

HR ANALYTICS:

FUNDAMENTALS AND APPLICATIONS



Editors:
Sandeep Kumar Kautish
Anuj Sheopuri

Bentham Books

HR Analytics: Fundamentals and Applications

Edited by

Sandeep Kumar Kautish

*Apex Institute of Technology
Chandigarh University
Mohali, Punjab
India*

&

Anuj Sheopuri

*Department of Management
Harlal Institute of Management & Technology
Greater Noida
India*

HR Analytics: Fundamentals and Applications

Editors: Sandeep Kumar Kautish and Anuj Sheopuri

ISBN (Online): 978-981-5274-19-6

ISBN (Print): 978-981-5274-20-2

ISBN (Paperback): 978-981-5274-21-9

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First published in 2024.

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FOREWORD

HR analytics sometimes goes by other names like people analytics, talent analytics, workforce analytics, and human capital analytics. It is defined as the analytics of human resources (employees), which includes the entire life cycle of employees, such as hiring, engaging, and ultimately, retention. HR has been undergoing a digital transformation for some time. With so much data, there has been a huge increase in the availability of unnecessary data, too. With so much ample data, it poses a challenge for HR professionals to sort and select the required data. Hence, HR practitioners must be able to read and understand HR analytics to create value for their organizations, as well as to improve their own capabilities. The tools and techniques will make sense of all of this information so one can make better HR business decisions. HR analytics empowers HR managers to be conversant with the idiosyncrasy of teams, which may be built upon people at multi-location workplaces. HR analytics is used for corporate decision making, achieving strategic goals, and sustaining a competitive advantage. The people-related data is procured, analyzed, and interpreted for the purpose of improvement. HRM focuses on supporting employees; people analytics brings science into HR. People analytics allows HR to quantify its efforts and impact in order to encourage better people decisions. It is the revival of people-driven scientific management.

In this foreword, I will focus primarily on the broader trend to think more analytically about almost everything and what that means for HR. This edited book provides a vital tool for HR practitioners to get familiar with the fundamentals of HR analytics, which is now an important for every HR professional. Actually, understanding and applying the data and analyzing it to solve real-life HR challenges is the main skill that has to be developed and enhanced. Today, there is no industry or field that is not using analytics. HR analytics has the potential to play a key role in the transformation process (*e.g.*, choosing and validating selection tools) that helps in decision making, *etc.* I wholeheartedly recommend this book for all who are grappling with how to capitalize on HR analytics and add greater value, as this book contains contributions by various professionals that make us understand effective HR practices. This book has an easy-to-understand format to illustrate the use of analytics to solve challenging problems that are commonplace in organizations.

Ali Wagdy Mohamed
Operations Research Department
Faculty of Graduate Studies for Statistical Research
Cairo University, Giza-12613, Egypt

PREFACE

This book, “HR Analytics: Fundamentals and Applications”, aims to compile innovative methods and literature related to HR analytics. It throws light on the role of analytics in the human resource industry, portrays the challenges and resistance that are faced in the industry, and determines how HR analytics is transforming and supporting various activities in the field of HR. In recent decades, advances in information technology and systems have reduced the time HR professionals spend on transactional and administrative activities, thereby creating more time and opportunities for transformational activities supporting the realization of strategic organizational objectives.

The content presented in this book offers a variety of methods/techniques that will provide an effective and sustainable solution for analytics, which has turned out to be one of the most gripping and useful tools. Therefore, HR analytics can go a long way toward sensitizing people toward building upon employee relations. It helps to create an employee-centric organization by providing HR professionals the required skills and opportunities to work and adapt to a data-driven environment and make informed and data-backed decisions. The topics covered are – the roles of HR analytics in people management, how various tools and techniques are used in recruitment and selection practices, and also its role in predicting employee performance. Overall, the concepts, advantages, and obstacles of HR analytics are discussed.

This edited book sheds light on upcoming trends, challenges, and future research directions in HR analytics. The editors have explored the topics and the subjects that are impressive and impactful. We hope the exploration of what it takes to successfully launch and grow these capabilities will boost awareness of how HR professionals can lead the charge to change while elevating the function’s status in the eyes of stakeholders.

We would like to express our heartfelt gratitude to our reviewers who have helped despite their hectic schedules. Thank you very much to all our authors for submitting their work. We would like to express our heartfelt gratitude to Bentham Science Publishers for accepting our proposal to edit this book and for their unwavering support throughout the editing process. Thank you to everyone who has contributed, directly or indirectly, to the completion of this edited book.

We believe the efforts we rendered for editing the book are worthwhile only if this book is of any use to the ordinary end-users of our society. This gratification will motivate us to produce more edited publications that will benefit society.

Sandeep Kumar Kautish
Apex Institute of Technology
Chandigarh University
Mohali, Punjab, India

&

Anuj Sheopuri
Department of Management
Harlal Institute of Management & Technology
Greater Noida, India

List of Contributors

Amarnatha Reddy P.	Custard Apple Consulting, Hyderabad, India
Abinash T.	Sri Sairam Engineering College, Chennai, India
Freeda Maria Swarna M.	Dharthi NGO, Bangalore, India
Gomuprakash P.	Sri Sairam Engineering College, Chennai, India
Isha Bhardwaj	IMS - Ghaziabad (University Courses Campus), Dehli, India
Jatinder Kaur	Rukmini Devi Institute of Advanced Studies, Affiliated to GGSIPU, New Delhi, India
Madhvi Lamba	Department of Management Studies, Deenbandhu Chhotu Ram University of Science and Technology, Murthal, Haryana, 131039, India
Nidhi Srivastava	IMS - Ghaziabad (University Courses Campus), Dehli, India
Nithyashree N.	Sri Sairam Engineering College, Chennai, India
Panch Ramalingam	UGC-HRDC, Pondicherry University, Pondicherry, India
Parulkumari Bhati	Department of Humanities and Social Science, Institute of Technology, Nirma University, Gujarat, India
Rupa Rathee	Deenbandhu Chhotu Ram University of Science and Technology, Murthal, Haryana, India
Shaheed Khan	Research and Training, Dharthi NGO, Bangalore, India
Sasirekha V.	Faculty of Management, SRM Institute of Science & Technology, Vadapalani, Chennai, India
Sarulatha N.	Management Studies DG Vaishnava College, Chennai, India
Suresh R.	Management Studies, Sri Sairam Engineering College, Chennai, India
Srijan Gupta	Rukmini Devi Institute of Advanced Studies, Affiliated to GGSIPU, New Delhi, India
Venkateswara Prasad B.	Management Studies, Sri Sairam Engineering College, Chennai, India

CHAPTER 1

Role of HR Analytics in People Management: Challenges and Opportunities in the Indian IT/ITeS Space

Freeda Maria Swarna M.¹, Shaheed Khan^{2,*}, Panch Ramalingam³ and Amarnatha Reddy P.⁴

¹ Dharthi NGO, Bangalore, India

² Research and Training, Dharthi NGO, Bangalore, India

³ UGC-HRDC, Pondicherry University, Pondicherry, India

⁴ Custard Apple Consulting, Hyderabad, India

Abstract: Human capability and capacity are what determine what an organization can do, and thence, managing human resources (HR), or human capital, is one of the most important, if not significant, functions of an organization. Considering the size of the organization, and in a day and age where organizations have thousands of employees that are spread across a wide geographical area, HR analytics comes into play. HR analytics, in a true sense, provides the necessary scientific support to decision-making and process improvement concerning a firm/organization's HR and the organization in general. The way organizations are growing, and the dynamic role that the HR ecosystem plays makes it pertinent that a robust HR analytics system is in place. With more organizations realizing that qualitative data helps to hire, engage, and retain the right talent, the investment in HR analytics has seen an increase. It is right to say that HR analytics aims to provide insights into how best to manage employees and reach business goals. Because of data availability, it is important for HR teams to identify data relevance and its usage, leading to maximizing return on investment (RoI). The chapter places a perspective on how HR is i) identifying high-performing applicants, ii) supporting the analysis of pertinent aspects of engagement, iii) identifying high-value career paths and leadership applicants, iv) analyzing strengths of prospective and existing associates, v) ushering in a qualitative and metric oriented performance management system (PMS), and vi) managing/predicting attrition.

Keywords: Data, HR analytics, Leadership, Performance management systems (PMS), Prediction, RoI.

* Corresponding author Shaheed Khan: Research and Training, Dharthi NGO, Bangalore, India; E-mail: shaheeddharthi@gmail.com

INTRODUCTION

Human resources (HR) analytics bridges the gap between HR activities in the corporate world and displays the outcomes that the decision makers receive from the same. With the Information Technology (IT) and Information Technology-enabled Services (ITeS) sector being considered the vibrant and dynamic segments for the innovative working culture, it is by choice that HR analytics plays a role that is unique and important, if not critical, to the HR function and the organization for ensuring decisions to be taken on a real-time basis.

The National Association of Software Companies (NASSCOM) stated that, “investing for growth is the primary focus of the Software business. One must realise that, (i) the forward-looking policies of the sector, (ii) a strong facet of governance, (iii) investment on talent, that is the crux of the industry, and (iv) digital trust, which makes efforts to ensure, privacy, security, and reliability across the spectrum; the IT/ITeS space in India is galloping toward a growth factor of \$500 by 2030 (NASSCOM, 2023).” This is an incredible statement by Debjani Ghosh, President (NASSCOM, 2023), NASSCOM (<https://nasscom.in>), on the IT/ITeS and the way it is growing.

The IT/ITeS business segment, with its vast global delivery model (GDM) and enormous human capital for managing the onsite, offshore, nearshore, and even client locations, provides a huge opportunity for the human resources (HR) department to ensure the best for the organizations. HR engages itself in talent acquisition (TA), talent engagement (TE), talent management (TM), talent transformation (TR), and the various other activities to enable organizations to function smoothly. Sun (2022) put forward data about the totality of IT/ITeS employment for 2009-2022, which was enormous and stood at 4.85 million employees as of 2022 (Fig. 1). This clearly sends a perspective that managing people, the most important facet of the business, must and should be done in a scientific way to ensure that the investment that is done in HR is captured well.

The sheer numbers clearly showcase the need for HR analytics, the metric that has become critical to the HR function. Bersin (2023) mentions the amount of data that is generated on account of the human capital that needs to be managed. Josh Bersin mentions that the single most common expenditure in most companies is people, followed by (i) salaries, (ii) benefits, (iii) real estate, and (iv) the domain of HR. The challenge is how do we manage this expenditure in the best way possible? Thence, the need of the hour is to ‘integrate people data’ (Bersin, 2023). It is here that Bersin (2023) introduces the facet of systemic people analytics (SPA), a new concept and a thought process about HR and the technologies it imbibes.

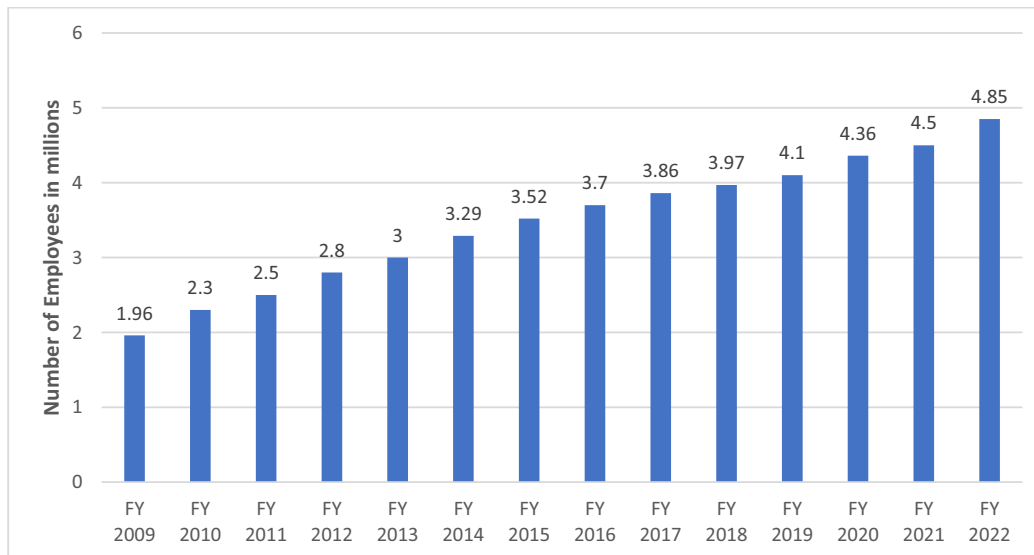


Fig. (1). Employment of IT/ITeS industry in India, 2009-2022, Sun (2022).

HR ANALYTICS?

For an HR professional or a layman, what is HR analytics? How does it impact the IT/ITeS sector in India? As mentioned by Chanakya Sehgal (Sehgal, 2023), a senior HR professional in the Indian IT Industry with nearly three decades of experience, “when HR analytics was spoken of, we thought, it just about numbers, about metrics, and what we need to put up to the leadership to decide. But as we progressed into understanding the dynamics of HR analytics, we realized that it was much more. HR analytics was an enablement to take decisions, decide, a course of action and ensure the same.” Sehgal spoke of how academia has tried to define HR analytics, which fits the bill for the practitioner who would like the discipline to usher in positivity to the subject of human capital management. To enable the academic and the practitioner alike, HR analytics has been defined and considered a corporate practice by Marler and Boudreau (2017), wherein the enablement of IT uses (i) descriptive, (ii) visual, and (iii) statistical analysis of data and information related to human resources management (HRM) and its processes, human capital, organizational performance and, external economic benchmarks, which will establish and support business impacts and enable a data-driven decision-making system, which further helps the organization to move forward in a robust fashion. This provides a broad base to all those who are interested in HR analytics and furthers the cause of HR through the milestones provided in the seminal article by Coy (2017), which speaks of four levels/stages of workforce analytics, which was eloquently adapted by Banerjee (*et al.*, 2019), as seen in Fig. (2).

Impact of HR Analytics on Organizational Performance: A Modern Approach in HR

Nidhi Srivastava^{1,*} and Isha Bhardwaj^{1,*}

¹ IMS - Ghaziabad (University Courses Campus), Dehli, India

Abstract: The field of human resource analytics, characterized by its emphasis on data-driven and analytical approaches within human resources management, is rapidly emerging as a critical element in organizational contexts. Our work environments are evolving due to the swift integration of data and information processing advancements with the progress of human resources management (HRM). This paper explores the existing body of research on HR analytics and its significance in making predictive decisions within organizations. HRM is centered on identifying tools and metrics, founded on the fundamental principle that employers and employees can collaborate to achieve shared objectives within the hierarchical structure of an organization. In such a dynamic landscape, human resources remain a pivotal distinguishing factor for any organization, presenting opportunities for competitive growth and the creation of essential organizational value.

Keywords: Decision-making, HR analytics, Predictive.

INTRODUCTION

Human resource management focuses on optimizing the utilization of personnel to achieve both organizational and individual objectives. This encompasses tasks such as recruitment, administration, and exit procedures within the organization. A crucial facet of HR involves assessing employee performance and designing training initiatives to enhance their skills. The emergence of HR as a distinct field was accompanied by a specific focus on performance management. This practice involves continuous interaction between managers and employees to attain organizational targets while fostering individual growth.

Performance management entails a dynamic exchange of expectations, goal setting, ongoing feedback, and performance evaluation. It establishes a channel of

* Corresponding authors Nidhi Srivastava and Isha Bhardwaj: IMS - Ghaziabad (University Courses Campus), Dehli, India; E-mails: nidhi.mzpsanker@gmail.com, ishabhardwaj@imsuc.ac.in

communication that develops throughout the year, aiming to fulfill both organizational and personal aims. Managers analyze gathered data to comprehend employee performance and bridge any gaps identified in the data. Tools like HR analytics are employed to accumulate this data. HR analytics involves collecting and leveraging talent-related data to enhance crucial workforce aspects. This data-driven approach aids in decision-making, foreseeing employee turnover, recognizing high-performers, and identifying skill enhancement needs. Also termed people analytics, HR analytics empowers organizations to gauge the influence of HR metrics on overall business outcomes, facilitating informed decisions guided by data.

Four types of HR analytics are explained below (Fig. 1):

- Descriptive Analytics
- Diagnostic Analytics
- Predictive Analytics
- Prescriptive Analytics

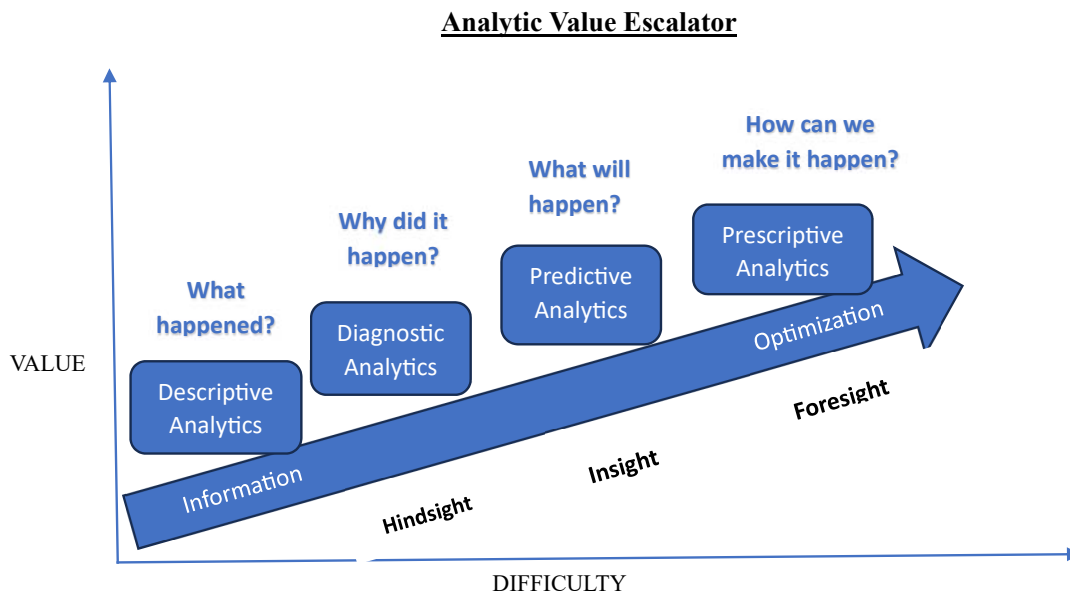


Fig. (1). Types of HR analytics.

© 2022 IJRAR August 2022, Volume 9, Issue 3 www.ijrar.org (E-ISSN 2348-12earl). Performance Management is an important aspect in Human Resources as it is a continuous communication process between managers and employees to achieve organizational goals as well as develop personnel skills of employees. This entire communication process involves defining clear specific expectations, establishing goals, providing continuous feedback and examining results. Performance Management builds a communication system between a manager and employee that is built throughout the year in hope of accomplishing organizational as well as individual goals. To understand employee managers, go through all the collected data and addresses the performance gaps through the given data. Various tools are used to gather such data like HR Analytics. HR Analytic is the collection and application of talent data to improve critical talent. It is basically used for decision making using the available data, to predict employee turnover and identify better performers or predict skills that need to be Improved. HR Analytics is also known as people analytics. It enables your organization to measure the impact of HR metrics on overall business performances and make decision based on the data.

Descriptive Analytics

Gathering raw data doesn't make sense and isn't always useful, but once it is sorted and put in a Descriptive analysis (often referred to as observation and reporting) represents the foundational level of analysis and is commonly employed. Its primary function is to compile all accessible historical data and condense it into a comprehensible format. For instance, tallying the number of employees within the organization or a specific department falls within the purview of descriptive analytics. Similarly, more intricate measurements, such as turnover, are also encompassed within descriptive analytics. This form of analysis involves scrutinizing historical data with the goal of elucidating past occurrences.

Diagnostic Analytics

While descriptive analytics reveals occurrences, diagnostic analytics uncovers the reasons behind them. It surpasses the understanding of the "what" and delves into the quest for the "why" behind these events. This process entails making observations, acknowledging the findings from descriptive analysis, and then advancing into conducting diagnostic analysis. Diagnostic analytics employs a range of methodologies, encompassing techniques like data drilling and data mining. These approaches are utilized to delve into the fundamental triggers of issues and unearth potential remedies. In order to fathom the origins of problems and devise solutions, it is essential for companies to comprehend the underlying causes driving these issues.

Predictive Analytics in Recruitment and Selection Practices

Sasirekha V.^{1*}, Nithyashree N.² and Sarulatha N.³

¹ Faculty of Management, SRM Institute of Science & Technology, Vadapalani, Chennai, India

² Sri Sairam Engineering College, Chennai, India

³ Management Studies DG Vaishnava College, Chennai, India

Abstract: Predictive analytics in recruitment and selection analytics in HR are increasingly important in a competitive job market. The importance of predictive measures in recruitment and selection analytics provides practical guidance for HR professionals looking to implement these measures in their organizations. Predictive measures involve the use of data-driven methods and statistical analyses to identify and hire the most qualified candidates for a given job. This approach relies on the collection and analysis of various data points, such as job requirements, candidate qualifications, and hiring outcomes, to develop models that predict which candidates are most likely to succeed in the role. By leveraging this information, HR professionals can streamline the recruitment process, reduce the risk of making hiring mistakes, and improve overall organizational performance. This article aims to provide the key predictive measures used in HR analytics to help organizations make better hiring decisions and an overview of key concepts and benefits associated with predictive measures in recruitment and selection analytics in HR, along with the challenges and limitations associated with the use of predictive measures in HR analytics and recommendations for overcoming these challenges.

Keywords: Predictive measures, Predictive analytics, Recruitment, Selection.

INTRODUCTION

Selection and recruitment play crucial roles in building a successful and capable workforce for an organization. Recruitment involves attracting and identifying potential candidates for job openings. This process includes creating job descriptions, advertising positions, sourcing candidates, and establishing a pool of potential hires. Effective recruitment ensures that the organization has access to a

* Corresponding author Sasirekha V.: Faculty of Management, SRM Institute of Science & Technology, Vadapalani, Chennai, India; E-mail: prof.sasirekha@gmail.com

diverse and qualified talent pool from which to choose. Selection, on the other hand, is the process of evaluating and choosing the best-suited candidates from the pool generated during recruitment (Belizón, M.J. and Kieran, S., 2022). This involves assessing candidates' qualifications, skills, experience, and fit with the company culture. The goal of selection is to identify individuals who not only have the required skills but also align with the organization's values and can contribute positively to its goals.

The processes are interconnected and influence the overall success of an organization. An effective recruitment and selection strategy ensures that the right people are placed in the right roles, which leads to improved employee performance, reduced turnover, and a stronger organizational culture. It involves data analysis to predict the success and performance of candidates. This approach uses historical data to identify patterns and factors that correlate with job success, helping organizations make more informed hiring decisions. It can lead to more efficient and effective candidate screening, reduced bias, and improved overall hiring outcomes. Predictive analytics in recruitment and selection involves leveraging statistical algorithms to forecast which candidates are likely to perform well in a given role. By analyzing factors like past job performance, skills experience, and even behavioral traits, organizations can identify patterns that correlate with success (Angrave, D. *et al.*, 2016).

This approach helps HR professionals make data-driven decisions, enhance the quality of hires, and streamline the hiring process by focusing on candidates who have a higher likelihood of excelling in the role. Recruitment and selection are integral components of human resource management that focus on identifying, attracting, and hiring the most suitable candidates for specific job roles within an organization (Singh, A., Singh, H., and Singh, A., 2022). Recruitment involves the process of actively seeking and attracting potential candidates to apply for job openings. This process begins with defining the requirements of the job, creating compelling job descriptions, and then promoting these openings through various channels such as job boards, social media, career fairs, and company websites.

The goal is to generate a pool of diverse and qualified candidates who are interested in joining the organization. Selection, on the other hand, is the process of evaluating and choosing the best-fit candidates from the pool of applicants generated during recruitment. This involves assessing candidates' qualifications, skills, experience, and compatibility with the organization's culture and values. Selection methods can include interviews, assessments, reference checks, and background screenings. Together, the recruitment and selection process not only leads to higher job satisfaction and performance among employees but also con-

tributes to building a strong and capable workforce that aligns with the organization's objectives (Dubey, R. *et al.*, 2019).

Understanding HR Analytics in Recruitment and Selection

HR analytics in recruitment and selection involves using data-driven approaches to gather insights, make informed decisions, and optimize the processes of attracting, evaluating, and hiring candidates. It involves using data and statistical analysis to enhance the hiring process. It helps in identifying trends, improving decision-making, and optimizing recruitment strategies based on factors like candidate sourcing, interview performance, and employee retention. By analyzing data, organizations can make more informed choices, reduce bias, and ultimately build stronger teams (Jabir, B., Falih, N. and Rahmani, K., 2019; Pessach, D., Singer *et al.*, 2020). Here is how HR analytics is applied in these areas:

Data Collection

HR analytics starts with collecting relevant data about candidates, including their skills, education, experience, and other attributes. This data is often collected through application forms, resumes, assessments, and other sources.

Candidate Sourcing

Analytics helps identify the most effective channels for candidate sourcing, such as job boards, social media platforms, or employee referrals, based on historical data and conversion rates.

Predictive Analytics

By analyzing historical data, organizations can predict future hiring needs and trends, enabling proactive talent acquisition planning.

Employee Retention

Analytics can highlight factors contributing to employee turnover, enabling strategies to improve retention and job satisfaction.

Diversity and Inclusion

Analytics can uncover biases in hiring processes, allowing organizations to address inequalities and promote diversity and inclusion.

CHAPTER 4

HR Analytics and People Management**Sasirekha V.^{1*}, Abinash T.² and Venkateswara Prasad B.³**¹ Faculty of Management, SRM Institute of Science & Technology, Vadapalani, Chennai, India² Sri Sairam Engineering College, Chennai, India³ Management Studies, Sri Sairam Engineering College, Chennai, India

Abstract: Human resource (HR) analytics is a crucial part of people management, which aids businesses in making decisions about their human resources. The goal of HR analytics is to increase employee engagement, retention rates, performance management, and hiring procedures by using data analysis methods and technologies to better understand workforce trends and patterns. Recent developments in HR analytics highlight the value of predictive analysis for workforce planning and management, including AI and ML, for decision-making while also placing a strong emphasis on data protection, security, and ethics. Among the many functions that HR analytics may play in people management is improving the hiring procedure. By examining important characteristics like education level or job experience, data-driven insights can assist in selecting potential candidates who are most likely to succeed inside the organization. Given that it enables companies to foresee future staffing demands based on current market conditions or demographic shifts, recent trends indicate that predictive analysis will continue to play a crucial role in workforce planning and management. As a result, human resource professionals may use cutting-edge technology to gain important insights into how their teams work, enabling them to build more effective and productive teams.

Keywords: Future trends, Human resource analytics, HR analytics implementation, KPI, Metrics, People management, Workforce trends, Workforce patterns.

INTRODUCTION

In the ever-evolving landscape of contemporary business, the role of human resources (HR) has transcended its traditional administrative boundaries. Today, HR is at the forefront of strategic decision-making, and this transformation is driven by HR analytics. In recent years, HR analytics has surged in importance,

* **Corresponding author Sasirekha V.:** Faculty of Management, SRM Institute of Science & Technology, Vadapalani, Chennai, India; E-mail: prof.sasirekha@gmail.com

leveraging data-driven insights to shape the way organizations function. With technology enabling the collection, analysis, and interpretation of vast amounts of HR data, organizations now have the tools to make more informed and precise decisions concerning talent acquisition, performance evaluation, and employee engagement. These analytics not only offer a glimpse into the past and present but also illuminate potential future trends and challenges. The role of HR analytics in people management explores the dynamic landscape of HR analytics and its pivotal role in contemporary people management (Marler J H and Boudreau J.W., 2019).

In today's dynamic and competitive business environment, effective people management is a crucial factor for organizations striving to maintain a competitive edge. Human resources (HR) professionals play a vital role in ensuring that the organization's workforce is engaged, productive, and strategically aligned with the overall goals and objectives. HR analytics, also known as people analytics, has emerged as a powerful tool in modern-day people management (Marler J.H. and Boudreau J.W., 2020). It entails gathering, analyzing, and interpreting HR-related data in order to acquire insights into various elements of the workforce. By leveraging data-driven approaches, HR analytics enables organizations to make informed decisions, optimize processes, and drive positive outcomes in managing their people.

The role of HR analytics in people management is multifaceted. It supports organizations in talent acquisition, where data-driven hiring practices help identify the right candidates with the desired skills and cultural fit. It also plays a pivotal role in talent retention, as HR analytics enables organizations to gain insights into employee satisfaction, identify potential flight risks, and develop targeted strategies to enhance employee engagement and satisfaction. Furthermore, HR analytics facilitates effective performance management by tracking and analyzing employee performance metrics, identifying areas for improvement, and aligning individual goals with organizational objectives. It aids in workforce planning by analyzing data on turnover rates, succession planning, and identifying skill gaps to ensure the organization has the right talent in place for future needs (Van den Heuvel S., Bondarouk T., and Strohmeier S., 2020).

Additionally, HR analytics contributes to learning and development initiatives by identifying skill development needs, monitoring training effectiveness, and evaluating the impact of learning interventions on employee performance. It also enables HR professionals to measure the ROI of their initiatives and make data-driven decisions. Overall, HR analytics provides HR professionals with the necessary insights to drive evidence-based decision making, enhance operational efficiency, and align people management strategies with the organization's goals

(Rasmussen, T., and D. Ulrich, 2020). Organizations can unleash the full potential of their workforce and achieve a competitive edge in today's fast-developing business landscape by using the power of data and analytics.

Understanding HR Analytics

HR analytics is a transformational field within human resources management that focuses on the systematic gathering, analysis, and interpretation of data to inform HR decision-making. It has grown dramatically in recent years, spurred by technological breakthroughs and a rising acknowledgment of its potential to improve people management practices. HR has always been concerned with administrative chores, compliance, and employee relations. However, as businesses strive to become more agile and data-driven, HR analytics has gained prominence by enabling HR professionals to transition from reactive to proactive roles (GitikaTalukdar, 2016). One core concept in HR analytics is the distinction between various analytics levels:

Descriptive Analytics

This involves the examination of historical data to understand past HR trends and events. It forms the foundation for more advanced analytics and helps HR professionals identify patterns and areas that require attention. For example, it can be used to track employee turnover rates over time.

Diagnostic Analytics

Building on descriptive analytics, this level aims to uncover the root causes of HR challenges or trends. It involves digging deeper into data to answer “why” questions. For instance, it can help HR managers understand why certain departments experience higher turnover rates.

Predictive Analytics

This level takes HR analytics into the future by using statistical models and machine learning algorithms to forecast HR trends and issues. For instance, it can predict which employees are at risk of leaving the organization based on historical data and current behavior.

Prescriptive Analytics

The most advanced level, prescriptive analytics, goes beyond predicting outcomes to recommend actions. It provides HR professionals with actionable insights on how to address HR challenges or capitalize on opportunities effectively. For exa-

Unleashing the Power of HR Analytics: Enhancing People Management Strategies

Parulkumari Bhati^{1,*}

¹ Department of Humanities and Social Science, Institute of Technology, Nirma University, Gujarat, India

Abstract: HR analytics can enable organizations to make data-driven decisions that improve workforce productivity, engagement, and retention. This chapter provides an overview of the key HR analytics concepts and methods, including data collection and analysis, data visualization, and predictive modeling. It also focuses on the challenges and opportunities associated with implementing HR analytics in organizations, such as data privacy and security concerns and the need for skilled data analysts. Overall, the article makes a case for HR analytics as a critical tool for driving organizational success in the modern workplace. The use of HR analytics has become increasingly important in enhancing people management strategies. This chapter also explores the potential of HR analytics to transform the way organizations manage their workforce, from recruitment to retention. By leveraging data and analytics, HR experts can gain an understanding of their workforce, identify areas for improvement, and make data-driven decisions. This chapter discusses the benefits of HR analytics, including improved talent acquisition, enhanced employee engagement and retention, and increased productivity. It also examines some of the challenges organizations may face when implementing HR analytics, such as data privacy concerns and the need for specialized skills. Overall, this chapter demonstrates how HR analytics can be a powerful device for establishments looking to augment their people management policies.

Keywords: Data-driven decision-making, Employee engagement, HR analytics, Performance management, People management, Organizational effectiveness, Retention, Talent acquisition, Workforce planning.

INTRODUCTION TO HR ANALYTICS AND ITS SIGNIFICANCE IN MODERN BUSINESS

In today's quickly growing business landscape, where data is often dubbed the “new oil”, the field of human resources (HR) has undergone a profound trans-

* Corresponding author Parulkumari Bhati: Department of Humanities and Social Science, Institute of Technology, Nirma University, Gujarat, India; E-mail: dr.parulbhati@gmail.com

formation. Traditional HR practices, while effective in their time, are being superseded by a new approach that is revolutionizing the way organizations manage their most valuable asset: their people. This transformation is none other than the rise of HR analytics.

Defining HR Analytics

HR analytics, identified as people analytics or personnel analytics, involves the systematic collection, analysis, and interpretation of HR-related data to drive evidence-based decisions and strategies. It is the marriage of data science and human resources, harnessing the power of data to unravel insights that enable organizations to make informed and proactive people management decisions.

The Power of Data-Driven Insights

In an era where digital technologies permeate every aspect of business, HR analytics emerges as a game-changer. It is not merely about digitizing old HR processes; it is about unlocking the latent potential within workforce data to inform strategic actions. HR analytics takes HR from a reactive support function to a proactive driver of organizational success.

The Significance in Modern Business

The significance of HR analytics in modern business is multifaceted. Here are some key aspects highlighting its importance.

Informed Decision-Making

HR analytics equips HR professionals and organizational leaders with insights that go beyond gut feelings. Decisions are no longer based solely on intuition; they are anchored in empirical evidence derived from data analysis.

Enhanced Recruitment

In a globalized talent market, finding the right candidates swiftly is crucial. HR analytics optimizes recruitment processes by identifying the most effective sourcing channels, predicting candidate success, and ensuring cultural fit.

Employee Retention and Engagement

High turnover rates can be detrimental to a company's bottom line. HR analytics identifies underlying factors contributing to turnover, allowing organizations to implement targeted strategies for improving employee satisfaction and retention.

Performance Optimization

By analyzing performance metrics and team dynamics, HR analytics helps identify factors that contribute to high-performing teams. Insights guide decisions on team composition, leadership styles, and skill development.

Strategic Workforce Planning

With the future of work evolving, organizations need to anticipate skill gaps and workforce needs. HR analytics enables proactive workforce planning by forecasting talent demands and supply.

Personalized Learning and Development

Employees today seek continuous growth. HR analytics tailors learning and development paths based on individual skills, preferences, and career aspirations, fostering a culture of learning.

Ethical and Inclusive Practices

HR analytics has the potential to uncover biases and disparities within organizations. By identifying these issues, companies can work toward building a more equitable and inclusive workforce.

In essence, HR analytics transcends traditional HR functions and positions HR as a strategic partner in achieving organizational goals. It aligns HR initiatives with business objectives, enhances employee experiences, and maximizes overall performance.

As we journey through this chapter, we will delve deeper into the applications, benefits, challenges, and future trends of HR analytics, exploring how it revolutionizes people management strategies and empowers organizations to make smarter, data-driven decisions.

The Transformation from Traditional HR Practices to Data-Driven Decision-Making

The evolution of human resources (HR) practices from manual, intuition-based processes to data-driven decision-making represents a profound shift in how organizations manage their workforce. This transformation is reshaping the HR landscape and revolutionizing the way businesses approach people management. Let's explore the key milestones in this journey and the advantages that data-driven HR decision-making brings to the table.

Predicting Employee Performance Using Predictive Models

Sasirekha V.^{1*}, Gomuprakash P.² and Suresh R.³

¹ Faculty of Management, SRM Institute of Science & Technology, Vadapalani, Chennai, India

² Sri Sairam Engineering College, Chennai, India

³ Management Studies, Sri Sairam Engineering College, Chennai, India

Abstract: An employee performance forecasting overview typically outlines the key components and objectives of a forecasting model developed to assess employee effectiveness in the workplace. Such models include employee demographics, job-related factors (job description, tenure, *etc.*), performance metrics (sales figures, customer feedback, *etc.*), and psychometric scores (personality traits, cognitive abilities). The goal of such models is to identify the factors most strongly associated with high performance and use this information to predict future employee success. This chapter describes potential challenges and limitations associated with the predictive models, such as ethical concerns about the use of personal data, the potential for bias or error in predictive algorithms, and the need to balance the benefits of predictive modeling with concerns about employee privacy and autonomy.

Keywords: Employee performance, Ethical concerns, Predictive models.

INTRODUCTION

In the fast-paced and ruthless world of modern business, corporations are acutely aware that their workforce is their most significant and valuable asset (Fulmer, Ingrid & Ployhart, Robert, 2013). This is because labor is one of the primary factors that determine a company's profitability. The success and growth of every company are closely related to the productivity of its employees (Olaniyi, Olusegun Abayomi, 2021). As a result of this, businesses are always on the lookout for novel and original approaches that will allow them to boost the productivity, engagement, and overall performance of their staff. It has become a crucial component in this effort to attempt to predict how personnel will carry out

* Corresponding author Sasirekha V.: Faculty of Management, SRM Institute of Science & Technology, Vadapalani, Chennai, India; E-mail: prof.sasirekha@gmail.com

their duties. Using the strength of modern data analytics and predictive modeling, a corporation may get insights about its employees' potential, work patterns, and future contributions. This predictive strategy assists businesses in making well-informed decisions, effectively allocating resources, and effectively designing strategies to increase both individual and team performance (Cascio, W. F., 2006). In this age of digital transition, the traditional approaches to management and performance evaluation have been proven to be insufficient and backward-looking. This is because they focus on the past rather than looking toward the future. In the modern world of business, firms are shifting more toward proactive and data-driven initiatives in order to gain a deeper understanding of the factors that impact employee performance (Chowdhury S, Hioe E, and Schaninger B, 2018). By drawing on a wide range of different data sources, businesses are able to develop predictive models that provide an all-encompassing view of their workforce. These data sources might include things like employee feedback and external market trends, in addition to historical performance metrics and results from projects. This study will center on researching the topic of predictive analytics as it pertains to employee performance as its primary objective. During this discussion, we will study how new methods and cutting-edge technology are reshaping the manner in which corporations identify high-potential workers, reduce performance bottlenecks, and encourage ongoing progress. If companies can harness the power of machine learning, artificial intelligence, and massive volumes of data, they will have the capacity to go beyond the traditional ways of performance evaluation and start down the path toward proactive management and strategic expansion (Shubhabrata Basu, Bishakha Majumdar *et al.*, 2023, Steven McCartney, 2022). This will allow them to go beyond the limitations of the past. During the course of this inquiry, we will look at case studies that are based on the real world, delve into the underlying ideas that drive predictive modeling, and discover the numerous challenges and ethical considerations that are associated with the use of this approach. When it is all said and done, the objective of this paper is to ensure that the reader has a comprehensive understanding of how anticipating employee performance may change the landscape of human resource management, cultivate a culture of excellence, and ultimately contribute to the long-term success of a firm.

Key Components of Predicting Employee Performance

Predicting employee performance using predictive models involves leveraging data and statistical techniques to forecast an employee's future performance based on historical patterns and various factors (Boudreau, J. W., & Cascio, W. F., 2017, Patrick Coolen, Sjoerd van den Heuvel *et al.*, 2023). Here are the key components involved in using predictive models for this purpose:

Data Collection and Preparation

Gather relevant data about employees, such as job skills, education, experience, performance history, personality assessments, engagement surveys, *etc.* Make sure that the data is accurate and consistent by cleaning, preprocessing, and transforming it. Take care of missing data, unusual observations, and other data quirks that might hurt the model's accuracy.

Feature Selection and Engineering

Identify the most relevant features (variables) that are likely to influence employee performance. Create new features through engineering that might capture complex relationships in the data. Use domain knowledge and statistical analysis to select features that provide predictive power.

Model Selection

Based on the situation at hand and the information at hand, select the most suitable predictive modeling approach. Common methods include regression analysis, tree-based decision making, random forest sampling, gradient boost, neural networks, and so on. Consider the trade-offs between interpretability and predictive power when selecting models.

Model Training

Separate the data into a training set and a test set so that you can compare the two. Train the predictive model on the training data using the selected algorithm. Adjust hyper parameters of the model to optimize its performance.

Validation and Evaluation

Apply problem-specific measures like accuracy, precision, recall, F1-score, or area under the ROC curve (AUC-ROC) to assess the model's efficacy. Utilize cross-validation techniques to ensure the model's robustness and generalizability.

Feature Importance Analysis

Analyze the importance of different features in predicting employee performance using techniques like feature importance plots or permutation importance. Identify which features have the most significant impact on the model's predictions.

Model Interpretability

In some cases, knowing what informs the model's predictions is crucial. SHAP (Shapley Additive Explanations) and LIME (Local Interpretable Model-agnostic

A Numbers Game or a People Game: An Analytical Approach to Bring the Best Talent to the Organizations

Rupa Rathee^{1*} and Madhvi Lamba^{2,*}

¹ Deenbandhu Chhotu Ram University of Science and Technology, Murthal, Haryana, India

² Department of Management Studies, Deenbandhu Chhotu Ram University of Science and Technology, Murthal, Haryana, 131039, India

Abstract: Human resources analytics (HR analytics) is an interesting field of study for those who love to play with numbers. Playing with numbers seems fun, but the quantified data helps organizations in many ways. Do you want to go a long way in your business? Then, yes! HR analytics is for you. HR analytics deals with interpreting data by applying statistical tools in order to get meaningful information so that predictive analysis for the growth of an organization can be done. The modern concept of HR is more data-driven, and HR analytics provide an opportunity for organizations to follow data-driven approach in order to manage people. HR analytics can be applied to numerous functions of HR, but this chapter will specifically cover the concept of HR analytics by emphasizing more on talent management analytics and its aspects. Are you looking for the best talent in the market? Do you want to get qualitative people in minimum costs and time? Then, this chapter will help you by elaborating on numerous recruitment metrics and suggesting how talent management analytics can help in managing people and enhancing an organization's profitability. Moreover, this chapter also provides theoretical and practical insights to the readers to enhance their understanding with the help of numerical interpretations.

Keywords: Application, Candidate, Cost, Data, Decision, Employees, Hiring, HR analytics, Human, Human resources, Management, Metrics, People, Process, Quality, Recruitment, Strategies, Talent, Talent management, Technology.

INTRODUCTION

Is human capital investment still a thought-provoking term for organizations? The traditional approach hardly emphasizes human resources (HR) professionals in

* Corresponding authors Rupa Rathee and Madhvi Lamba: Deenbandhu Chhotu Ram University of Science and Technology, Murthal, Haryana, India; Department of Management Studies, Deenbandhu Chhotu Ram University of Science and Technology, Murthal, Haryana, 131039, India; E-mails: rugarathee18@gmail.com, lambamadhvi7@gmail.com

any profitable aspect for organizations. Why so? There is a probability that HR may not have strong skill sets in HR metrics and analytics. This again leads to the lack of decision-making competencies. Awareness of the right set of analytical models can also be another reason. Identifying the models that predict the association and gap between current HR practices and future HR practices may require the help of analytical models. But, is the perception of HR professionals the same even in the present era? The profession of HR has now shifted towards the strategic and decision-making side. HR analytics also helps in that particular aspect. People usually think the role of HR is merely recruiting and preparing the salaries of the employees. But is it so? Knowing a recruiter needs to hire people does not end the role of HR. This is just a traditional aspect of one of the roles of HR (recruitment), but knowing the turn around time (TAT), sourcing channels, their costs and effectiveness, cost per hire, efficiency of recruiter, satisfaction of hiring manager, and quality of hire will give facts and figures. These facts and figures will help in providing data to analyze, decide, and help in preparing future strategies by understanding the loopholes. By having an understanding of the loopholes, strategies can be formed to fill the gaps. This is how costs and time taken to hire candidates can be minimized. The quality of candidates can be improvised if required. The efficiency of the recruiter can be measured and enhanced by improvising the weaker areas.

It has been seen in the past decade that most organizations are moving towards the data-driven approach. The formation of strategies can be done with the help of the best decisions management can take. The amalgamation of data along with analytics is gaining the wider attention of professionals and researchers. The decisions can be made only on the basis of data analysis. Data can be prepared with a number of observations that come with the passage of time. This is where HR analytics comes into play. The profession of HR is shifting from a traditional approach to a more strategic and decision-making-oriented approach. Data analysis is also bringing revolution to the domain of HR as data is helping organizations to change for the better.

The human resource department is one of the most critical departments of the organization. Beyond recruitment and salary preparation, HR looks after the multiple functions of the HR gamut. The roles may include documentation, preparation of letters (offer, appointment, appraisal, increment and termination, *etc.*), attendance and leave management, employee engagement, training and development, compensation and salary, performance appraisal, employees' grievances, exit management, and other administrative activities. But this chapter will cover the analytics on talent management, majorly on the recruitment aspect. These terminologies may seem very simple, but when one dives into them, it gets wider with the data, which helps smoothen the process. These traditional practi-

ces, along with data analysis, have completely emerged as a whole new subject of HR analytics.

When the term “talent management” pops up, it usually means managing talent. That is correct. But how? Talent management consists of various roles such as recruiting, hiring, training, learning, developing, and retaining employees. Considering the depth of the individual aspects of talent management, this chapter will emphasize the recruitment facet of talent management. Besides recruitment, the chapter will be initiated with a brief overview of HR analytics. In order to understand each aspect of recruitment metrics and analytics, it is important to know about talent management and HR analytics.

So now, let us understand what HR analytics is?

HR ANALYTICS

Numbers, data, statistical tools, and reports result in successful outcomes in HR analytics when such data is used in the decision-making process.

Kryscynski *et al.* (2017) and Margherita (2020) described HR analytics as “data, metrics, statistics, and scientific methods, with the help of technology, to gauge the impact of human capital management practices on business goals.”

According to van den Heuvel and Bondarouk (2017), Margherita (2020), and McCartney & Fu (2022), “HR analytics is the systematic identification and quantification of the people drivers of business outcomes to make better decisions.”

Another definition by Mishra *et al.* (2016) and Margherita (2020) states, “HR analytics is a multidisciplinary approach to integrate methodologies for improving the quality of people-related decisions.”

According to Deloitte, HR analytics revolves around four elements: information, process, technology, and people.

The keen interest in HR analytics revolves around four elements that are depicted in Fig. (1).

According to Lawler *et al.* (2004), HR analytics that provide valuable outcomes for businesses can be done in the following three steps:

- Identifying human resources metrics (HR metrics).
- Analytical model.

CHAPTER 8

HR Analytics: Concept, Advantages and Obstacles**Jatinder Kaur^{1,*}** and **Srijan Gupta¹**¹ *Rukmini Devi Institute of Advanced Studies, Affiliated to GGSIPU, New Delhi, India*

Abstract: In the contemporary landscape, the management of employees within organizations has transformed into a collaborative endeavor. The responsibility for managing personnel and evaluating their performance has moved to online platforms, made possible by the integration of HR analytic tools in light of changing company dynamics and technological advancement. The strategic use of HR analytics (HRA) has been shown to be essential for improving employee performance and increasing operational effectiveness. Noteworthy improvements have been witnessed in critical areas such as recruitment quality, talent management, employee productivity, and the reduction of employee turnover.

The focal point of this research centers on an in-depth exploration of HR analytics, encompassing its multifaceted tools and their diverse applications across distinct organizational contexts. The main goal is to identify the numerous advantages of the wise application of HRA. Through the lens of logical tools, organizations gain the acumen to identify and address pertinent issues, including performance disparities, employee attrition, retention challenges, and nuanced employee behaviors, leveraging the troves of data inherent within the organizational framework.

This study has been instigated in response to the prevalent underestimation of HR's potential within numerous organizations. Despite this underestimation, the modern technological milieu has borne an array of analytical tools, which have garnered considerable adoption by major corporate entities. Within the confines of this paper, we delve into the illustrative cases of HR analytics implementation across five diverse organizations. Through empirical analysis, we discern how the strategic incorporation of HR analytics has yielded tangible benefits both for the organizations and their workforce, often resulting in transformative shifts towards a more people-centric business approach.

Keywords: Data metrics, Employee attrition, HR analytics, Organizational enhancement.

* **Corresponding author Jatinder Kaur:** Rukmini Devi Institute of Advanced Studies, Affiliated to GGSIPU, New Delhi, India; E-mail: jeetu.jazz@gmail.com

INTRODUCTION

The core of human resource management is maximizing the efficient use of people to achieve both business goals and personal aspirations. Its primary responsibilities encompass recruitment, administration, and exit-related functions within an organization. To sustain employee engagement and enhance productivity, HR professionals assess employee performance and orchestrate tailor-made training initiatives. The inception of HR as a distinct discipline emerged in the early 20th century, influenced by the ideas of Frederick Winslow Taylor (1856–1915). The terminology “human resource” was first coined by John R. Commons, an American institutional economist, in his 1893 publication “The Distribution of Wealth”. Formal HR departments, created to handle the complex interactions between employers and employees, did not emerge until the 20th century. Performance management, a crucial component of human resources, is an ongoing conversation between managers and workers with the goal of attaining corporate goals and fostering employee skill development. This ongoing interaction encompasses delineating precise expectations, setting objectives, providing incessant feedback, and evaluating outcomes. Through recital management, a strong line of statements between managers and staff develops over the course of a year to achieve both organizational and personal objectives. To comprehend employee performance comprehensively, managers analyze the amassed data, addressing performance gaps with insights derived from the information. This process incorporates a range of tools, including the utilization of HR analytics.

Concept of HR Analytics

HR analytics is a process that involves gathering and using talent-related data in order to maximize key workforce capabilities. It serves as a decision-making tool harnessing available data to predict employee turnover, identify high-performing individuals, and forecast skill areas necessitating enhancement. Often referred to as people analytics, HR analytics empowers organizations to assess the influence of HR metrics on overall business performance, thereby facilitating data-driven decision-making. This approach enables organizations to make informed choices based on tangible data insights.

Literature Review

Dr. P. Raghunadha Reddy and P. Lakshmi Keerthi (2017) emphasize the crucial value of human resources within organizations. They promote an evidence-based strategy as the best method for making decisions, emphasizing how HR analytics not only supports this strategy but also pushes businesses to keep good data to support the return on investment of HR expenditures.

Anshu Sharma and Tanuja Sharma (2017), in their study article, “HR Analytics and Performance Appraisal System: A Conceptual Framework for Employee Performance Improvement”, describe the influence of HR analytics on performance assessment systems and how this affects employees' incentive to improve their performance. According to their conceptual approach, the use of capable data scrutiny tools in HRA improves the accuracy of the evaluation process. Additionally, they offer perceptions for additional investigation into the field of performance management, offering prospective routes for development.

R. Anita and Dr. N. Sumathi (2019) investigate how employee performance is impacted by performance management systems. Based on the WERS 2004 dataset, they examine the dynamics of the link between enactment management systems and employee enactment. The study's goals include studying the performance management system, examining how it relates to employee performance, and eventually coming up with suggestions on how to best balance these elements.

Udhay Kailash and M Prathyusha (2020) contribute to the discourse with their research paper “HR Analytics: Methodical Measurement of HR Processes”. They emphasize the use of HR analytics in assessing employee contributions to firms, forecasting workforce needs, and coordinating workforce usage with strategic objectives to improve overall business success. Their study focuses on the pharmaceutical industry, proposing a replicable HR analytics model for similar organizations within the sector and beyond.

H.H.D.P.J. Opatha (2020), in their research paper titled “HR Analytics: A Literature Review and New Conceptual Model”, expounds on how HR analytics offers a data-driven framework for addressing workforce challenges through the synthesis of data using statistical models and specialized software. This approach facilitates nuanced decision-making and equips managers with insights to optimize human resource management practices.

Dr. Filza Hameed *et al.* (2021) underscore the importance of a dynamic and continuous performance management system. They advocate for addressing employee concerns collaboratively, creating a unified team atmosphere. The researchers recommend implementing acknowledgment methods to enhance motivation and engagement, fostering a sense of recognition. Involving employees in goal-setting and rewarding their efforts aligns their endeavors with organizational objectives.

Steven McCartney and Na Fu (2022) contribute to the discourse with their research paper titled “Bridging the Gap: Why, How, and When HR Analytics Can Impact Organizational Performance”. They examine the potential of HR analytics

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Sandeep Kumar Kautish

Prof. Sandeep Kautish is recognized among the top 2% of scientists globally, according to Stanford University and Elsevier. An academician by choice, he boasts two decades of experience in academia, including nearly a decade in academic administration across various institutions in India and abroad. Currently, he serves as the Director AIT CSE at Chandigarh University, which is ranked between #690-700 in the QS World University Rankings 2024. Dr. Kautish possesses an exemplary academic record, holding bachelor's, master's, and doctoral degrees in Computer Science with a specialization in Intelligent Systems in Social Networks, as well as a Diploma in Management. His research interests encompass Healthcare Analytics, Business Analytics, Machine Learning, Data Mining, and Information Systems. As an avid researcher, he has authored over 120 publications, including over 50 publications indexed in SCI/SCIE-indexed journals, and the Web of Science Core Collection.



Anuj Sheopuri

Prof. Anuj Sheopuri is working as Professor in the Department of Management in HIMT, Greater Noida. He worked as an Associate Professor, in UIMS, Agra. He did MBA in Human Resource Management and Marketing in the year 2001, and completed doctorate degree in the year 2012. He has 5 years of corporate, and 17 years of administrative and academic experience. His research areas are work engagement, performance appraisal, and training and development. His research articles have been published in various UGC, referred / double blind reviewed journals. He is a reviewer of national and international journals of management stream. He has authored a couple of chapters in the edited books, and is empanelled in GLA, SAGE and Rasoni universities as external examiner and paper setter for UG / PG level programmes. He is a life member of various national and international associations, i.e., EAERC - Jordan, ASR - Hong Kong, and TERA, etc.