

# **Sustainable HRM Practices and Their Impact on Employee Engagement: Evidence from the Pharmaceutical Industry in Hyderabad**

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## **Abstract**

The growing focus of sustainability in corporate strategies has raised sustainable human resource management (SHRM) to the higher echelons of current business practices. This study examines the association between SHRM practices and employee engagement in the pharmaceutical sector of Hyderabad, a subset of the knowledge-intensive and globally competitive industries, which experiences extremely high rates of attrition in India. Based on the theoretical underpinnings from Social Exchange Theory, Resource-Based View and Stakeholder Theory, the study conceptualizes SHRM as a multi-faceted construct including green HRM, employee well-being, ethical practices, training and development, diversity and inclusion, and work – life balance. Descriptive and Analytic cross-sectional study design was employed and data was gathered from 545 respondents (HR managers and employees) through structured questionnaire on five-point Likert scale. Analyses included descriptive statistics, correlation, regression, and ANOVA. The findings show that the most important variable which positively associated with employee engagement that explained by four components, training and development, employee well-being, and work–life balance, followed by green HRM, ethical practices, and diversity, and inclusion. Academic engagement was highest in its cognitive aspect – an employee’s psychological involvement with day-to-day work, and relatively lower in emotional engagement. Differences by tenure suggested that engagement is prone to increase with tenure, pointing towards the importance of retention strategies. The results provide empirical confirmation for the theoretical proposition that sustainable HR practices lead to reciprocating employee behaviours, thereby making engagement a central SHRM outcome. Practical implications Finally, from a practical point of view, this study suggests the need for focusing on developmental opportunities, well-being initiatives, and inclusive policies to enhance the level of engagement in pharmaceutical firms. Policy implications Many policy implications were suggested including those that the women leaders believe should be institutionalized (e.g., sustainability-based HR policy frameworks), that focus on how women leaders can start working (e.g., onboarding programs that higher-level women leaders could use to engage early-tenure employees), and how they can be fostered (e.g., inclusiveness and ethical behavior). By addressing these dimensions, pharma cos in Hyderabad can increase engagement, decrease attrition and build long term competitiveness, while also aligning with larger sustainability goals.

**Keywords:** Sustainable HRM, Employee Engagement, Pharmaceutical Industry, Training and Development, Work–Life Balance

## **1. Introduction:**

In today's business practice, companies are becoming progressively aware that sustainable HRM might hold the key to long-term competitiveness and socially responsible behavior. SHRM considers both traditional and social, environmental and economic/nonprofit business activities that involve the coordination, collaboration, cooperation, and human resources perspective in employing human resources and corporate livelihood investments as well as the attitude of the stakeholders and people as a resource (Kramar, 2014). In the pharmaceutical sector, which is also one of the fastest-growing sectors in India, the sustainability in HRM has grown in importance especially with the industry's volatile workforce requirement, global competition, and increasing regulatory pressures (Panda & Sharma, 2022). Employee engagement, an indicator of employees' emotional and cognitive bond to the corporation, is considered to be a crucial aspect of corporate success and innovation (Albrecht et al., 2015). However, despite the literature indicating a positive relationship between SHRM practices and engagement related outcomes (Ehnert et al., 2016; Guerçi et al., 2019), there is lack of empirical research evidencing this relationship in the case of Indian pharmaceutical sector (in Hyderabad commonly known as the “Pharma Capital of India”). To address this lacuna, this research responds to a call on how sustainable HRM practices affect employee engagement in the context of pharmaceutical organizations, and accordingly makes additional theoretical and managerial contributions.

### **1.1 Background of the Study:**

Closer links between sustainability on innovative business strategies have been driving the change of how organizations are approaching human resource management. Traditional HRM that was primarily focused on being efficient and cost effective is currently being transformed to Sustainable Human Resources Management (SHRM) that incorporates social, environmental and ethical considerations in HR practices (Ehnert, Harry and Zink, 2016). This is mainly due to global challenges in sustainable development, regulatory pressures, and tensions between the legitimate interests of organizations and the common good of society (Kramar, 2014). SHRM is particularly of an economic value in a knowledge-based and a more regulated sector like pharmaceuticals due to the skill based manpower requirement, high attrition rate and need for constant innovation process in the industry (Panda & Sharma, 2022).

Besides being the “Pharma capital of India”, Hyderabad houses a number of multinationals as well as national pharma companies. The city plays a major role in India's pharmaceutical company, drug discovery, and generics manufacturing, thus serving as an essential platform for both economic and health considerations (Kumar & Routroy, 2021). Nevertheless, the sector has workforce-associated issues such as heavy employee turnover, stress, and requirement for a lifelong skill learning. Within this context, sustainable HRM practices, such as employee well-being interventions, ethical employment practices, diversity & inclusion programs, green HRM initiatives, and work-life policies, have become strategic levers to retain talent and increase employee engagement (Guerçi et al., 2019).

## 1.2 Problem Statement

While evidence suggests that SHRM can have a positive impact on employee outcomes developments linking sustainable HR systems and employee engagement are fragmented and context-specific. Current systematic reviews point out that SHRM and green HRM are conceptual scattered and there are inconclusive measurement models and cross-sectional designs making difficult the establishment of the causality relationship (Liang, 2024; Sakib et al., 2025). Researchers also emphasize that very little of the research has generated findings which connect employee--level outcomes with green HRM practices because a significant proportion of the work has looked more at organisational and environmental performance outcomes, and the evidence tends to show that green HRM practices can promote employee work engagement directly, in terms of how green practices affect employees' experiences of the climate at work and psychological well being (Gupta, 2024; Tahir et al., 2024).

The pharmaceutical industry in India exhibits distinct HRM challenges, namely high employee attrition, compliance-related issues and incremental skill levels. Although there are certain multinationals which have been studied with a multicountry focus (Green HR practices and sustainable performance in Indian Pharmaceuticals Industry: A behavioural intuitionist theory and social exchange view based approach, 2028), yet the geographical setup of China is different from India that is why such a study will not be directly applied (Examining the Influence of Green HR Practices, 2025). Furthermore, one of the leading global life sciences clusters is in Hyderabad which boasts a high density of pharmaceutical companies, yet there is a dearth of local empirical studies on the impact of SHRM on employee engagement in this important cluster (The Times of India, 2025).

## 1.3 Research Questions

- What are the key sustainable HRM practices currently implemented in the pharmaceutical industry in Hyderabad?
- What is the overall level of employee engagement among employees in Hyderabad's pharmaceutical firms?
- How do different dimensions of sustainable HRM practices (e.g., employee well-being, green HRM, diversity and inclusion, ethical practices, training and development, and work-life balance) influence employee engagement?
- Which specific SHRM practices contribute most significantly to enhancing employee engagement in the pharmaceutical sector?
- Do demographic factors (e.g., age, gender, education, tenure) or organizational characteristics (e.g., size, ownership type) moderate the relationship between sustainable HRM practices and employee engagement?
- How can pharmaceutical firms in Hyderabad strategically leverage sustainable HRM practices to foster higher employee engagement and ensure long-term organizational sustainability?

## 1.4 Objectives of the Study

- To identify the sustainable HRM practices adopted in the pharmaceutical industry in Hyderabad.
- To assess the level of employee engagement in selected firms.
- To examine the relationship between sustainable HRM practices and employee engagement.
- To provide recommendations for improving employee engagement through SHRM.

## 1.5 Significance of the Study:

This paper is of theoretical and practical importance, as it focuses on a neglected topic in the field of HRM. Theoretically, it extends the sustainable HRM literature by theoretically and empirically associating sustainable HRM practices with employee engagement in the Indian pharmaceutical sector—a relationship that has been under-researched by scholars. Recent reviews have also called for a stronger focus on context- and industry-specific research in order to better understand how sustainable HRM influences employee attitudes and behaviors (Aust et al., 2020; Stahl et al., 2020). By focusing on Hyderabad, a well-known pharma place globally, this research offers localized evidence which enhances the broader international HRM body of literature and further deepens the use of theories such as the RBV and SET (Aust et al., 2020; Koseoglu et al., 2021).

## 2. Literature Review

### 2.1 Concept of Sustainable HRM:

The notion for Sustainable Human Resource Management (SHRM) has emerged as it is deemed that HRM is too important not to turn its back only to organisational needs, but to also consider future effects on social, economic and environmental sustainability. SHRM is commonly described as “the pattern of planned or emerging human resource deployment and activities, intended to enable an organization to achieve its goals whilst simultaneously ensuring the long-term survival of the organization (and the stakeholders)” (Ehnert et al., 2016). Categories Systems and process reengineering Unlike traditional HRM which tends to focus on efficiency and productivity, SHRM recognizes the trade-off between economic performance, social composure and ecological integrity, and it targets to steer HR practices in compliance with the principles of corporate sustainability (Kramar, 2014; Aust et al., 2020).

In other words, economically SHRM is concerned with organisational sustainability through turn over reduction, fostering employee’s commitment and developing the organisational human capital as a source of sustainable competitive advantage (Mariappanadar, 2019). The social facet highlights fairness, employee well-being, diversity and inclusion, and ethical labor practices, which are gaining prominence as drivers of employee trust and loyalty (Stahl et al., 2020). This is highlighted by the environmental approach, which broadens the traditional scope of HR practices, by adding green HRM practices, including encouragement of pro-environmental behaviors, sustainable workplace practices, as well as sensitizing training for employees about ecological responsibility (Renwick et al., 2013; Guerci & Carollo, 2016). Combined, these dimensions situate SHRM as a multi-dimensional model that links organisational objectives with wider sustainable development considerations.

There is empirical evidence that SHRM is especially appropriate in knowledge- intensive sectors—such as pharmaceuticals, IT, higher education—in which human capital is the major source of innovation and competitive advantage. For example, study on knowledge-based sectors in Europe shows that HR processes with sustainability, such as employee development, work–work balance practices and participative decision-making, increase creativity and long-term performance (De Stefano et al., 2018). Also, studies on Indian IT and service sector shows that SHRM has made a greater impact into employee retention and innovation capability and thus industries having knowledge and talent as core strategic resource could not ignore influence of SHRM (Mishra & Manohar, 2022). In the pharma industry where regulatory compliances are required and up-skilling is continuous, SHRM is a

key in striking a balance between employee well-being and organization's sustenance needs (Panda & Sharma, 2022). These results contribute to the view that SHRM is not only an ideal type, but a practical imperative for industries relying on intellectual capital and innovation.

## 2.5 Research Gap

Despite significant growth in sustainable human resource management (SHRM) literature on employee engagement during the last decade, there remain some gaps which require focused attention. First, the literature on SHRM has been concentrated in the context of developed economies or multinational firms, but empirical evidence is scant, especially in emerging contexts like India (Aust et al., 2020; Stahl et al., 2020). Most of the international literature has focused on SHRM effects on environmental and performance outcomes, failing to fully consider micro-level employees' outcomes, like engagement, commitment, or well-being (Renwick et al., 2013; Guerci & Carollo, 2016). Second, although there is strong theoretical basis (Job Demands–Resources model, Social Exchange Theory) to couple SHRM to engagement, relatively few studies have empirically tested these mechanisms in knowledge-intensive sectors (Bakker, 2023; Cropanzano & Mitchell, 2005).

## 3. Research Methodology

This paper is based on a descriptive-analytical study with a cross-sectional survey design. A descriptive study design has been chosen as it enables the researcher to comprehensively investigate the implementation of sustainable HRM practices and its perceived effect on employees' engagement in the pharmaceutical industry. The analytic dimension meanwhile allows for testing statistical relationships between variables and for a more thorough understanding of how particular dimensions of SHRM impact engagement outcomes. J-C Bank Integrativity NunneriNautbamAttammahbayWromuncMughnane4dj8o4637The cross-sectional design of single point in time data collection is selected because it can best capture current practice and engagement patterns in a fast-paced and competitive industry like pharmaceuticals.

## 4. Results & Analysis

**Objective 1: To identify the sustainable HRM practices adopted in the pharmaceutical industry in Hyderabad**

**Table 1: Descriptive Statistics of Sustainable HRM Practices**

SHRM Practice Dimension	N	Mean	Std. Deviation	Adoption Level (Interpretation)
<b>Green HRM</b>	545	3.85	0.76	Moderately High
<b>Employee Well-being</b>	545	3.92	0.81	High
<b>Ethical Practices</b>	545	3.68	0.88	Moderate
<b>Training &amp; Development</b>	545	4.02	0.73	High
<b>Diversity &amp; Inclusion</b>	545	3.61	0.84	Moderate
<b>Work-Life Balance</b>	545	3.79	0.79	Moderately High

Table 1 shows the levels to which pharmaceutical companies in Hyderabad adopt sustainable HRM practices. Of the six dimensions analysed, the most widespread practice was training and development ( $M = 4.02$ ,  $SD = 0.73$ ), whose adoption is indicative of the realization of the importance of ongoing skills updating in knowledge-intensive workers who operate in a sector in which innovation, regulation, and technological development are necessary. The organisational concern for employee welfare ( $M = 3.92$ ,  $SD = 0.81$ ) similarly scored high,

predominantly highlighting organisations are making an effort of investment into health, safety, and wellness in an insecure industry traditionally having stressful work. Green HRM ( $M = 3.85$ ,  $SD = 0.76$ ) and work-life balance programs ( $M = 3.79$ ,  $SD = 0.79$ ) received moderately high scores, suggesting an emerging, though still developing, concern for environmental sustainability and stress/work–family conflict employee-friendly policies.

On the flip side, ethical HR practices ( $M = 3.68$ ,  $SD = 0.88$ ) and diversity and inclusion initiatives ( $M = 3.61$ ,  $SD = 0.84$ ) had moderate level of positions in indicating that pharmaceutical companies in Hyderabad have not fully integrated them in their HR strategies. The lower average in the diversity and inclusion dimension indicates that aspects of gender equality, equality of opportunities, and inclusiveness possibly need a more intense focus in the organizational culture and HR policy structures. Also in line with this, ethical behavior is only somewhat present, and the variation in standards (with a relatively high standard deviation) reflects differences between firms in how consistently and effectively ethical HRM is being implemented. Taken together, these findings suggest that although Hyderabad's pharmaceutical industry is proactive in skill development and well-being, it needs to further develop practices related to diversity, inclusivity, and ethics to enhance through diversity, inclusivity, and ethics a more comprehensive, sustainable HRM system.

## Objective 2: To assess the level of employee engagement in selected firms

**Table 2: Employee Engagement Dimensions – Descriptive Analysis**

Engagement Dimension	N	Mean	Std. Deviation	Engagement Level
Cognitive Engagement	545	3.88	0.72	High
Emotional Engagement	545	3.74	0.80	Moderately High
Behavioral Engagement	545	3.81	0.77	Moderately High
Overall Engagement	545	3.81	0.76	Moderately High

Table 2 shows the outcomes found for the total scores of engagements for employees of pharmaceutical companies in Hyderabad. The results suggest that cognitive engagement ( $M = 3.88$ ,  $SD = 0.72$ ) is the highest-rated dimension, and this is indicative of strong attention, concentration, and psychological presence of the employees in this industry. It means the staff know where they are going and are focused on getting the work done, which I see as very important in a regulated industry like pharma with so much complex know — how to deal with." The overall levels of behavioral engagement ( $M = 3.81$ ,  $SD = 0.77$ ) and emotional engagement ( $M = 3.74$ ,  $SD = 0.80$ ) were moderately high. As much as employees are ready to play some extra role performances at work (behavioural), their emotional identification with the organisation, in terms of being a source of enthusiasm, pride, and affective commitment, is somewhat lower.

The mean score for overall employee engagement ( $M = 3.81$ ;  $SD = 0.76$ ) shows the level of engagement within the pharmaceutical industry is fairly high, but employees could be engaged more, next to other practices. The single-point lower emotional commitment score suggests that organizations should further enhance emotional influence through the use of recognition, inclusiveness, and alignment with employees' values. This is even more prevalent in the pharmaceutical industry, which has high employee turnover and burnout from heavy workloads and competitive challenges. Therefore, in conclusion, the obtained results suggest that even though the employee may have cognitive involvement and

behavioral activity about their job, management should be looking to improve the emotional engagement with the job to create greater commitment and lower the risk of churn.

### Objective 3: To examine the relationship between SHRM practices and employee engagement

**Table 3: Correlation Matrix (Pearson's r)**

Variables	1	2	3	4	5	6	7
<b>1. Green HRM</b>	1						
<b>2. Employee Well-being</b>	.42**	1					
<b>3. Ethical Practices</b>	.37**	.41**	1				
<b>4. Training &amp; Dev.</b>	.46**	.49**	.40**	1			
<b>5. Diversity &amp; Inclusion</b>	.31**	.35**	.36**	.38**	1		
<b>6. Work-Life Balance</b>	.44**	.47**	.39**	.41**	.33**	1	
<b>7. Employee Engagement</b>	.53**	.57**	.48**	.61**	.42**	.55**	1

Note:  $p < 0.01$  indicates significance.

The correlation results shown in Table 3 indicate that there are significant and positive relationships between the six constructs of SHRM practices and employee engagement ( $p < 0.01$ ). Of these variables training and development ( $r = .61$ ) has the highest predictive link with engagement, and emphasizes the powerful contribution of ongoing learning and development in engaging employees and in them being active in their work. These results emphasize the fact that, especially in the pharmaceutical driven market where innovation and compliance to industry development are crucial, investing in training and skills transfer also automatically pays off in terms of stronger engagement. Employee well-being ( $r = .57$ ) and work-family conflict ( $r = .55$ ) also show strong relationships, implying that efforts that protect employees' physical and emotional well-being and support work-life balance significantly strengthen their commitment and loyalty towards the organization.

Similarly, green HRM ( $r = .53$ ) shows a strong positive correlation, which indicates that also environmentally responsible HR practices communicate with employees' values and create a feeling of pride and connectedness that raise their engagement. Ethical practices ( $r = .48$ ) and diversity and inclusion ( $r = .42$ ), who are also significant, however to a lesser extent than other dimensions. This means that while moral HRM and inclusivity practices are likely to have positive effects on engagement, it might be the case that they are not as directly effective as skill development opportunities and well-being interventions within the setting of the pharmaceutical industry in Hyderabad.

### Objective 4: To analyse the impact of SHRM practices on employee engagement

**Table 4: Multiple Regression Analysis (Dependent Variable: Employee Engagement)**

Predictor Variables	$\beta$ (Beta Coefficient)	Std. Error	t-value	Sig. (p-value)
<b>Green HRM</b>	0.18	0.05	3.60	0.000 **
<b>Employee Well-being</b>	0.22	0.04	4.90	0.000 **
<b>Ethical Practices</b>	0.11	0.04	2.75	0.006 **
<b>Training &amp; Development</b>	0.28	0.05	5.60	0.000 **
<b>Diversity &amp; Inclusion</b>	0.09	0.04	2.10	0.035 *
<b>Work-Life Balance</b>	0.20	0.04	4.40	0.000 **

$R^2 = 0.62$ ; Adj.  $R^2 = 0.61$ ;  $F = 84.27$ ;  $p < 0.001$

Table 4 also clearly shows more detailed results on the relationships that sustainable HRM practices have on employee engagement. The overall model is significant ( $F = 84.27$ ,  $p < 0.001$ ) and its  $R^2 = 0.62$ , suggesting that the variance in employee engagement can be explained by the cumulative effect of SHRM practices. This confirms sustainable HRM as a robust predictor of engagement in the pharmaceutical industry of Hyderabad both conceptually and empirically.

Of the predictors, training and development ( $\beta = 0.28$ ,  $t = 5.60$ ,  $p < 0.001$ ) was the most significant determinant of engagement. This highlights the fact that continuous on-the-job learning, career development and skills development are significant enhancers of employees' commitment, and above all, their extra effort, in an industry in which scientific skills and regulatory compliance are paramount. Employee well-being ( $\beta = 0.22$ ,  $t = 4.90$ ,  $p < 0.001$ ) and work-life balance ( $\beta = 0.20$ ,  $t = 4.40$ ,  $p < 0.001$ ) also have robust, positive effects, suggesting that any health and wellness and balance support initiatives have a large positive effect on engagement.

Furthermore, Green HRM ( $\beta = 0.18$ ,  $t = 3.60$ ,  $p < 0.001$ ) makes a significant contribution to engagement; this finding implies employees respond favorably to organizations that demonstrate their environmental responsibility and thereby connect their sense of purpose to the larger goal of sustainability. Although statistically significant, ethics  $\beta = 0.11$ ,  $t = 2.75$ ,  $p = 0.006$  and diversity and inclusion  $\beta = 0.09$ ,  $t = 2.10$ ,  $p = 0.035$  have moderate effects relative to other 13 predictors. This suggests that although fairness, integrity and inclusivity are important in promoting engagement, they may not yet exert as powerful immediate impacts as skill development and well-being schemes in this industry.

On the whole, the findings support that SHRM practices indeed have a significant positive impact on engagement, where training and development, well-being and work-life balance were identified as the most critical factors in driving engagement. These insights indicate to the Hyderabad-based pharmaceutical companies about the need to focus on developmental and supportive HR practices with strong emphasis on ethics and inclusivity in order to create balanced and sustainable engagement.

### Objective 5: To test differences in perceptions across demographic groups

**Table 5: One-Way ANOVA – Employee Engagement by Job Tenure**

Tenure Group	N	Mean Engagement	Std. Dev.	F-value	Sig. (p)
Less than 2 years	120	3.62	0.71		
2–5 years	200	3.79	0.74		
6–10 years	130	3.88	0.77	4.15	0.016 **
More than 10 years	95	3.97	0.80		

Results of one-way ANOVA analysis in Table 5 look at the differences in employee engagement perception by group (job tenure). The results of an ANOVA show a significant difference ( $F = 4.15$ ,  $p = 0.016$ ) between the four tenure groups, demonstrating that time with the organization influences the felt and exhibited levels of engagement. Employees who had worked for less than 2 years ( $M = 3.62$ ,  $SD = 0.71$ ) had the lowest levels of engagement, indicating that new employees may need more time, developmental experience, and acculturation into organizational norms before they fully invest and engage in their roles.



Engagement levels increase gradually over tenure: employees with 2–5 ( $M = 3.79$ ,  $SD = 0.74$ ) and 6–10 ( $M = 3.88$ ,  $SD = 0.77$ ) years experience are more engaged, the reason there could be the familiarity with organizational routine, the acquisition of skill maturity, and the construction of deeper work relationship. Service years The top engagement was in M tenure employees ( $>10$  years;  $3.97$   $M$ ,  $SD = 0.80$ ), suggesting that employees with carbon and service tenure had higher emotional connection, loyalty and involvement, converting to cognitive, emotional and behavioral engagement.

## 5. Discussion:

Research reports provide important information about sustainable human resource management (SHRM) practices and its impact on employee's engagement in a pharmaceutical industry in Hyderabad. In line with international evidence, the findings of this study show SHRM practices such as training and development, employee well-being and work–life balance are the most significant predictors of engagement. For example, Alfes et al. (2013) and Lu et al. (2023) ascertained that developing and supportive HR practices contribute to higher levels of cognitive and behavioral engagement because they provide employees with resources to face and cope with work demands. Furthermore, Ababneh (2021) and Baykal (2022) studied that employee well-being and green HRM support psychological ownership and commitment, which are in line with the positive associations established in the current study. But, in difference to Western studies in which diversity and inclusion came out as main engagement drivers (Stahl et al., 2020), the matter comes out as a weaker one in Hyderabad's firms that are in pharmaceutical business, and it suggests different priorities and implementation in the specific context.

The study adds novelty by positioning SHRM–engagement dynamics in the pharmaceutical industry of Hyderabad – a global life sciences destination. This micro-level view indicates that, although organisations highly prioritise talent development and employee welfare, ethics and inclusivity have not been similarly embedded at an institutional level. In the case of Hyderabad pharma, the global environment is one in which inclusion, remains formalized, even as the Hyderabad pharma's need to evolve from following compliance-based HR approach to being guided by principles of sustainability. The findings on tenure differences further support the fact that tenured employees feel more engaged than their younger counterparts, which is especially relevant to Hyderabad's pharma sector struggling with constant migration of its young professionals.

Theoretically, the findings of the study lend credence to SET as supportive and sustainable HR practices were reciprocated by employees with higher engagement. The findings are also consistent with the Resource-Based View (RBV) of the firm, which posits that developmental and well-being-directed HR practices are especially valuable, inimitable resources for gaining competitive advantage, through a motivated workforce. Second, the findings support the Stakeholder Theory because firms that are both caring and just towards their employees, are likely to develop trust and long-term commitment that both the organization and employees can enjoy. In empirically examining these frameworks in the Indian pharmaceutical industry, the study pushes HRM theory to new geographical and industry domains where such evidence was scarce.

## 6. Conclusion:

The current study intended to explore the association of sustainable human resource management (SHRM) practices on employee engagement in pharmaceutical sector of Hyderabad. The findings indicate that SHRM practices — in particular training and development, employee well-being and work–life balance — are strong predictors of engagement, while the contribution of green HRM, ethical practices and diversity and inclusion are also positive but lower. The greatest contributing and highest level of engagement was in terms of cognitive, which means that employees are intellectually engrossed in their job, while the emotional dimension still needs improvement and opportunity to enhance affective commitment. Additionally, journey tenure analysis shows that longer-tenured employees are more engaged and suggests that retention efforts should focus on developing long-term attachment to the workforce.

This research contributes to theory and practice in several ways. Conceptually, this study contributes to the theoretical development of Social Exchange Theory, Resource-Based View, and Stakeholder Theory by demonstrating that employees return supportive and high road HRM practices with increased engagement and firms deploy human capital as strategic resources for sustained competitive advantages. Empirically, it fills a research gap by providing context specific evidence from the pharmaceutical industry in Hyderabad, India, one of the focal life sciences nodes in the Indian bio-clusters for which there had been less scholarship of innovation and learning networks. For practitioners, the study offers practical recommendations for HR leaders concerning which HRM levers (e.g. ongoing development opportunities, well-being initiatives and work–life balance policies) are effective for engaging employees in high-pressure, knowledge-intensive industries.

## 7. Limitations & Future Scope

As with any empirical study, some limitations apply to this study and should also be recognised. The study was also limited in its geographic coverage, as we only included pharmaceutical companies based in Hyderabad, which although is a leading life-sciences centre, may not be representative of other either the location or a different industry in India. Second, the design of the study was cross-sectional which was conducted on a single occasion. This restricts the opportunity to make causal inferences or explore how sustainable HRM practices and employee engagement may alter over time. Third, because self-reported measures were used in this study, social desirability and common method variance might occur, and result in compromising the validity of results. Lastly, sustainable HRM and engagement are not the only dimensions to be included in the model since, indeed, including additional organizational or contextual factors (e.g., leadership styles, organizational culture, or external labor market conditions) could impact engagement as well.

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