

LEVERAGING HR ANALYTICS FOR ENHANCED WORKFORCE PLANNING AND DECISION MAKING AT HETERO DRUGS LIMITED

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Abstract— Human Resource Analytics—the systematic application of data analysis, statistical modelling, and predictive intelligence to workforce data—has emerged as a transformative capability for HR functions seeking to transition from administrative service delivery toward strategic business partnership. In the pharmaceutical manufacturing sector, where workforce competency, regulatory compliance, and operational productivity are directly linked to product quality and business performance, the strategic deployment of HR analytics offers particular value for workforce planning accuracy, talent retention, and human capital decision-making quality. Hetero Drugs Limited, one of India's largest generic pharmaceutical manufacturers with a workforce exceeding 9,600 employees across manufacturing, R&D, quality assurance, regulatory affairs, and commercial operations, provides a rich organisational context for examining how HR analytics can enhance workforce planning and decision-making effectiveness. This study examines the application of HR analytics across four maturity levels—descriptive, diagnostic, predictive, and prescriptive—at Hetero Drugs, drawing on primary survey data from 100 HR managers and employees and secondary data from organisational workforce reports and pharmaceutical industry HR benchmarks. Findings reveal that HR analytics adoption

at Hetero Drugs has driven measurable workforce outcomes: attrition rate declined

from 18.4% in FY22 to 12.4% in FY24, time-to-fill improved from 46 to 31 days, internal promotion rate increased from 22% to 31%, and employee Net Promoter Score improved by 18 points. However, implementation challenges including fragmented HR data systems (66%), data quality gaps (62%), and analytics talent scarcity (58%) constrain the advancement toward fully predictive and prescriptive HR analytics maturity.

Keywords: HR analytics, workforce planning, decision making, Hetero Drugs Limited, attrition prediction, talent management, people analytics, workforce KPIs, pharmaceutical HR, predictive HR, succession planning.

1. INTRODUCTION

The transformation of Human Resource Management from an administrative support function into a strategic business partner role is one of the defining organisational development narratives of the past two decades. Central to this transformation is the emergence of HR analytics—the application of data analysis, statistical modelling, and predictive intelligence to workforce data to generate evidence-based insights that inform talent acquisition, employee development, retention management, performance optimisation, and organisational design

decisions. Where traditional HR decision-making relied on managerial intuition, periodic surveys, and lagging performance indicators, HR analytics enables proactive, data-driven people management grounded in quantitative evidence and forward-looking predictions.

The pharmaceutical manufacturing sector presents a particularly compelling context for HR analytics deployment. The industry's quality-critical production environment demands highly skilled, continuously trained, and tightly regulated workforce competencies—where human error, skill gaps, or turnover in critical technical roles can have direct consequences for product quality, regulatory compliance, and patient safety. Simultaneously, India's pharmaceutical sector faces intensifying competition for specialised talent in formulation chemistry, regulatory affairs, quality assurance, and pharmaceutical R&D—creating workforce planning challenges that require analytical precision rather than intuitive estimation.

Hetero Drugs Limited, established in 1993 and headquartered in Hyderabad, Telangana, is one of India's leading generic pharmaceutical manufacturers, with an annual revenue exceeding ₹8,000 crore, manufacturing facilities across 26 plants in India and internationally, and a product portfolio spanning Active Pharmaceutical Ingredients (APIs), formulations, and biosimilars marketed in over 126 countries. With a total workforce of approximately 9,648 employees as of FY24, Hetero operates across highly specialised functional domains including pharmaceutical manufacturing, analytical quality control, regulatory affairs, clinical research, and global commercial operations—each with distinct talent profiles, development requirements, and retention dynamics.

The organisation's HR function has progressively invested in analytics capabilities over the FY20–FY24 period,

transitioning from basic headcount and attrition reporting toward integrated workforce dashboards, predictive attrition risk modelling, and analytics-driven succession planning. This study examines the specific HR analytics applications deployed at Hetero Drugs, documents the measurable workforce outcomes achieved, and identifies the implementation challenges that must be addressed to advance the organisation toward fully prescriptive HR analytics maturity.

2. OBJECTIVES OF THE STUDY

The primary objective of this study is to examine how HR analytics is leveraged for enhanced workforce planning and decision-making at Hetero Drugs Limited, and to assess the impact of analytics adoption on key workforce performance outcomes over FY 2019–20 to FY 2023–24. Specifically, the study aims to map the HR analytics maturity level at Hetero Drugs across the four-tier descriptive–diagnostic–predictive–prescriptive framework, identifying the specific analytics applications deployed at each maturity level and their corresponding workforce planning use cases. It further seeks to document and analyse key workforce KPIs—including headcount, attrition rate, time-to-fill, training hours, absenteeism, and internal promotion rate—across the five-year study period to establish the empirical evidence base for analytics-driven workforce improvement. The research aims to assess the adoption and effectiveness perceptions of HR analytics capabilities through primary survey analysis of 100 Hetero Drugs HR managers and employees. Additionally, the study quantifies the before-and-after impact of specific HR analytics applications on workforce outcome metrics, and identifies and prioritises the key implementation challenges constraining HR analytics maturity advancement at Hetero Drugs, providing actionable recommendations for overcoming these barriers.

3. LITERATURE REVIEW

[1] Davenport, Harris and Shapiro (2010) in 'Competing on Talent Analytics' identified HR analytics as the next frontier of analytical competition, documenting that organisations with mature people analytics capabilities make significantly better talent decisions across hiring, development, and retention—resulting in measurably superior workforce productivity and reduced voluntary turnover relative to intuition-based HR management counterparts.

[2] Fitz-enz (2010) in The New HR Analytics established the foundational framework for human capital measurement, introducing the Human Capital ROI (HCROI) metric and demonstrating that systematic workforce data analysis enables HR functions to demonstrate quantifiable business value contribution—shifting HR's organisational positioning from cost centre to strategic investment partner.

[3] Boudreau and Ramstad (2007) in Beyond HR: The New Science of Human Capital articulated the concept of 'talentship'—the systematic application of decision science to talent management—arguing that HR functions require an analytical decision framework analogous to financial management's return-on-investment framework to allocate human capital resources with precision and accountability.

[4] Bersin (2013) developed the four-level HR analytics maturity model—from operational reporting through advanced analytics—that has become the standard framework for assessing and benchmarking HR analytics capability development. Bersin's research documented that only 14% of organisations globally had achieved Level 3 (predictive analytics) maturity, with the majority operating at Level 1 (operational reporting), identifying a significant capability gap with high competitive implications.

[5] Tursunbayeva et al. (2018) conducted a systematic review of 60 academic and practitioner studies on HR analytics implementation, finding that the most significant barriers to HR analytics adoption were data fragmentation across HR information systems, insufficient analytical skills within HR functions, and leadership scepticism about data-driven HR decision-making—barriers that directly correspond to the implementation challenges identified in the present study at Hetero Drugs.

[6] Marler and Boudreau (2017) in a comprehensive review of empirical HR analytics research, found that predictive analytics applications in HR—particularly attrition prediction and performance forecasting models—consistently outperformed managerial judgement in accuracy when trained on sufficient historical data, with attrition prediction models achieving 70–85% accuracy compared to 50–60% for unaided managerial assessment.

[7] SHRM Research (2022) in its People Analytics Benchmarking Report documented that pharmaceutical and life sciences organisations exhibited the highest HR analytics adoption rates among manufacturing sectors, driven by regulatory compliance requirements for workforce competency documentation and the strategic importance of specialised scientific talent retention—contextualising Hetero Drugs' analytics investments within sector-specific drivers.

[8] Nair and Bhattacharyya (2019) examined HR analytics adoption patterns among Indian pharmaceutical manufacturers, finding that attrition analytics and workforce demand forecasting were the two highest-priority HR analytics applications, driven by the intense competition for pharmaceutical science talent in the Hyderabad and Pune pharmaceutical clusters—an industry talent market context directly relevant to Hetero Drugs' workforce planning challenges.

4. RESEARCH METHODOLOGY

This study employs a mixed research design integrating primary survey-based analysis of HR analytics adoption perceptions with secondary analysis of Hetero Drugs' workforce KPI data and pharmaceutical sector HR benchmarks to comprehensively examine the role of HR analytics in workforce planning and decision-making.

4.1 Research Design

A descriptive and analytical research design is adopted. The descriptive dimension involves systematic documentation of HR analytics applications across the four maturity levels at Hetero Drugs and description of workforce KPI trends over the five-year study period. The analytical dimension applies percentage analysis and impact benchmarking to primary survey responses and secondary workforce data to assess analytics adoption effectiveness and identify implementation challenge severity patterns.

4.2 Data Sources

Primary Data: A structured questionnaire was administered to 100 respondents comprising HR managers, HR business partners, talent acquisition specialists, learning and development professionals, and employee representatives at Hetero Drugs Limited, Hyderabad. The questionnaire covered awareness and usage of HR analytics tools, perceptions of analytics impact on workforce decisions, adoption of specific analytics applications, and implementation challenge severity across 18 items rated on five-point Likert scales.

Secondary Data: Workforce KPI data spanning FY 2019–20 to FY 2023–24 was sourced from Hetero Drugs' internal HR performance reports and Annual Report workforce disclosures. Pharmaceutical sector HR benchmarks—including industry average attrition rates, time-to-fill norms, and training investment standards—were sourced from SHRM People Analytics

Benchmarking Report (2022), CII HR Benchmarking Study (2023), and NASSCOM–Deloitte India Talent Report (2023).

4.3 Sample Size

The primary survey sample comprises 100 respondents from Hetero Drugs Limited selected through stratified purposive sampling, with strata defined by HR function (talent acquisition, learning and development, HR operations, HR business partnering) and employee grade (junior, mid-level, senior management). The sample size is validated at 95% confidence level with $\pm 5\%$ margin of error, yielding a minimum required sample of 80–100 respondents were surveyed to enable subgroup analysis by HR function and analytics maturity awareness.

4.4 Tools for Analysis

The following analytical tools are applied: (i) HR Analytics Maturity Framework Mapping—categorisation of Hetero Drugs' HR analytics applications across the four-tier descriptive–diagnostic–predictive–prescriptive maturity model; (ii) Percentage Analysis—frequency distribution of Likert-scale survey responses across HR analytics adoption and impact parameters; (iii) Trend Analysis—directional tracking of workforce KPIs across the five-year study period to identify analytics-driven improvement inflection points; (iv) Before-After Impact Analysis—comparison of key workforce metrics pre-analytics and post-analytics deployment to quantify the measurable outcomes attributable to specific HR analytics applications; (v) Challenge Prioritisation Matrix—ranking of implementation barriers by frequency and severity from primary survey data.

5. DATA ANALYSIS AND INTERPRETATION

Table I presents the four-tier HR analytics maturity framework mapped to Hetero Drugs' specific applications at each level.

Descriptive analytics—the foundation of the analytics pyramid—is comprehensively deployed through headcount, attrition, and absenteeism dashboards that provide HR leadership with real-time visibility into workforce status. Prescriptive analytics, the most advanced tier, is emerging at Hetero Drugs through targeted retention intervention programmes informed by attrition risk scores and succession planning models that allocate development investments toward highest-potential talent—representing the frontier of the organisation's current analytics capability.

HR Analytics Level	Description	Application at Hetero Drugs
Descriptive	What happened? – Past HR metrics	Headcount, attrition, absenteeism dashboards
Diagnostic	Why did it happen? – Root cause analysis	Attrition drivers, engagement analysis
Predictive	What will happen? – Forecasting models	Attrition risk, workforce demand forecast
Prescriptive	What should we do? – Action optimisation	Retention interventions, succession planning

TABLE I: HR Analytics Maturity Levels and Applications at Hetero Drugs

Table II presents Hetero Drugs' workforce KPIs across the five-year study period FY20–FY24, documenting the measurable improvement trajectory in workforce outcomes that coincides with progressive HR analytics capability development. The attrition rate—the most strategically significant workforce metric in the competitive pharmaceutical talent market—peaked at 18.4% in FY22 before declining to 12.4% in FY24 following the deployment of predictive attrition risk models and targeted retention interventions for high-risk employees identified through the analytics system. Total headcount grew at a CAGR of 4.0% from 8,240 to 9,648, while training hours per employee increased from 28.4 to 42.4—reflecting the parallel investment in workforce development capability.

Workforce Metric	FY20	FY21	FY22	FY23	FY24
Total Headcount	8,240	8,486	8,912	9,284	9,648
Attrition Rate (%)	14.8	16.2	18.4	15.6	12.4
Avg. Time-to-Fill (Days)	38	42	46	38	31
Training Hours /	28.4	31.2	34.6	38.8	42.4

Workforce Metric	FY20	FY21	FY22	FY23	FY24
Employee					
Absenteeism Rate (%)	5.2	6.1	5.8	4.6	3.8
Internal Promotion Rate (%)	18	19	22	26	31

TABLE II: Hetero Drugs – Workforce KPIs (FY20–FY24)

Table III presents the primary survey results documenting HR analytics adoption perceptions among 100 Hetero Drugs respondents. A strong 86% of respondents agree or strongly agree that HR analytics improves workforce decisions—confirming broad recognition of analytics' strategic value within the organisation's HR community. Engagement analytics—tracking employee NPS and satisfaction scores monthly—shows the highest adoption at 78%, reflecting the organisation's priority investment in employee experience measurement. Predictive succession planning models show the lowest adoption confirmation at 60%, consistent with the greater technical complexity and data requirements of predictive modelling relative to descriptive analytics applications.

Survey Parameter	Strongly Agree	Agree	Neutral	Disagree
HR analytics improves workforce decisions	52%	34%	10%	4%
Attrition prediction models are used	38%	30%	20%	12%
Workforce data is accessible to HR team	44%	32%	14%	10%
Analytics reduces time-to-hire	46%	28%	18%	8%
Predictive models used for succession plan	32%	28%	24%	16%
Employee engagement scores tracked monthly	48%	30%	14%	8%
Training ROI is measured analytically	36%	34%	20%	10%

TABLE III: Primary Survey – HR Analytics Adoption at Hetero Drugs (n=100)

Table IV quantifies the before-and-after workforce outcome improvements at Hetero Drugs attributable to specific HR analytics applications. The most impactful single application is the attrition risk prediction model, which contributed to a 6.0 percentage point reduction in the annual attrition rate from 18.4% (FY22 peak) to 12.4%

(FY24)—representing a reduction in annual workforce replacement costs estimated at ₹18–22 crore given a cost-to-replace of approximately 50–75% of annual salary for pharmaceutical technical roles. Workforce demand forecasting delivered a 15-day reduction in average time-to-fill, enabling critical manufacturing and quality roles to be staffed more rapidly and reducing production bottleneck risk associated with role vacancies in GMP-regulated manufacturing environments.

Analytics Application	Metric Improved	Pre-Analytics	Post-Analytics	Change
Attrition Risk Prediction	Attrition Rate	18.4%	12.4%	-6.0 pp
Workforce Demand Forecasting	Time-to-Fill (days)	46	31	-15 days
Succession Planning Model	Internal Promotion Rate	22%	31%	+9 pp
Training Needs Analysis	Training Hours/Employee	34.6	42.4	+7.8 hrs
Absenteeism Analytics	Absenteeism Rate	6.1%	3.8%	-2.3 pp
Engagement Analytics	eNPS Score	28	46	+18 pts

TABLE IV: HR Analytics Impact on Workforce Outcomes at Hetero Drugs

Table V identifies the key challenges constraining HR analytics implementation at Hetero Drugs, ranked by frequency of mention and severity rating from the primary survey. Fragmented HR data systems—cited by 66% of respondents with severity 4.3—reflects the reality that Hetero Drugs' HR data is distributed across multiple systems including HRMS, payroll, learning management, recruitment tracking, and performance management platforms that do not natively integrate, requiring significant data engineering effort to create unified analytical datasets. Data quality and completeness issues, cited by 62% with severity 4.2, further compound the data infrastructure challenge, as incomplete historical records and inconsistent data entry standards reduce the reliability of analytical outputs and undermine trust in analytics-derived insights among HR decision-makers.

Challenge	% Respondents	Severity (1–5)	Recommended Solution
Fragmented HR data systems	66%	4.3	Integrated HRMS / Data lake
Lack of HR analytics skills	58%	4.1	Analytics upskilling programme
Employee data privacy concerns	54%	4.4	PDPB-compliant data governance
Low HR-leadership analytics buy-in	48%	3.8	Executive dashboard deployment
Data quality and completeness	62%	4.2	Data stewardship framework
Limited predictive model adoption	44%	3.9	Phased maturity roadmap

TABLE V: Challenges in HR Analytics Implementation at Hetero Drugs

6. FINDINGS AND SUGGESTIONS

The comprehensive analysis of HR analytics applications and outcomes at Hetero Drugs Limited yields several significant findings. HR analytics adoption at Hetero Drugs has driven measurable, quantifiable improvements across all major workforce KPIs over the FY20–FY24 study period: attrition rate declined from a peak of 18.4% to 12.4%, time-to-fill improved from 46 to 31 days, internal promotion rate grew from 22% to 31%, training hours per employee increased from 34.6 to 42.4, absenteeism declined from 6.1% to 3.8%, and employee NPS improved by 18 points. This multi-metric improvement trajectory, coinciding with progressive HR analytics capability development, provides strong circumstantial evidence for the business value of analytics investment in the pharmaceutical HR context.

The attrition prediction model emerges as the single highest-impact HR analytics application at Hetero Drugs, generating an estimated annual cost saving of ₹18–22 crore through reduced workforce replacement expenditure—a return that substantially exceeds the investment in analytics platform development and HR analyst capability building. The 86% agreement rate among survey respondents that HR analytics improves workforce decisions confirms organisation-wide

recognition of analytics' strategic value; however, the lower adoption rates for predictive succession planning (60%) and attrition prediction usage (68%) indicate that awareness has not yet fully translated into embedded analytical practice across the HR function. Fragmented HR data systems (66%) and data quality gaps (62%) are identified as the two most pervasive implementation barriers, both reflecting underlying data infrastructure deficiencies that constrain analytical reliability and limit the volume and completeness of training data available for predictive model development.

Based on the findings, it is recommended that Hetero Drugs prioritise the implementation of an integrated Human Resource Information System (HRIS) with a centralised people data lake as the foundational infrastructure investment for advancing HR analytics maturity—consolidating recruitment, onboarding, performance, learning, compensation, and exit data into a unified repository that enables comprehensive, high-quality analytical models. The organisation should establish a dedicated People Analytics Centre of Excellence (CoE) comprising 3–4 HR analysts with skills in Python, R, SQL, and HR-specific statistical modelling, supported by a People Analytics product manager who bridges the gap between HR business requirements and data science capabilities. Hetero Drugs should deploy a real-time HR analytics dashboard accessible to senior HR leadership and business unit heads, providing live visibility into department-level attrition risk scores, workforce capacity versus demand, and employee engagement indicators—embedding analytics into the regular rhythm of workforce management rather than periodic reporting cycles. A structured analytics maturity roadmap should be developed with 12-month, 24-month, and 36-month capability milestones, progressing from diagnostic root cause analysis through

predictive attrition and demand forecasting toward prescriptive intervention optimisation and automated workforce planning recommendations, ensuring that technology investment and capability development are sequenced appropriately.

7. CONCLUSION

This study has provided a comprehensive examination of how HR analytics is leveraged for enhanced workforce planning and decision-making at Hetero Drugs Limited, documenting the analytics maturity framework, workforce KPI trajectory, adoption perceptions, business impact quantification, and implementation challenges across the five-year study period FY 2019–20 to FY 2023–24. The evidence confirms that HR analytics deployment at Hetero Drugs has generated measurable, economically significant improvements in workforce outcomes, with attrition rate reduction alone estimated to save ₹18–22 crore annually—a compelling return that justifies continued investment in analytics capability advancement.

The central conclusion of the study is that HR analytics at Hetero Drugs has successfully advanced from descriptive reporting to the early stages of predictive analytics deployment—a meaningful maturity progression that positions the organisation ahead of many Indian pharmaceutical sector peers. However, the persistence of data infrastructure fragmentation, data quality gaps, and analytics talent scarcity constrains the full realisation of prescriptive analytics potential, where workforce planning recommendations are generated automatically from real-time data signals and continuously optimised through machine learning feedback loops.

The pharmaceutical sector context amplifies the strategic importance of HR analytics maturity advancement: in an industry where workforce competency, regulatory compliance, and operational continuity are directly linked to product quality and patient

safety, the ability to predict skill gaps, forecast workforce demand, identify attrition risk in critical technical roles, and prescribe targeted interventions provides HR with a genuine competitive and operational advantage. Hetero Drugs' demonstrated commitment to analytics-driven workforce management—evidenced by the measurable KPI improvements documented over the study period—provides a strong foundation for the next phase of analytics capability development.

Future research should extend the analytical framework to examine the application of advanced machine learning techniques—including natural language processing for exit interview sentiment analysis, network analysis for identifying informal organisational influence patterns, and reinforcement learning for adaptive workforce intervention optimisation—that represent the frontier of prescriptive HR analytics and are likely to define the next generation of people analytics competitive advantage in the pharmaceutical sector.

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