International Journal of Research and Technology (IJRT)

International Open-Access, Peer-Reviewed, Refereed, Online Journal

ISSN (Print): 2321-7510 | ISSN (Online): 2321-7529

| An ISO 9001:2015 Certified Journal |

From Analytics To Experience: How Organisational Communication and Work Environment Link HR Analytics Capability with Perceived Organisational Performance

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https://doi.org/10.64882/ijrt.v14.i4.2041

ABSTRACT

Purpose – This study examines how human resource analytics capability (HRAC) is associated with organisational performance through employee-facing processes, focusing on organisational communication and work environment.

Design/methodology/approach – A cross-sectional employee survey was analysed after data-integrity and response-quality screening, yielding 234 usable cases. A maximum-likelihood confirmatory factor analysis (CFA) evaluated the reflective measurement model before standardised composite-based path models with controls were estimated using HC3 robust standard errors. Indirect associations were tested with 10,000 bootstrap resamples.

Findings – HRAC was positively associated with organisational communication ($\beta = 0.557$, $p < 0.001$). Communication was positively associated with work environment ($\beta = 0.733$, $p < 0.001$), which was positively associated with perceived organisational performance ($\beta = 0.215$, $p = 0.019$). The serial indirect association was positive ($\beta = 0.088$, 95% CI [0.022, 0.172]), while HRAC retained a direct association with performance. A reverse-order specification was also statistically viable, so temporal ordering cannot be established from the cross-sectional data.

Practical implications – Organisations should assess analytics value not only through tools and dashboards but also through whether analytics-informed insights are communicated clearly and reflected in employees' working conditions.

Originality – The study advances an employee-facing value-realisation perspective grounded in HRM system-strength theory. Its contribution is to distinguish analytics capability from the communication of organisational signals and the working conditions employees experience, extending established HR analytics–performance relationships. The proposed and reverse-order serial indirect associations are examined without claiming a uniquely supported temporal sequence.

Keywords: HR analytics; people analytics; organisational communication; work environment; organisational performance; HRM system strength

Article classification: Research paper

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1. INTRODUCTION

Human resource analytics (HRA) has moved from being primarily a reporting activity towards a potentially strategic organisational capability. Organisations increasingly use workforce data, analytical technologies and specialist expertise to identify workforce patterns, support people-related decisions and connect human resource management (HRM) with broader organisational priorities (Marler and Boudreau, 2017; Minbaeva, 2018). This development has produced substantial interest in whether analytics can improve organisational outcomes and, more importantly, in the processes through which such value may be realised. Prior research links HR analytics with evidence-based management and organisational performance (McCartney and Fu, 2022), innovative capability (Arora and Mittal, 2024), managerial decision-making (Arora et al., 2025) and talent analytics (Sivathanu and Pillai, 2020). These studies establish the relevance of analytics to organisational outcomes but leave open how analytical capability becomes embedded in employee-facing processes. Existing explanations remain largely managerial, whereas analytics-informed decisions may also shape communication, information access, development opportunities and working conditions.

Recent work increasingly foregrounds employees' experience of analytics. Employees interpret HRA through information-sharing and perceived legitimacy (Rigamonti et al., 2025), while analytics may create both resources and demands (Raj and Krishnan, 2025) and should be understood as an organisational practice rather than a stand-alone technology (Espegren and Hugosson, 2025). Building on this view, the study examines organisational communication and work environment as employee-facing mechanisms. HRAC may generate workforce information; communication makes that information accessible and interpretable; and employees encounter its organisational consequences through their working environment. The argument is grounded primarily in the HRM system-strength perspective (Bowen and Ostroff, 2004; Ostroff and Bowen, 2016). This perspective shifts attention from isolated HR practices towards the processes through which organisational messages become sufficiently visible, understandable and consistent to influence employee perceptions and organisational climate. Applied to HRA, it suggests that analytical capability represents only one part of the value-realisation process. Organisational information has to be transmitted and enacted before employees can experience its consequences. More specifically, distinctiveness concerns the visibility and interpretability of HR signals, consistency concerns their coherence across messages and enactment, and consensus concerns agreement among HR decision-makers and perceived fairness (Bowen and Ostroff, 2004). Applied here, communication is a proposed channel for making analytics-informed signals understandable, while working conditions provide an experiential basis for assessing whether those signals are enacted. These are theoretical connections: the measures do not directly operationalise all three system-strength dimensions or establish shared climate through within-organisation agreement.

This study contributes by shifting explanations of HRA value from predominantly managerial mechanisms towards an employee-facing process. It distinguishes analytics capability from its informational transmission through organisational communication and its manifestation in employees' work environment, and examines whether these mechanisms jointly account for an indirect association with perceived organisational performance. Because the data are cross-sectional, the proposed sequence is treated as theoretically consistent with the observed relationships rather than as a uniquely identified causal process.

2. THEORETICAL BACKGROUND AND HYPOTHESES

2.1 HR analytics capability

HR analytics refers to the use of workforce-related data and analytical methods to support HR and organisational decisions (Marler and Boudreau, 2017). A capability perspective distinguishes the possession of data from an organisation's ability to generate, interpret and act on analytical evidence (Minbaeva, 2018; McIver et al., 2018). This distinction matters because analytics can remain disconnected from relevant organisational problems or become an inward-looking HR exercise (Angrave et al., 2016; Rasmussen and Ulrich, 2015). HRAC is therefore treated in this study as an enabling organisational capability rather than as a performance outcome in itself.

2.2 HR analytics capability and organisational communication

Analytics generates information, but this information becomes meaningful to the wider organisation only when it extends beyond the analytics function. Organisations with stronger HR analytics capability (HRAC) are better equipped to identify workforce patterns, embed data into routine HR processes and produce evidence that supports decision-making. This capability can facilitate more informed communication about organisational priorities, employee performance, workforce concerns and organisational change. This relationship does not suggest that analytics automatically improves communication. Instead, stronger HRAC broadens the evidence base on which organisational communication can draw. The HRM system-strength perspective is particularly relevant because employees are more likely to interpret HR systems consistently when organisational messages are visible, understandable and coherent (Bowen and Ostroff, 2004). The communication climate also influences how employees understand HR systems (Presbitero et al., 2022). Similarly, research on datafication through HR analytics highlights the importance of information sharing in shaping employees' interpretations of analytics practices (Rigamonti et al., 2025).

H1. HR analytics capability is positively associated with organisational communication.

2.3 Organisational communication and work environment

Organisational communication involves more than simply sharing information; it helps shape the context in which employees understand and experience their work. Employees rely on communication to clarify organisational goals, obtain the information needed to perform their roles, provide feedback and assess the transparency of organisational procedures. Clear and accessible communication can therefore reduce uncertainty and help translate formal organisational systems into employees' everyday working experiences.

From an HRM system-strength perspective, communication is a key mechanism through which formal HR practices become visible, understandable and meaningful to employees. Stronger systems create clearer signals about what the organisation values, expects and supports (Bowen and Ostroff, 2004; Ostroff and Bowen, 2016). A supportive work environment characterised by adequate resources, safety, inclusion and learning opportunities is unlikely to be experienced solely because policies exist; employees must also understand available resources, expectations and channels for support.

H2. Organisational communication is positively associated with employees' perceptions of the work environment.

Accordingly, organisational communication is conceptualised here as an informational process concerned with how organisational messages are transmitted, accessed and understood, whereas work environment captures the conditions employees experience, including resources, safety, inclusion and developmental support. The constructs are therefore theoretically related but conceptually distinct. For example, employees may receive clear information about development opportunities without having sufficient access to them, or experience safe and well-resourced conditions despite weak communication. Communication therefore concerns information and exchange, whereas work environment concerns experienced support and conditions. Their expected association does not make one a substitute measure for the other.

2.4 Work environment and perceived organisational performance

Organisational performance depends partly on employees' ability to execute organisational priorities within supportive working conditions. A positive work environment can provide resources needed to perform effectively, establish conditions of safety and inclusion and support continued learning and development. Such conditions may facilitate coordination, reduce avoidable impediments to performance and strengthen employees' capacity to contribute to organisational goals. This reasoning is also consistent with job demands–resources theory, which treats access to supportive job resources as an important condition for effective functioning and favourable work-related outcomes (Bakker and Demerouti, 2017). The potential performance consequences extend beyond individual task performance. Supportive working conditions can influence internal processes, service quality, innovation, customer outcomes and organisational adaptability. In this study, work environment is therefore treated as an employee-experienced organisational context that may be associated with broader perceived organisational performance.

H3. A supportive work environment is positively associated with perceived organisational performance.

2.5 HR analytics capability and perceived organisational performance

A positive association between HR analytics and organisational performance is well established conceptually and increasingly supported empirically. Analytics can improve the quality of workforce information, facilitate evidence-based management and help organisations identify patterns that would otherwise remain difficult to observe (Marler and Boudreau, 2017; McCartney and Fu, 2022). HR analytics capability has also been linked with

performance through innovation-related mechanisms (Arora and Mittal, 2024), while IJOA research demonstrates its relevance to managerial decision-making (Arora et al., 2025).

The present model therefore retains a direct HRAC-performance path rather than assuming that all association must operate through employee-facing mechanisms.

H4. HR analytics capability is positively associated with perceived organisational performance.

2.6 The employee-facing value-realisation pathway

The central contribution of the study lies in connecting the preceding relationships. Prior HRA research has commonly explained performance through managerial mechanisms. McCartney and Fu (2022), for example, identify evidence-based management as a link between HRA and performance, while Arora and Mittal (2024) emphasise innovative capability. These studies explain how organisations transform analytics into decision capability. The present study complements these explanations by proposing an employee-facing pathway. Analytical capability strengthens the organisation's capacity to generate workforce information; communication translates that information into accessible organisational signals; communication is associated with the work environment employees experience; and the work environment is associated with perceived organisational performance. The proposed sequence is theoretical rather than temporal proof: with cross-sectional data, the analysis can assess whether the observed associations are consistent with the proposed mechanism, but it cannot demonstrate that one intermediate construct necessarily precedes another in time.

H5. HR analytics capability has a positive indirect association with perceived organisational performance through organisational communication and work environment in sequence.

3. METHODOLOGY

3.1 Research design and sample

The study used a quantitative cross-sectional employee survey conducted in India. Respondents were working professionals employed across multiple sectors, including information technology, banking and financial services, manufacturing, retail, fast-moving consumer goods and other professional and service sectors. Data were collected between July and September 2024 using a non-probability purposive and convenience sampling approach. The questionnaire was administered online and distributed through professional networks and digital communication channels to reach employees across different organisations and functional areas. Participation was voluntary, and respondents' information was treated confidentially. Eligibility was limited to individuals who were employed at the time of the survey, ensuring that participants had current workplace experience relevant to the organisational practices examined. Respondents worked in organisations of varying sizes and held a range of functional and managerial roles, providing diversity in their organisational and professional backgrounds.

Before testing the hypotheses, the data were screened for integrity. The exported workbook initially contained 512 rows. However, rows 257–512 were exact duplicates of rows 1–256

and appeared in the same sequence. This repeated block was therefore removed. Three additional duplicate records were identified based on complete agreement across all demographic and substantive questionnaire fields. In each case, only the first occurrence was retained. A further 19 unique cases showed no variation across all 83 substantive Likert-scale items and were excluded as invariant response patterns. After these data-cleaning procedures, the final analytical sample comprised 234 respondents. There were no missing responses for the focal substantive variables in the retained sample.

The screening sequence was therefore 512 exported rows → 256 after removal of the repeated block → 253 after removal of the three additional exact matches → 234 after invariant-response screening. Removal of the repeated block prevents identical records from receiving double weight. The matching pattern establishes workbook duplication but does not, by itself, identify its origin. Likewise, complete questionnaire agreement cannot conclusively establish respondent identity. Invariant responding meant selecting the same response category across all 83 substantive items; it was a response-quality flag rather than proof of inattentiveness. Excluding such cases may also remove genuine responses and alter the sample, which motivates the sensitivity analysis reported in Section 4.3. Corroboration through timestamps or respondent identifiers is not reported for the three additional exact matches, so their classification rests on the questionnaire-field matching rule described above.

Of the 234 respondents, 58.1 per cent were male and 41.9 per cent were female. Most respondents were younger than 30 years (57.7 per cent), while 35.5 per cent were aged between 30 and 40 years. In terms of educational qualifications, 65.0 per cent held postgraduate degrees and 31.6 per cent were graduates. Approximately 65.0 per cent worked in organisations with more than 1,000 employees. Sectoral diversity should not be interpreted as proportional coverage of Indian employment. Recruitment through professional networks can overrepresent well-connected employees, and voluntary participation can select respondents with greater interest in HR practices. The predominance of younger, postgraduate respondents and employees in large organisations further limits transferability to other groups. Sector controls adjust the pooled associations for included sector categories; they do not establish population representativeness or demonstrate that relationships are identical across sectors. The recruitment information reported here does not include sector-specific frequencies or the number of eligible employees reached. Consequently, the sector proportions and a recruitment response rate cannot be established from the available reporting, limiting assessment of coverage and non-response bias.

3.2 Measures

All focal items used a five-point agreement scale ranging from 1 = strongly disagree to 5 = strongly agree. The questionnaire comprised researcher-developed and adapted items rather than the verbatim adoption of a single established scale. Item development was informed by the conceptual and empirical literature on HR analytics, HRM systems and organisational performance, and the wording was adapted to capture employees' perceptions of practices and conditions within their organisations. The conceptual anchors discussed in Section 2

include capability-oriented accounts of HRA (Marler and Boudreau, 2017; Minbaeva, 2018), HRM signalling processes (Bowen and Ostroff, 2004), supportive job resources (Bakker and Demerouti, 2017) and the HRA–performance relationship (McCartney and Fu, 2022). These theoretical anchors should not be read as an item-level attribution of adapted scale wording; an item-by-item mapping to original measures is not reported. The measures are therefore treated as study-specific operationalisations whose item provenance and content validity require further documentation, rather than as validated reproductions of established scales. The initial HR analytics pool covered analytics resources, technological integration, usability, workforce-related insights, decision support and organisational investment, while the communication, work-environment and performance items represented the corresponding organisational domains. No separate pilot study or formal CVR/CVI-based content-validity exercise was documented before the main survey. Measurement quality was therefore examined in the analytical sample through internal consistency, CFA, composite reliability, average variance extracted and discriminant-validity diagnostics. Content coverage was therefore supported by the stated construct definitions and conceptual item-retention decisions, rather than by independently documented content-validity ratings. Reliability and CFA provide evidence about score consistency and structure but cannot substitute for expert content review, cognitive pretesting or independent validation.

HR analytics capability. The broader questionnaire contained 18 HRA-related statements. Several items explicitly described downstream outcomes, such as improved work environment, reward transparency or work-life balance. Including those items in the predictor while modelling the same outcomes as intermediate organisational conditions would create criterion contamination. Item retention was based on conceptual content rather than on the statistical significance of particular model relationships: items were excluded when their wording directly represented downstream outcomes already modelled elsewhere in the study. HRAC was therefore operationalised with seven capability-oriented items: organisational use of HRA for decision-making, availability of analytics resources and tools, integration into daily HR operations, usability and effectiveness of HRA tools, customisation to changing workforce needs, availability of skilled analytics resources and continuing investment in analytics technology and training. The seven-item scale showed high internal consistency ($\alpha = 0.920$).

Organisational communication. Six items assessed communication by top management, employee access to job-relevant information, employee feedback, accessibility of communication channels, updates concerning organisational performance and goals, and transparency. Internal consistency was high ($\alpha = 0.892$). Work environment. Seven items initially represented work environment. During measurement-model assessment, WE7 (the organisation conducts training and development programmes for employee advancement) showed a standardised loading below 0.50 and substantially overlapped in content with WE6, which already captured developmental support. WE7 was therefore excluded as a measurement refinement before structural estimation. The retained six items assessed a clean and healthy work setting, congenial working conditions, access to resources, safety and

security, a positive and inclusive culture, and encouragement for further education and training. Internal consistency for the six-item scale was acceptable to high (α = 0.842).

Perceived organisational performance. The questionnaire included 20 performance items spanning target/financial performance, customer outcomes, internal processes, growth and innovation, and sustainability/social performance. One item stating that the organisation leverages data and analytics to guide decision-making was excluded because of direct conceptual overlap with HRAC. The remaining 19 items showed high internal consistency (α = 0.918). Because these items intentionally represented five substantively distinct performance domains, performance was retained as a multidimensional composite rather than forced into a single reflective CFA factor. The five-domain means were calculated first and then averaged so that domains with more items did not dominate the overall score. Domain-level reliability coefficients ranged from 0.789 to 0.860. The rationale is to represent perceived organisational effectiveness across complementary economic, customer, operational, developmental and social domains, rather than to assume that all items are interchangeable manifestations of one latent trait. Equal weighting gives each domain one-fifth of the overall score; it is a transparent scoring choice, not an empirically established equivalence of their importance. The composite can conceal differences or trade-offs across domains, and its high alpha does not establish unidimensionality. Findings therefore concern the overall employee-rated index and do not demonstrate improvement in every domain or in audited financial performance.

Controls. Age, gender, educational qualification, professional experience, organisation size and sector were included as controls. Categorical variables were dummy-coded for estimation; coefficients for controls are not reported because they were not focal to the hypotheses.

3.3 Analytical strategy

The analysis proceeded in five stages. First, the data were screened for exact duplication, invariant responding and missing observations. Second, a maximum-likelihood CFA was estimated for the three reflective constructs HRAC, organisational communication and work environment. Five-point items were treated as approximately continuous; univariate skewness was below 1.10 in absolute value and excess kurtosis below 2.34. During CFA refinement, four residual covariances were permitted where item wording indicated clear shared specificity beyond the focal constructs: HR2–HR3, HR17–HR18, WE1–WE2 and CO2–WE3. The final three-factor model was compared with a model combining communication and work environment and with a single-factor model. Standardised loadings, composite reliability (CR), average variance extracted (AVE) and HTMT ratios were then examined (Fornell and Larcker, 1981; Henseler et al., 2015). Third, descriptive statistics and zero-order correlations were computed. Fourth, potential common-method concentration was examined using Harman's single-factor diagnostic and full-collinearity VIFs (Podsakoff et al., 2003; Kock, 2015). These diagnostics are treated as indicators rather than as proof that common-method bias is absent. The residual covariances and the removal of WE7 were assessed in the same sample used for hypothesis testing. These refinements may capitalise on sample-

specific relationships and require independent replication. In particular, the cross-construct CO2–WE3 residual covariance acknowledges local item overlap and warrants caution when interpreting the separation of communication and work environment.

Fifth, the hypotheses were examined using standardised composite-based path models. HC3 heteroscedasticity-robust standard errors were used for direct associations. Age, gender, education, experience, organisation size and sector were included as controls. Indirect associations were evaluated using 10,000 non-parametric bootstrap resamples. A bootstrap confidence interval excluding zero was treated as evidence of a statistically detectable indirect association. Given the cross-sectional design, the products of path coefficients are described as serial or specific indirect associations, not as established causal mediation. Bootstrap intervals quantify sampling uncertainty conditional on the specified model; they do not establish temporal order or remove unmeasured confounding. A reverse-order specification was also estimated in which work environment preceded communication. This robustness analysis was used to assess whether the data uniquely supported the proposed ordering. Because cross-sectional serial models can be observationally compatible with more than one temporal sequence, the alternative model is interpreted as a sensitivity check rather than a causal model-comparison test.

4. RESULTS

4.1 Measurement diagnostics and descriptive relationships

The three-factor CFA provided acceptable fit to the data: $\chi^2(145) = 352.21$, $p < 0.001$, CFI = 0.926, TLI = 0.913, RMSEA = 0.078, 90% CI [0.068, 0.089], and SRMR = 0.064. The three-factor specification fit better than a model in which organisational communication and work environment were combined (CFI = 0.908, TLI = 0.893, RMSEA = 0.087, SRMR = 0.066) and a single-factor model (CFI = 0.741, TLI = 0.701, RMSEA = 0.145, SRMR = 0.129). Standardised loadings ranged from 0.718 to 0.870 for HRAC, 0.703 to 0.831 for organisational communication and 0.511 to 0.829 for the retained work-environment items. CR/AVE values were 0.918/0.615 for HRAC, 0.894/0.585 for communication and 0.849/0.489 for work environment. The work-environment AVE of 0.489 falls marginally below the conventional 0.50 criterion, so convergent validity is qualified rather than fully established.

Retention of work environment balances this shortfall against its conceptual coverage, CR of 0.849 and retained loadings of 0.511–0.829. AVE and CR assess different measurement properties: adequate reliability does not negate an AVE below 0.50 (Fornell and Larcker, 1981). Further item deletion solely to raise AVE could narrow the intended coverage of physical, social and developmental conditions. The six-item construct is therefore retained provisionally for the present analysis, with the explicit limitation that the convergent-validity benchmark is not met. Independent studies should examine its dimensionality and refine weaker items before treating this specification as established.

Table 1 reports descriptive statistics, reliability, zero-order correlations and HTMT ratios for the final construct scores. All zero-order correlations were positive and statistically significant. The strongest association was between organisational communication and work

environment (r = 0.771). Their HTMT value was 0.886, below 0.90 but above the stricter 0.85 benchmark. The conceptual distinction in Section 2.3 and the better three-factor fit favour retaining separate constructs for this analysis, but do not conclusively establish discriminant validity. The HTMT result passes the more permissive 0.90 threshold while failing 0.85 (Henseler et al., 2015). Moreover, the reported CFA factor correlation of approximately 0.87 implies shared variance of approximately 0.76, exceeding both AVEs (0.585 and 0.489); the Fornell–Larcker criterion is therefore not met for this pair. These mixed diagnostics require cautious interpretation of their separate path coefficients. In Harman's single-factor test, the first unrotated factor explained 36.6 per cent of the variance across the focal items, while the full-collinearity VIF values ranged from 1.59 to 2.81. These results indicate that the first factor did not account for most item variance; they do not establish that common-method bias is absent or negligible. Method variance can affect several factors and path estimates even without a dominant single factor, and VIFs do not isolate its source (Podsakoff et al., 2003).

Table 1. Descriptive statistics, reliability estimates, correlations and HTMT ratios

Construct	M	SD	α	1	2	3	4
1. HR analytics capability	3.538	0.784	0.920	—	0.567	0.502	0.612
2. Organisational communication	3.791	0.742	0.892	0.517	—	0.886	0.668
3. Work environment	4.051	0.611	0.842	0.450	0.771	—	0.663
4. Perceived organisational performance	3.917	0.522	0.918	0.567	0.602	0.586	—

Notes: Zero-order correlations appear below the diagonal; HTMT ratios appear above the diagonal. All reported zero-order correlations are significant at $p < 0.001$. N = 234. HTMT values involving the multidimensional performance composite are descriptive item-overlap diagnostics and should not be interpreted as validating a single reflective performance factor.

4.2 Structural associations and indirect associations

The structural estimates generally supported the proposed relationships, although the strength of the associations varied across paths. HRAC was positively associated with organisational communication ($\beta = 0.557$, $p < 0.001$). When both HRAC and organisational communication were included as predictors of the work environment, communication showed a strong positive association with the work environment ($\beta = 0.733$, $p < 0.001$). In contrast, the direct association between HRAC and the work environment was not statistically significant ($\beta = 0.052$, $p = 0.440$). These findings suggest that communication may serve as an important pathway through which HRAC relates to employees' work environment, rather than HRAC

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being directly associated with every employee-facing workplace condition. In the performance equation, HRAC retained a positive direct association with perceived organisational performance ($\beta = 0.326$, $p < 0.001$). Organisational communication ($\beta = 0.284$, $p = 0.010$) and work environment ($\beta = 0.215$, $p = 0.019$) were also positively associated with performance. The models explained 40.7 per cent of the variance in communication, 63.3 per cent in work environment and 56.7 per cent in perceived organisational performance after controls were included.

The proposed serial indirect association, HRAC → organisational communication → work environment → perceived organisational performance, was positive and its bootstrap interval excluded zero ($\beta = 0.088$, 95% CI [0.022, 0.172]). The total indirect association across the model was $\beta = 0.257$ (95% CI [0.184, 0.370]), while the direct HRAC–performance association remained positive. Accordingly, direct and indirect associations coexist; this pattern does not establish partial or complete causal mediation. Importantly, not every possible indirect route was detectable. The specific HRAC → work environment → performance route was small and its bootstrap interval included zero ($\beta = 0.011$, 95% CI [−0.016, 0.046]). By contrast, the HRAC → communication → performance route was positive ($\beta = 0.158$, 95% CI [0.057, 0.291]). These results are consistent with communication's proposed employee-facing role, without establishing the underlying causal mechanism.

Table 2. Structural associations and hypothesis assessment

Path	β	p / 95% CI	Interpretation	Status
H1: HRAC → communication	0.557	$p < 0.001$	Positive association	Consistent with H1
Additional: HRAC → work environment	0.052	$p = 0.440$	Not statistically detectable	—
H2: Communication → work environment	0.733	$p < 0.001$	Positive association	Consistent with H2
H3: Work environment → performance	0.215	$p = 0.019$	Positive association	Consistent with H3
H4: HRAC → performance	0.326	$p < 0.001$	Positive direct association	Consistent with H4
Additional: Communication → performance	0.284	$p = 0.010$	Positive association	—
H5: HRAC → communication → work environment → performance	0.088	95% CI [0.022, 0.172]	Positive serial indirect association	Consistent with H5

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Notes: Standardised coefficients are from models including age, gender, education, professional experience, organisation size and sector controls. HC3 robust standard errors were used for direct paths. Indirect-association confidence intervals are based on 10,000 bootstrap resamples. R^2: communication = 0.407; work environment = 0.633; perceived organisational performance = 0.567. For reporting consistency, the serial bootstrap interval follows the matching values in the abstract, Section 4.2 and Table 3, and the direct-path p-values follow Section 4.2. This reconciliation of discrepant summaries does not constitute independent verification against the original analysis output.

4.3 Alternative ordering and robustness

The reverse-order specification also produced a statistically detectable serial indirect association from HRAC through work environment and then communication to performance (β = 0.083, 95% CI [0.029, 0.148]). The data therefore do not uniquely distinguish the temporal ordering of communication and work environment. With contemporaneous employee perceptions, either process may precede the other, or the two may develop reciprocally. The proposed ordering is therefore retained because it follows the study's theoretical argument concerning analytics-generated information, organisational signalling and experienced working conditions. However, the alternative model is reported rather than suppressed, and no claim is made that the observed data uniquely identify the temporal sequence. The reported sensitivity analysis retaining the invariant-response cases produced the same substantive pattern of positive focal associations. However, its coefficients and confidence intervals are not reported, limiting assessment of the magnitude and uncertainty of any changes.

Table 3. Indirect-association and alternative-ordering diagnostics

Indirect association	β	95% bootstrap CI	Inference
HRAC → communication → work environment → performance	0.088	[0.022, 0.172]	Detectable
HRAC → communication → performance	0.158	[0.057, 0.291]	Detectable
HRAC → work environment → performance	0.011	[-0.016, 0.046]	Not detectable
Total indirect association	0.257	[0.184, 0.370]	Detectable
Reverse order: HRAC → work environment → communication → performance	0.083	[0.029, 0.148]	Detectable

Note: The reverse-order result is reported to make clear that the cross-sectional data do not uniquely establish temporal ordering between communication and work environment.

5. DISCUSSION

The findings are consistent with an employee-facing explanation of HR analytics value. HRAC was associated with organisational communication, communication with work environment, and work environment with perceived organisational performance. This extends

prior managerial explanations based on evidence-based management (McCartney and Fu, 2022) and innovative capability (Arora and Mittal, 2024) by identifying a complementary employee-facing route. Communication appears central to this process. The non-significant conditional HRAC–work-environment path, alongside the strong communication–work-environment association, is consistent with the proposed informational role of communication. It does not show that communication is necessary for analytics to influence working conditions, particularly given the overlap between communication and work-environment measures. This interpretation is consistent with HRM system-strength theory, which emphasises visible, understandable and consistent organisational signals (Bowen and Ostroff, 2004; Presbitero et al., 2022).

The reverse-order analysis also provides an important interpretive qualification. Because the alternative sequence was statistically viable, the findings should not be read as evidence that communication necessarily occurs before work environment in time. It is equally plausible that supportive environments improve perceptions of communication, or that the two processes reinforce each other. The contribution is therefore not a claim of temporal discovery. It is the articulation of an employee-facing explanation and the observation of associations consistent with it, rather than the empirical identification of causal mechanisms. Longitudinal evidence is required to determine ordering.

5.1 Theoretical contribution

The theoretical contribution is an employee-facing value-realisation perspective that distinguishes analytics capability from the organisational conditions through which employees encounter its consequences. Consistent with practice-oriented accounts of HRA (Espegren and Hugosson, 2025), the study shifts attention from possessing analytics capability to how analytics-informed information becomes embedded in communication and working conditions. Novelty therefore lies not in individual bivariate relationships but in theorising communication as an informational translation mechanism and work environment as an employee-experienced context, and examining the corresponding serial indirect association, while also examining a plausible alternative ordering.

The extension to HRM system-strength theory is the distinction between generating workforce evidence, communicating its organisational meaning and experiencing its enactment in working conditions. This specifies a proposed link between analytics capability and employees' interpretations that is not captured by the established direct HR analytics–performance relationship or by managerial decision capability alone. However, because system strength and shared climate were not directly measured, the findings provide an application of the theory's signalling logic, not a test of the complete theory.

6. PRACTICAL IMPLICATIONS

Organisations should not equate investment in analytics technology with realised value. Analytics-informed insights need to move through communication channels that line managers and employees can understand and use. Managers should explain why changes are introduced, what evidence informs them and how employee feedback will be incorporated.

Analytics success should also be assessed through changes in working conditions, not only through dashboards or analytical outputs. Insights concerning workload, resources, development or inclusion should translate into visible organisational action. Clear communication about the purposes and boundaries of HRA is especially important where employees may have concerns about monitoring, fairness or data use.

7. LIMITATIONS AND FUTURE RESEARCH

Several limitations qualify the findings. First, the cross-sectional design does not establish temporal or causal ordering; the viable reverse-order model reinforces this limitation. Longitudinal or time-separated studies should test whether analytics capability precedes communication, work environment and performance. Reverse causation, reciprocal relationships and omitted organisational conditions remain possible despite covariate adjustment; bootstrap significance cannot resolve these alternatives. Second, all focal variables were employee-reported, so performance should be interpreted as perceived rather than audited organisational performance. Future studies should incorporate objective or multi-source outcomes.

Third, the HRAC specification and the six-item work-environment measure require independent validation. WE7 was excluded because of a sub-0.50 loading and conceptual redundancy, and future research should test the stability of the refined measurement structure in separate samples. The absence of a documented formal CVR/CVI exercise, independent pilot and item-level source mapping limits content-validity and replication claims. The work-environment AVE of 0.489 also means that convergent validity remains marginal despite CR of 0.849.

Fourth, communication and work environment remained closely related (HTMT = 0.886; CFA factor correlation ≈ 0.87), although the three-factor model fit better than a combined-factor model. More differentiated measures should test whether this distinction replicates. Their high shared variance and the cross-construct residual covariance mean that part of the apparent serial association may reflect overlapping perceptions rather than clearly separated processes. Finally, same-source measurement leaves potential common-method variance, and other employee-facing mechanisms including trust, fairness, privacy concerns and managerial capability remain to be examined using longitudinal, multi-source or multilevel designs. Confidentiality and voluntary participation do not remove possible halo effects, social desirability or response-consistency tendencies arising from the same respondent, survey occasion and response format. Harman's test and VIFs cannot quantify or eliminate these biases.

Future designs should separate measurement occasions, obtain independent assessments of analytics capability and workplace conditions, and use organisational records for performance; suitably designed marker-variable or method-factor analyses could provide additional diagnostics (Podsakoff et al., 2003). The purposive and convenience recruitment also precludes population-wide generalisation. Multiple sectors broaden the observed settings without establishing representative sector coverage, and the pooled findings should not be assumed to apply equally to small organisations, less-educated or older employees, or

contexts outside India. The screening decisions improve record integrity but may also change sample composition; the reported invariant-response sensitivity check does not establish the absence of selection bias.

8. CONCLUSION

The proposed perspective suggests that HR analytics creates organisational potential and that value realisation may depend partly on how analytics-informed information becomes embedded in employee-facing organisational processes. In this study, HR analytics capability was associated with organisational communication, communication with work environment, and work environment with perceived organisational performance. Although the cross-sectional design does not establish a unique temporal or causal sequence, the findings suggest why the employee-facing translation of analytics deserves greater attention in research on HR analytics and organisational performance.

Declarations

Ethics and informed consent: The study involved a voluntary, non-interventional online survey of adult employees. Respondents were informed about the academic purpose of the study before completing the questionnaire, and completion and submission of the questionnaire constituted informed consent. No personally identifiable information is reported in the manuscript, and findings are presented only in aggregate form.

Funding: The authors received no external funding for this research.

Conflict of interest: The authors declare no conflict of interest.

Data availability: The data supporting the findings of this study are available from the corresponding author upon reasonable request, subject to applicable ethical and confidentiality requirements.

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