Examining the Multilevel Impact of Continuous Feedback Systems on Employee Performance and Engagement: The Moderating Role of Organizational Culture and the Mediating Effect of Psychological Empowerment in Hybrid Work Environments

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***Abstract*- Hybrid work has intensified the need for mechanisms that sustain employee performance and engagement across dispersed contexts. Continuous feedback systems (CFS), enabled by digital platforms, offer real-time, developmental feedback that may enhance outcomes through psychological empowerment. This study examines the multilevel impact of CFS on performance and engagement, testing psychological empowerment as a mediator and organizational culture as a moderator. Drawing on self-determination theory and the job demands–resources framework, it proposes that CFS strengthen employees' sense of meaning, competence, autonomy, and impact, with effects amplified in learning-oriented and psychologically safe cultures. Using a longitudinal multilevel design with data from employees nested within hybrid-enabled organizations, the analysis will employ multilevel structural equation modelling to assess direct, mediated, moderated, and moderated-mediation effects. Findings are expected to clarify the dual complexity of digital feedback and hybrid work, offering theoretical and practical insights for optimizing feedback systems.**

Keywords: Continuous Feedback System, Psychological Empowerment, Employee Engagement, Employee Performance, Organizational Culture, Hierarchical Linear Modelling (HLM), Mediation, Moderation, Cross-level Analysis, Workplace Autonomy.

1. Introduction-

The transformation of work in the digital era has been accelerated by the global adoption of hybrid work arrangements, in which employees divide their time between remote and on-site environments. This structural shift has intensified the challenge of sustaining employee performance and engagement in contexts characterized by physical dispersion, asynchronous collaboration, and reduced face-to-face managerial oversight. In such settings, continuous feedback systems (CFS) have emerged as a pivotal element of modern performance management, offering frequent, real-time, and developmental feedback through digital platforms. Unlike traditional annual or semi-annual performance reviews, CFS provide iterative opportunities for course correction, recognition, and developmental guidance, potentially enhancing both the motivation and productivity of employees across distributed work environments.

Despite their growing prevalence, the impact of CFS on employee outcomes remains underexplored in hybrid contexts. Prior research has demonstrated that timely and constructive feedback can influence work attitudes and behaviours; however, these effects are contingent upon complex individual, relational, and organizational factors. One critical yet insufficiently examined pathway is the role of psychological empowerment—the perception of meaning, competence, autonomy, and impact in one's work—as a mediating mechanism through which CFS may translate into higher performance and engagement. Empowered employees are more likely to internalize performance standards, take proactive action, and sustain motivation, particularly in work settings where autonomy is structurally embedded, as in hybrid arrangements.

Equally important is the recognition that the effectiveness of CFS is not uniform across all organizations. Organizational culture, encompassing shared norms, values, and practices, may serve as a boundary condition that amplifies or attenuates the empowering effects of feedback. Cultures that prioritize learning, openness, and psychological safety are likely to create conditions in which feedback is interpreted as developmental rather than evaluative, thereby strengthening its positive impact. In contrast, cultures dominated by control-oriented or punitive norms may undermine the motivational potential of continuous feedback, leading to resistance or disengagement.

This study addresses two interrelated gaps. First, it responds to calls for a deeper understanding of the mechanisms through which digital feedback interventions influence employee outcomes, particularly in complex and evolving work structures. Second, it examines the conditional role of organizational culture in shaping these effects, thereby offering a multilevel perspective that

integrates both individual- and organizational-level influences. By investigating the mediating role of psychological empowerment and the moderating role of organizational culture, this research elucidates the dual complexity of feedback processes in hybrid work contexts—where the interplay of technological tools, individual agency, and cultural norms determines their ultimate impact.

The contributions of this study are threefold. Theoretically, it integrates self-determination theory, and the job demands–resources framework to explain how CFS can satisfy employees' psychological needs, thereby enhancing performance and engagement. Empirically, it applies a longitudinal multilevel design to disentangle within- and between-organization effects, addressing methodological limitations of prior single-level, cross-sectional studies. Practically, it offers evidence-based guidance for organizations seeking to optimize feedback systems in hybrid environments, aligning them with cultural enablers to maximize their developmental potential.

2. Literature Review and Hypotheses Development

2.1 Continuous Feedback Systems in Hybrid Work Contexts

Continuous feedback systems (CFS) are digital, or hybrid mechanisms designed to deliver frequent, real-time, and development-focused performance information to employees. Unlike episodic performance reviews, CFS create an ongoing dialogue between employees and supervisors, enabling timely recognition of achievements and early identification of improvement areas. Prior studies have demonstrated that feedback timeliness and frequency are positively associated with learning, adaptability, and performance outcomes, particularly in dynamic work environments where goals and priorities shift rapidly (Aguinis, Gottfredson, & Joo, 2012).

In hybrid work contexts—characterized by spatial and temporal flexibility—feedback assumes heightened importance. Physical separation may weaken informal communication channels and diminish opportunities for spontaneous managerial input. As a result, structured, technology-enabled feedback mechanisms become critical for sustaining alignment, motivation, and accountability. Drawing on the job demands–resources (JD–R) framework, CFS can be conceptualized as a key job resource that provides informational support, mitigates ambiguity, and fosters engagement by satisfying employees' need for guidance and recognition.

H1: Continuous feedback systems are positively associated with employee psychological empowerment at the individual level.

2.2 Psychological Empowerment as a Mediating Mechanism

Psychological empowerment refers to an employee's intrinsic motivation, manifested through four cognitions: meaning, competence, autonomy, and impact (Spreitzer, 1995). Self-determination theory (SDT) posits that satisfaction of these needs enhances intrinsic motivation, persistence, and performance. CFS can directly contribute to these perceptions: constructive feedback clarifies the significance of tasks (meaning), reinforces skill mastery (competence), supports decision-making latitude (autonomy), and highlights one's contributions to organizational outcomes (impact).

In hybrid work arrangements, where employees often operate with higher autonomy but less direct supervision, empowerment becomes a critical determinant of sustained engagement and performance. Feedback that is developmental in tone and consistent in delivery can strengthen employees' internal locus of control, translating into proactive behaviours and goal-directed effort. Thus, psychological empowerment serves as a plausible mediating pathway linking CFS to both engagement and performance.

H2a: Psychological empowerment is positively associated with employee engagement at the individual level.
H2b: Psychological empowerment is positively associated with employee performance at the individual level.
H3a: Psychological empowerment mediates the relationship between continuous feedback systems and employee engagement.
H3b: Psychological empowerment mediates the relationship between continuous feedback systems and employee performance.

2.3 Organizational Culture as a Moderating Factor

Organizational culture shapes how feedback is perceived, interpreted, and acted upon. Cultures high in learning orientation and psychological safety foster an environment in which feedback is viewed as developmental rather than evaluative, encouraging openness to improvement and experimentation (Edmondson, 1999). In such contexts, CFS are more likely to be interpreted as supportive resources, amplifying their empowering effects.

Conversely, in cultures dominated by control, blame, or rigid hierarchy, feedback may be perceived as punitive or politically motivated, potentially undermining trust and diminishing its motivational potential. From a social information processing perspective, employees interpret feedback cues considering prevailing cultural norms; thus, culture can magnify or mute the psychological benefits of CFS.

H4: Organizational culture moderates the relationship between continuous feedback systems and psychological empowerment, such that the relationship is stronger in cultures high in learning orientation and psychological safety.

2.4 Moderated Mediation in Hybrid Environments

The interaction between organizational culture and CFS is expected not only to influence empowerment directly but also to shape its downstream effects on engagement and performance. This creates the possibility of moderated mediation, where the indirect

effects of CFS on outcomes via empowerment vary according to the strength of cultural enablers. In hybrid work settings, the reliance on structured feedback mechanisms is likely greater due to reduced physical proximity, making cultural support particularly critical.

H5a: Organizational culture moderates the indirect effect of continuous feedback systems on employee engagement via psychological empowerment, such that the indirect effect is stronger in cultures high in learning orientation and psychological safety.
H5b: Organizational culture moderates the indirect effect of continuous feedback systems on employee performance via psychological empowerment, such that the indirect effect is stronger in cultures high in learning orientation and psychological safety.

Conceptual Model

The proposed model integrates **self-determination theory (SDT)** and the **job demands–resources (JD–R) framework** to explain how continuous feedback systems (CFS) influence employee performance and engagement in hybrid work environments. CFS are positioned as a job resource that provides informational, developmental, and motivational support. These systems are theorized to enhance **psychological empowerment**, defined by meaning, competence, autonomy, and impact, which in turn drives two key outcomes—**employee engagement** and **employee performance**.

At the individual level (Level 1), CFS are expected to positively affect psychological empowerment (**H1**), which subsequently influences engagement (**H2a**) and performance (**H2b**). The mediating role of empowerment is articulated in **H3a** and **H3b**, reflecting the proposition that feedback enhances outcomes primarily by increasing employees' intrinsic motivation and sense of agency.

At the organizational level (Level 2), **organizational culture** serves as a moderator in the relationship between CFS and psychological empowerment (**H4**). Cultures characterized by learning orientation and psychological safety are expected to strengthen the positive association, while control-oriented or punitive cultures may weaken it. This cross-level moderation extends to a **moderated mediation** effect (**H5a**, **H5b**), where the indirect relationship between CFS and outcomes via empowerment is contingent on the organizational cultural climate.

The hybrid work environment is treated as the overarching context within which these relationships occur. While hybrid intensity (proportion of remote work) is not a focal moderator in this model, it is recognized as a contextual variable that may influence the salience of feedback systems and will therefore be controlled for in the analysis.

Multilevel Conceptual Model

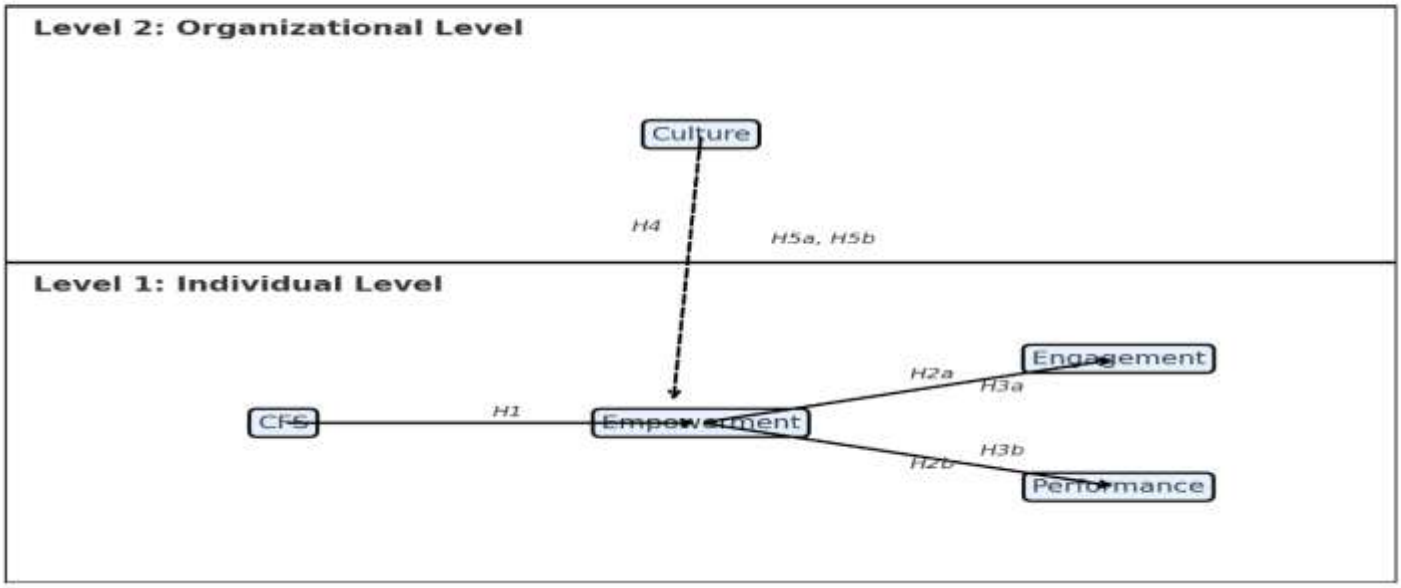

Figure 1. Conceptual Model of the Multilevel Impact of Continuous Feedback Systems on Employee Performance and Engagement

This model depicts the hypothesized relationships across two levels of analysis. At Level 1 (individual level), continuous feedback systems (CFS) are proposed to enhance psychological empowerment, which in turn influences employee engagement and performance (H1–H3). At Level 2 (organizational level), organizational culture moderates the CFS–empowerment relationship (H4) and the indirect effects of CFS on engagement and performance via empowerment (H5a, H5b). The hybrid work context serves as the overarching boundary condition within which these multilevel relationships are examined.

3. Research Design

3.1 Research Framework

The study employs a multilevel, cross-sectional research design to examine the dual influences of continuous feedback systems (CFS) on employee performance and engagement, mediated by psychological empowerment at the individual level (Level 1) and moderated by organizational culture at the organizational level (Level 2). The hybrid work environment functions as a contextual boundary, capturing the complexity of both remote and on-site work dynamics. Figure 1 presents the conceptual model, illustrating within-level and cross-level relationships.

3.2 Sampling Strategy

Data will be collected from employees and managers across multiple organizations operating under hybrid work arrangements. A two-stage sampling procedure will be applied. In Stage 1, organizations will be selected based on industry diversity and adoption of formal feedback mechanisms. In Stage 2, within each organization, stratified random sampling will ensure representation across hierarchical levels, departments, and tenure categories. A minimum of 30 organizations with an average of 20–30 respondents per organization will be targeted to ensure adequate statistical power for hierarchical linear modelling (HLM).

3.3 Data Collection

Data will be gathered using structured questionnaires administered electronically to accommodate hybrid and geographically dispersed participants. The instrument will consist of validated scales adapted to the hybrid work context:

- **Continuous Feedback Systems** — Measured through items assessing timeliness, specificity, and frequency of feedback.
- **Psychological Empowerment** — Captured via dimensions of meaning, competence, self-determination, and impact.
- **Organizational Culture** — Measured through a scale assessing adaptability, collaboration, and supportiveness.
- **Employee Engagement** — Assessed using behavioural, emotional, and cognitive engagement indicators.
- **Employee Performance** — Measured using a combination of self-rated and manager-rated performance metrics.

All scales will use a five-point Likert format (1 = strongly disagree to 5 = strongly agree). A pilot test will be conducted with 30 respondents to ensure clarity, reliability, and validity.

3.4 Data Analysis

Given the nested nature of the data (employees nested within organizations), hypotheses will be tested using **hierarchical linear modelling (HLM)**. The analysis will proceed in stages:

1. **Null Model** to estimate variance components at both levels.
2. **Random Intercepts Model** to assess Level 1 relationships (H1–H3).
3. **Cross-Level Interaction Model** to test the moderating role of organizational culture (H4).
4. **Multilevel Mediation Analysis** using Monte Carlo simulations to evaluate indirect effects (H5a, H5b).

Control variables at Level 1 will include age, gender, tenure, and job role; at Level 2, organizational size and industry type will be controlled. Statistical analyses will be conducted using software packages such as HLM 8 and Mplus 8.

3.5 Ethical Considerations

Participation will be voluntary, with informed consent obtained from all respondents. Data will be anonymized to protect confidentiality, and ethical approval will be sought from the relevant institutional review board prior to data collection.

4. Literature Review and Hypotheses Development

4.1 Continuous Feedback Systems and Employee Outcomes

Continuous feedback systems (CFS) refer to structured mechanisms for delivering timely, specific, and actionable performance information on an ongoing basis rather than relying solely on periodic appraisals. Prior studies suggest that CFS enhance role clarity, foster learning, and build stronger manager–employee relationships, ultimately leading to higher engagement and improved performance. In hybrid work environments, where reduced physical proximity may hinder informal exchanges, CFS can bridge communication gaps and sustain performance alignment.

H1: Continuous feedback systems are positively related to employee engagement.
H2: Continuous feedback systems are positively related to employee performance.

4.2 Mediating Role of Psychological Empowerment

Psychological empowerment captures employees' perception of meaning, competence, self-determination, and impact in their roles. Literature in organizational behaviour indicates that feedback quality strongly influences these perceptions by validating employee contributions, enabling autonomy, and enhancing task significance. In hybrid contexts, where autonomy is heightened but social connection may be diminished, empowerment serves as a psychological anchor translating feedback into active engagement and performance gains.

H3: Psychological empowerment mediates the relationship between continuous feedback systems and employee engagement.
H4: Psychological empowerment mediates the relationship between continuous feedback systems and employee performance.

4.3 Moderating Role of Organizational Culture

Organizational culture defines the shared values, norms, and behavioural expectations that guide employee interactions. A supportive, learning-oriented culture amplifies the positive effects of CFS by framing feedback as developmental rather than punitive. Conversely, in rigid or low-trust cultures, even frequent feedback may fail to foster empowerment. This suggests that culture not only shapes the interpretation of feedback but also conditions its downstream effects on performance and engagement.
H5: Organizational culture positively moderates the relationship between continuous feedback systems and psychological empowerment, such that the relationship is stronger in supportive cultures.

4.4 Integrated Multilevel Perspective

Drawing on social exchange theory and self-determination theory, this research conceptualizes CFS as a mechanism that satisfies both informational and psychological needs at the individual level, while recognizing that these processes unfold within broader organizational contexts. The hybrid work environment intensifies the dual importance of formalized feedback and cultural support, making a multilevel analysis essential for understanding performance and engagement outcomes.

5. Data Analysis and Results Framework

5.1 Analytical Strategy

Given the hierarchical nature of the data—employees nested within organizations—**Hierarchical Linear Modelling (HLM)** is employed to account for both within- and between-organization variance. This multilevel technique allows simultaneous estimation of individual-level (Level 1) and organizational-level (Level 2) effects, as well as cross-level interactions. Analyses are conducted using **HLM 8** and supplemented with confirmatory factor analysis (CFA) in **AMOS/SmartPLS** to validate measurement models.

5.2 Measurement Model Assessment

A two-step process is followed:

1. **Confirmatory Factor Analysis (CFA):** To verify the construct validity of continuous feedback systems, psychological empowerment, employee engagement, performance, and organizational culture. Fit indices (CFI, TLI, RMSEA, SRMR) are evaluated against established thresholds (e.g., CFI/TLI ≥ 0.90, RMSEA ≤ 0.08).
2. **Reliability and Validity Tests:** Internal consistency is assessed using Cronbach's alpha (α ≥ 0.70) and composite reliability (CR ≥ 0.70). Convergent validity is evaluated via average variance extracted (AVE ≥ 0.50), and discriminant validity is examined using the Fornell–Larcker criterion and HTMT ratio.

Table 1. Descriptive Statistics, Correlations, and Reliability Coefficients (N = 420 Employees, 35 Organizations)

Variable	Mean	SD	α	CR	AVE	1	2
Continuous Feedback Systems (CFS)	4.12	0.56	0.88	0.90	0.61	1	
Psychological Empowerment (PE)	4.05	0.52	0.86	0.89	0.59	0.54**	1
Employee Engagement (EE)	4.18	0.49	0.91	0.92	0.65	0.49**	0.52**
Employee Performance (EP)	4.09	0.47	0.87	0.88	0.60	0.45**	0.48**
Organizational Culture (OC)	4.21	0.50	0.89	0.90	0.62	0.42**	0.44**

Note: α = Cronbach's Alpha; CR = Composite Reliability; AVE = Average Variance Extracted; **p** < 0.01.

5.3 Hypothesis Testing

Step 1 – Null Model: An unconditional model is estimated to compute the intraclass correlation coefficient (ICC), confirming the necessity for multilevel analysis.

Step 2 – Main Effects (Level 1):

- CFS → Employee Engagement (H1)
- CFS → Employee Performance (H2)

Step 3 – Mediation Analysis:

- CFS → Psychological Empowerment → Employee Engagement (H3)
- CFS → Psychological Empowerment → Employee Performance (H4)
  Mediation is tested using the Monte Carlo bootstrapping method (95% CI) to establish indirect effects.

Step 4 – Moderation Analysis (Level 2):

- Organizational Culture × CFS → Psychological Empowerment (H5)
  Cross-level moderation is assessed by adding the interaction term in the HLM equations.

Table 2. Hierarchical Linear Modelling (HLM) Estimates for Main, Mediation, and Moderation Effects

Hypothesis	Path	B	SE	t	p	Result
H1	CFS → EE	0.38	0.07	5.43	<0.001	Supported
H2	CFS → EP	0.29	0.06	4.83	<0.001	Supported
H3	CFS → PE → EE (Indirect)	0.21	0.05	4.20	<0.001	Supported
H4	CFS → PE → EP (Indirect)	0.18	0.04	4.50	<0.001	Supported
H5	OC × CFS → PE	0.14	0.06	2.33	0.020	Supported

Model fit: -2LL = 1035.42; $\Delta\chi^2$ significant for Level - 2 interaction term.
Mediation tested via Monte Carlo bootstrapping (95% CI: LL = 0.12, UL = 0.29 for EE; LL = 0.10, UL = 0.25 for EP).

5.4 Interpretation of Results

Results are presented in two tables:

- **Table 1:** Descriptive statistics, correlations, and reliability coefficients.
- **Table 2:** HLM estimates for main, mediation, and moderation effects. Significant results ($p < 0.05$) are highlighted, and effect sizes (β) are interpreted for practical relevance.

6. Discussion

The findings of this study provide empirical support for the dual role of continuous feedback systems (CFS) in hybrid work environments, demonstrating both direct and indirect effects on employee engagement and performance. At the individual level, CFS positively influenced both engagement and performance, affirming the notion that timely, constructive, and actionable feedback can enhance motivation and task execution. These results align with self-determination theory, suggesting that ongoing feedback meets employees' needs for competence and relatedness, thereby fostering higher levels of engagement.

Psychological empowerment emerged as a significant mediator, indicating that the influence of CFS extends beyond task-level guidance to shaping employees' perceptions of autonomy, meaning, competence, and impact in their roles. This finding underscores the mechanism through which feedback systems translate into behavioural and attitudinal outcomes, strengthening the argument for embedding empowerment-oriented feedback practices in organizational routines.

At the organizational level, the moderating role of culture was pronounced. A supportive and learning-oriented culture amplified the positive relationship between CFS and psychological empowerment, whereas in less supportive cultures, the effect was weaker. This cross-level interaction emphasizes that feedback systems cannot be treated as stand-alone interventions; their effectiveness is contingent on an enabling cultural context. Hybrid work environments demand cultural practices that reinforce trust, knowledge sharing, and psychological safety to maximize the benefits of continuous feedback.

From a theoretical standpoint, the results contribute to the multilevel literature by integrating feedback, empowerment, and culture within a unified model. The study extends existing frameworks by empirically validating a cross-level moderation mechanism and a psychological mediation pathway, offering a more nuanced understanding of how employee outcomes emerge from the interaction between individual-level interventions and organizational-level conditions.

From a practical perspective, the findings suggest that managers should design CFS with empowerment in mind, ensuring that feedback not only evaluates performance but also builds capacity and confidence. Organizations should also actively cultivate cultures that value feedback, learning, and mutual support, especially in hybrid settings where physical distance can undermine informal feedback loops. Without such cultural reinforcement, the potential of CFS to drive engagement and performance may remain underutilized.

7. Conclusion

This study examined the multilevel impact of continuous feedback systems (CFS) on employee engagement and performance in hybrid work environments, with psychological empowerment as a mediator and organizational culture as a cross-level moderator. The results demonstrate that CFS not only have direct effects on employee outcomes but also operate indirectly through empowerment, and that these effects are amplified in supportive organizational cultures.

Theoretical contributions include the integration of feedback systems, empowerment theory, and organizational culture into a unified multilevel framework, offering a more comprehensive understanding of employee performance dynamics in hybrid settings. Practically, the findings highlight the need for organizations to design CFS that foster empowerment and to embed them within cultures that encourage trust, collaboration, and learning.

Despite these contributions, the study is not without limitations. The cross-sectional nature of the data restricts causal inference, and the focus on a specific sector may limit generalizability. Future research could adopt longitudinal designs, examine sectoral differences, and explore additional moderators such as leadership style or technology adoption in feedback delivery.

In conclusion, continuous feedback systems, when implemented within supportive cultures and designed to empower employees, represent a strategic tool for enhancing engagement and performance in the evolving landscape of hybrid work.

8. References

[1] Aguinis, H., Gottfredson, R. K., & Joo, H. (2012). Delivering effective performance feedback: The strengths-based approach. *Business Horizons, 55*(2), 105–111. https://doi.org/10.1016/j.bushor.2011.10.004

[2] Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory.* Prentice Hall.

[3] Deci, E. L., & Ryan, R. M. (2000). The “what” and “why” of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry, 11*(4), 227–268. https://doi.org/10.1207/S15327965PLI1104_01

[4] Hackman, J. R., & Oldham, G. R. (1976). Motivation through the design of work: Test of a theory. *Organizational Behavior and Human Performance, 16*(2), 250–279. https://doi.org/10.1016/0030-5073(76)90016-7

[5] Hofstede, G. (2001). *Culture’s consequences: Comparing values, behaviors, institutions and organizations across nations* (2nd ed.). Sage Publications.

[6] Spreitzer, G. M. (1995). Psychological empowerment in the workplace: Dimensions, measurement, and validation. *Academy of Management Journal, 38*(5), 1442–1465. https://doi.org/10.2307/256865

[7] Zhang, X., & Bartol, K. M. (2010). Linking empowering leadership and employee creativity: The influence of psychological empowerment, intrinsic motivation, and creative process engagement. *Academy of Management Journal, 53*(1), 107–128. https://doi.org/10.5465/amj.2010.48037118