling resource, consistent with the broader positive psychology literature (Kundi et al., 2020; Lu et al., 2022).

Full mediation as a theoretically meaningful finding. The non-significance of the direct MRA → WP path (β = −.11, p = .055) after mediators were entered is arguably the most theoretically interesting result in the study. Full mediation implies that MRA does not damage performance directly — through, for example, distraction or motivational withdrawal — but does so entirely through the internalised states of stress and well-being. This finding is consistent with COR Theory's emphasis on psychological resource depletion as the mechanism linking stressors to outcomes, and carries a specific practical implication: the moral-to-performance chain can, in principle, be interrupted at the mediator level. Organisations that successfully reduce occupational stress and restore psychological well-being in IT employees can break MRA's downstream performance effect even before the upstream moral climate is addressed.

Comparison with healthcare evidence. The present findings parallel and extend the healthcare moral distress literature. Gustavsson et al. (2025) found that moral residue was associated with psychological distress; the present study demonstrates that this relationship holds in a non-healthcare, high-technology context and that it extends downstream to performance. The β coefficient for MRA → OS (.58) is somewhat larger than moral distress–burnout relationships reported in healthcare meta-analyses (Orgambídez et al., 2025), potentially reflecting the particular moral ambiguity of IT work, where ethical boundaries are less codified than in clinical practice.

Theoretical Implications

The study makes three distinct theoretical contributions to the organisational behaviour and HRM literatures.

First, construct extension. By formally distinguishing MRA from moral distress, moral injury, and emotional exhaustion (Table 1), and by demonstrating its empirical validity through CFA and SEM, the study establishes MRA as a quantifiable psychosocial construct applicable beyond healthcare. This opens a new line of organisational ethics research in digital, technology, and knowledge-work contexts.

Second, theoretical integration. The study demonstrates that MRA can be productively theorised at the intersection of COR Theory and Moral Identity Theory. These two frameworks are rarely combined in empirical HRM research, yet their integration here generates the dual-pathway prediction — strain pathway and resource-depletion pathway — that is empirically confirmed. Future studies may extend this integration to include boundary conditions such as ethical leadership, moral courage, or psychological safety as moderators.

Third, methodological contribution. The validated four-construct SEM framework with full CFA, discriminant validity via HTMT, and bootstrapped dual-path mediation provides a replicable template for future studies examining moral-psychological antecedents of performance in non-healthcare

settings. The model is parsimonious, theoretically grounded, and adaptable to other sectors, cultures, and role categories.

Practical Implications

The full mediation finding — that occupational stress and psychological well-being fully transmit MRA's performance effect — has a specific managerial implication: HR intervention at the mediator level can interrupt the moral-to-performance chain even before the broader ethical climate is reformed. Specific recommendations follow.

Ethical reporting channels: Organisations should establish formal, confidential mechanisms through which IT staff can surface privacy concerns, algorithmic fairness issues, cybersecurity shortcuts, and client-related ethical conflicts without risk of professional repercussion. This addresses MRA at its source.

Structured moral debrief: Project retrospectives and sprint reviews should include a brief ethical reflection component — not a compliance exercise, but a facilitated space in which team members can name and discuss morally uncomfortable decisions. This reduces the silent accumulation of unresolved residue.

Employee assistance and counselling: HR departments should ensure access to confidential counselling that explicitly encompasses moral distress, professional guilt, and value-conflict as presenting concerns — not only generic stress or burnout.

Workload and ethical-agency protection: Project managers should audit sprint designs and delivery timelines for conditions that systematically remove employees' ability to raise ethical objections. Overextension is not only a workload problem; it is a moral-agency problem that accelerates MRA.

Psychological safety culture: Managers should normalise dissent around ethical concerns in design, development, and client-facing decisions. Employees who feel psychologically safe to voice ethical objections accumulate less unresolved residue.

Manager training: Technical leads and project managers should be trained to recognise the behavioural signatures of moral distress — withdrawal, cynicism, perfunctory performance — and to respond with structured listening rather than dismissal.

MRA-specific well-being measurement: HR analytics teams should consider incorporating MRA-oriented items into their employee engagement or well-being surveys, enabling early detection before stress and performance outcomes emerge.

Limitations

The MRA scale is adapted from healthcare-context moral distress measures and has not been independently validated in an IT-specific context. While content validity was reviewed by domain experts and CFA results were satisfactory, a dedicated psychometric validation study — including test-retest reliability, convergent validity against established moral distress scales, and invariance testing across IT roles — remains a necessary next step.

The cross-sectional design precludes causal inference. The hypothesised directions (MRA causing stress and diminished well-being, which in turn impair performance) are theoretically grounded but cannot be confirmed without longitudinal data. Reverse causation — for example, poor performance generating guilt that is retrospectively labelled as moral residue — cannot be ruled out.

The sample is drawn from IT employees in India and may not generalise to IT workers in other cultural contexts, where moral norms, organisational power dynamics, and professional codes differ. The high-stress, high-performance culture of India's IT sector may amplify MRA effects relative to other settings.

Self-reported performance is susceptible to social desirability bias. Future studies should triangulate self-rated performance with supervisor ratings or objective productivity metrics.

The model does not include potentially important moderators — ethical leadership, psychological safety, moral courage, or perceived organisational support — that may buffer or amplify MRA's effects. Their inclusion would enrich the theoretical account.

Role-level heterogeneity within the IT sector was not examined. Software developers, cybersecurity analysts, and product managers likely encounter qualitatively different moral challenges, and MRA may manifest differently across these roles.

Future Research

Longitudinal studies should test whether MRA accumulation causally precedes stress, well-being decline, turnover intentions, and performance deterioration over time.

A dedicated psychometric validation study should develop and validate an IT-specific MRA scale with larger, stratified, cross-cultural samples.

Moderated mediation models should introduce ethical leadership, psychological safety, moral courage, and perceived organisational support as boundary conditions that may attenuate the MRA → stress → performance chain.

Cross-sectoral comparative studies should examine MRA in education, financial services, legal practice, and public administration — sectors characterised by high ethical complexity and increasing algorithmic governance.

Qualitative inquiry should explore the phenomenology of MRA in IT work: how employees narrate, manage, suppress, and rationalise their accumulated moral residue over time.

Gender, role, career stage, and remote/hybrid work comparisons may reveal differential vulnerabilities and coping strategies that modulate MRA accumulation and its consequences.

Conclusion

IT work is not morally neutral. Behind every software release, every data pipeline, and every client deliverable lie dozens of ethical micro-decisions — moments in which employees comply, stay silent, or compromise on values they hold. This study has demonstrated that the psychological residue of those moments accumulates, and that its accumulation has measurable consequences for occupational stress, psychological well-being, and work performance.

Drawing on Conservation of Resources Theory and Moral Identity Theory, the study proposed and confirmed a dual-pathway model in which Moral Residue Accumulation operates on work performance entirely through its effects on occupational stress and psychological well-being — with no significant direct path remaining once these mediators are included. The full mediation finding is theoretically important: it locates the mechanism of MRA's performance impact within the employee's internalised psychological states, and suggests that HR intervention at the mediator level can interrupt the causal chain even before the upstream ethical climate is reformed.

The study makes three contributions: it conceptually distinguishes MRA from adjacent constructs (moral distress, moral injury, emotional exhaustion) and establishes it as a quantifiable workplace hazard; it extends moral residue theory from healthcare into the digital work domain; and it provides a validated SEM framework replicable by future investigators. As algorithmic complexity, AI-assisted decision-making, and digital surveillance become more deeply embedded in IT work, the moral residue these systems generate for the humans who build and maintain them will only grow. Examining that residue is not only a theoretical imperative — it is a practical one

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