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Human Resource Analytics: A Deep Investigation

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Abstract

The Human Resource (HR) Analytics field has gained tremendous significance over the past few decades to aid decision-making processes concerning human resource management. This study provides an overview of the history of human resource analytics, from its early roots in industrial psychology to its present state in organizational decision-making. The importance of human resource analytics is described, such as the ability to improve recruitment efforts, increase employee engagement, and raise retention rates. The study examines various data sources for human resource analytics, which include employee surveys, performance evaluations, and social media. The methods utilized in human resource analytics are also mentioned, highlighting their potential to detect trends within employee data and solve certain human resource problems. Finally, this study summarizes the implications and limitations of human resource analytics, particularly in regard to privacy concerns and bias, and the need to conduct human resource analytics responsibly and ethically.

Keywords: Human Resource Analytics, Workforce Planning, HR Decision Making, Organizational Performance, Employee Productivity, HR Metrics, Performance Management.

1 Introduction

In the contemporary world of businesses, companies are always looking for methods to have a competitive edge in the market. One such areas is the management of human resources. Currently, it is expected from human resource practitioners to be strategic in making their decisions, and decision-making based on data has become crucial for success in this field. That is when Human Resource Analytics comes into play. Human Resource Analytics or simply HR Analytics is an approach based on the analysis of HR data by using data analytics techniques. This chapter will focus on introducing the concept of HR Analytics, explaining its meaning and applications, its benefits, and its limitations.

Human resource analytics is the use of sophisticated analytics to investigate massive and complex HR data to build insights and trends that can support effective strategic decision-making. - Tony Williams, Author, "Strategic HR: Building the Capability to Deliver [1]." Human Resource Analytics is the application of various data analysis methods to gain insights from HR data. This includes gathering, processing and understanding human resources data, such as performance, retention, demographics, and hiring data. The analysis of this data can provide valuable insights to organizations to improve the performance and productivity of their human resources. It offers insights to organizations by using human resource data that can help it to optimize its workforce hiring, retention and development practices. HR analytics focuses on the use of data and metrics to understand different workforce related factors such as staffing, retention, pay, engagement, performance and development. The purpose of conducting HR analytics is to support organizations with their decisions related to human resource management and possibly better business performance. By gathering, analyzing and interpreting

data about the workforce, it's possible to understand trends and patterns, best practice and areas where improvements can be made, and develop improvement strategies. This can help optimize the workforce and lead to better workforce. This involves a range of data collection, analysis and visualization techniques. These techniques involve data mining, statistical analysis, machine learning, predictive modelling and data visualization. These technologies can be used to identify patterns and trends in the data, make predictions, and generate reports and visualizations that can be used by decision makers to gain insights.

The main advantages of HR analytics are that it can help an organization to get a more comprehensive view of the workforce. They can perform several analyses on data from a variety of sources such as performance reviews, surveys and financial data. By analyzing this data, businesses can gain a better understanding of their workforce and its impact on performance, efficiency and overall growth. This allows the officials to make more informed decisions about workforce management, including recruitment, retention and training. HR analytics can also assist organizations to measure the impact of HR initiatives and investments. By tracking and measuring the performance of specific HR programs, such as training and development programs or compensation packages, organizations can assess the effectiveness of these programs and make improvements if necessary. HR analytics can also help to manage workforce risks. For example, by monitoring and measuring turnover data, organizations can determine why employees are leaving and take action to reduce turnover. Similarly, by monitoring data on employee engagement, organizations can see where there are problems with employee satisfaction and address these problems.

1.1 Background

Human Resource Analytics, also called peer analytics or talent analytics, has a long history, which goes back to the early twentieth century. Frederick Winslow Taylor, who is regarded as the founder of scientific management, introduced time and motion analysis into the business world to increase productivity through the optimization of all actions performed by the workers. In the 1920s and 1930s, research on the correlation between the degree of job satisfaction, motivation, and productivity among workers took place. One of the most notable studies carried out at the time was the Hawthorne Study, which was conducted by Elton Mayo and his associates from Harvard Business School.

The 1940s and 1950s saw the rise of personnel management, which focused on the administrative aspects of managing employees, including recruitment, training, compensation, and benefits. However, personnel management lacked a scientific and data-driven approach to managing employees. In the 1960s and 1970s, researchers began to develop theories on human behavior and motivation, leading to the emergence of organizational behavior and development. This field emphasized the importance of understanding individual and group behavior in organizations and how to leverage it to achieve business objectives. HR professionals began using psychological testing and assessments to select and develop employees during this period.

Introduction of technology in the late 1980s and 1990s revolutionized HR practices leading to the introduction of the HR information system (HRIS). Through HRIS, human resource practitioners were able to store and manage data related to their employees electronically and automate many processes to generate various reports. During this period, data analytics was still not part of the agenda for most HR departments. The late 2000s saw the increased popularity of HR analytics. Data analytics was becoming easier and more accessible due to technological advancements and the presence of data.

Nowadays, HR analytics is considered an important aspect in the efficient management of human capital in organizations. It is a vital element of strategic HR management, and organizations are investing in it immensely. Data analytics in HR has evolved from merely producing reports to using models that can predict future workforce trends and outcomes. HR analytics is now being used in promoting diversity, equity, and inclusion (DEI) efforts by detecting and eliminating biases and inequities in talent managem ent practices. With the aid of data analytics, HR practitioners can conduct analysis of recruitment, promotion, and compensation of staff.

HR analytics is set to continue to grow and develop in the coming years and change the way we manage and develop talent. With a focus on big data, artificial intelligence (AI) and machine learning, HR analytics can help organizations to interpret employee data to predict future events. By using these techniques and tools, HR professionals can harness data to make decisions and manage human capital. HR analytics will help organizations to build diverse, fair and inclusive cultures, leading to happier, engaged and productive employees.

1.2 Benefits of Human Resource Analytics

1. **Informed Decision Making:** HR analytics offers insights to guide HR and business leaders to make better decisions. Insights from employee performance, turnover and engagement data help identify problems and take steps to improve HR practices.

2. **Greater Efficiency:** HR analytics increases efficiency of HR processes through automation of data collection and analysis. Automating activities such as performance monitoring, turnover rates, reporting, etc., allows HR to concentrate on strategic activities.

3. **Better Talent Management:** HR analytics can help in talent management through identification of high performers. This helps in the planning of suitable training and development programs to boost employee skills and retention.

4. **Improved Engagement:** HR analytics can help in better understanding engagement. HR managers can analyses engagement data and identify areas where employees need support and develop engagement strategies to boost employee motivation, satisfaction and engagement.

5. **Cost Savings:** HR analytics can help save money in workforce planning. Analyzing turnover and absenteeism data can help identify the reasons for these problems and resolve them. This allows them to save on recruitment, training and replacement costs.

6. **Succession Planning:** HR analytics can help in developing potential leaders. By analyzing employees' skills, performance and leadership potential, succession plans can be developed.

7. **Better Predictive Analytics:** HR analytics can assist in predicting future HR needs. By analyzing turnover, engagement and productivity, HR can plan for the future.

8. **Improved Employee Wellness:** HR analytics allows organizations to understand problems related to employee health, stress and burnout. Using wellness data, organizations can implement appropriate programs to promote employee well-being and a healthy workplace.

9. **Better Employee Retention:** HR analytics allows organizations to identify the factors that affect employee retention. By understanding the retention factors, organizations can take targeted steps to enhance employee satisfaction and retention.

2 Major Components of Human Resource Analytics

2.1 Data Sources

Data sources are essential for HR analytics as they are the fuel that powers the analysis. Key sources of data for HR analytics

1. Human Resource Information Systems (HRIS): HRIS systems are used to manage employee data such as personal information, employment history, pay and benefits. HRIS systems provide data that can be used for HR analytics, including workforce demographics, turnover rates and other HR metrics.

2. Performance Management Systems: Performance management systems are used to manage employee performance and goal achievement and provide feedback. Performance data can be used to assess

productivity, identify top performers, and create strategies to improve employee performance and engagement.

3. Recruitment Systems: Recruitment systems are used to track the recruitment process, such as job vacancies, applications, and interviews. Recruitment data can be used to assess the success of various recruitment methods and strategies, and to identify areas for improvement.

4. Learning Management Systems (LMS): LMS systems are used to manage employee training and development programs. LMS data can be used to assess employee skills and training needs, and to identify training programs that are most effective in developing key skills.

5. Time and Attendance Systems: Time and attendance systems are used to manage employee attendance, hours worked and leave.

6. Health and Wellness Programs: Health and wellness programs can offer insights into employee health and well-being, including participation rates, health outcomes, and absenteeism rates. This information can be used to improve employee health and well-being and to lower health care costs.

7. Customer Feedback: Customer feedback can be used to measure the impact of the workforce on customer satisfaction and loyalty. This data can be used to inform changes to the workforce to improve customer outcomes.

8. Exit Interviews: Exit interviews can be used to understand why employees are leaving the organization. Exit interview data can be used to improve the employee experience and develop strategies to reduce employee turnover.

9. Employee Engagement Platforms: Employee engagement platforms are tools that can be used to assess and enhance employee engagement. These tools can generate data on employee sentiment, satisfaction and feedback. This data can be used to identify areas where the employee experience can be improved and to create strategies to improve employee engagement.

10. Behavioral Data: Behavioral data like email and chat logs can be used to understand employee communication, collaboration and productivity.

2.2 Analytical Techniques

1. Descriptive Analytics: To summarize and describe data. This technique is used to gain insights into workforce trends and patterns. For example, descriptive analytics can be used to analyze employee turnover rates or to identify which departments have the highest employee engagement.

2. Diagnostic Analytics: To identify the cause of a problem or trend. This technique is used to understand why certain workforce trends or patterns are occurring. For example, diagnostic analytics can be used to identify why a particular department has a high turnover rate.

3. Predictive Analytics: To forecast future trends based on historical data. This technique is used to identify future workforce trends and to develop strategies to address them. For example, predictive analytics can be used to forecast which employees are most likely to leave the organization, and to develop strategies to retain them.

4. Prescriptive Analytics: To identify the best course of action based on data analysis. This technique is used to develop actionable recommendations to improve workforce outcomes. For example, prescriptive analytics can be used to identify the best interventions to improve employee engagement or to reduce absenteeism.

5. Text Analytics: To analyze unstructured data, such as employee feedback or performance reviews. This technique is used to gain insights into employee sentiment, attitudes, and behaviors. For example, text analytics can be used to analyze employee feedback to identify areas for improvement in the employee

experience.

6. Network Analytics: Used to analyze relationships between employees, such as collaboration or communication patterns. This technique is used to gain insights into team dynamics and to identify opportunities to improve collaboration and productivity.

7. Machine Learning: To identify patterns in data. This technique is used to automate the analysis of large datasets and to identify new insights into workforce behavior. For example, machine learning can be used to identify the factors that contribute to employee turnover.

8. Sentiment Analysis: Focuses on identifying the emotional tone of written communications. This technique is used to analyze employee feedback and social media posts to identify how employees feel about the organization and their work. For example, sentiment analysis can be used to identify the most common emotions expressed by employees in their feedback.

9. Clustering Analysis: To group employees based on similarities in their demographic or behavioral data. This technique is used to identify subgroups within the workforce, which can then be analyzed to identify unique characteristics or issues. For example, clustering analysis can be used to group employees based on their engagement levels and identify the factors that contribute to high or low engagement.

10. Regression Analysis: To identify the relationship between one or more variables and a target variable. This technique is used to identify the factors that contribute to workforce outcomes such as productivity or turnover. For example, regression analysis can be used to identify the factors that contribute to employee absenteeism.

11. Time Series Analysis: To analyze trends in data over time. This technique is used to identify workforce trends and to forecast future workforce outcomes. For example, time series analysis can be used to identify the seasonality of employee turnover or to forecast the number of hires needed in the future.

12. Decision Trees: Used to model decision-making processes. This technique is used to identify the factors that contribute to workforce outcomes and to develop decision-making models that can be used to improve workforce outcomes. For example, decision trees can be used to identify the factors that contribute to employee engagement and to develop a model that can be used to improve engagement levels.

13. Network Analysis: Used to visualize and analyze relationships between individuals or groups within an organization. This technique can help identify key influencers, communication patterns, and potential bottlenecks within the organization. For example, network analysis can be used to identify which employees are most central to communication within a team and which employees are the most influential in driving change.

14. Survival Analysis: A statistical method employed to analyze the time it takes for an event to occur, such as employee turnover. This technique is used to identify the factors that contribute to the occurrence of an event and to predict the likelihood of that event occurring in the future. For example, survival analysis can be used to identify the factors that contribute to employee turnover and to predict which employees are most likely to leave the organization.

15. Machine Learning: An artificial intelligence branch that involves training algorithms to recognize patterns in data and make predictions based on those patterns. Machine learning can be used to automate the analysis of large data sets and to identify com-plex relationships between variables. For example, machine learning can be used to predict employee turnover based on a variety of factors, such as job satisfaction, compensation, and tenure.

16. Natural Language Processing: It is a subset of machine learning that involves analyzing and understanding human language. This technique can be used to analyze employee feedback, performance reviews, and other written communications to identify patterns and sentiment. For example, natural language processing can be used to identify the most common themes in employee feedback and to understand how

employees feel about their work.

2.3 Human Resource Analytics Diagrams

1. Bar Charts: Bar charts are a simple and effective way to display HR data. They consist of a series of bars, with each bar representing a different category of HR data. For example, a bar chart could be used to display employee turnover rates by department or recruitment sources by job level.

2. Line Graphs: Line graphs are another commonly used HR analytics diagram that shows how a particular HR metric has changed over time. For example, a line graph could be used to show how employee engagement scores have changed over the past year.

3. Scatter Plots: Scatter plots are used to display the relationship between two different HR metrics. For example, a scatter plot could be used to display the relationship between employee satisfaction and employee turnover rates.

4. Heat Maps: Heat maps are used to display HR data in a way that highlights patterns and trends. They use a color gradient to represent the intensity of a particular HR metric. For example, a heat map could be used to display employee satisfaction scores by department, with darker colors representing higher satisfaction scores.

3 Human Resource Analytics Tools In 2023

1. **SAP Success Factors:** SAP Success Factors [2] is a leading HR analytics software in 2023. It is a cloud-based software platform that offers HR analytics features, including workforce analytics, recruitment analytics and retention analytics. SAP Success Factors offers HR managers a real-time view of workforce data, allowing them to make informed decisions about talent management. It is user-friendly and can be integrated with other systems, making it a popular choice for companies.

Table 1: Comparison of HR Analytics Tools

Tool	Data Visualization	Data Integration	Data Security	Data Analytics	Predictive Analytics	Cost
SAP Success Factors [2]	Excellent	Excellent	Excellent	Excellent	Good	High
Tableau [3]	Excellent	Good	Excellent	Excellent	Excellent	High
Workday [4]	Good	Excellent	Excellent	Good	Good	Medium
Visier [5]	Good	Excellent	Excellent	Good	Excellent	High
ADP Data Cloud [6]	Good	Good	Excellent	Good	Good	Low

2. **Tableau:** Tableau [3] is a data visualization platform that is often used in HR analytics. Users can build interactive charts and dashboards to explore HR data. Tableau is easy to use and offers advanced analytics features, making it suitable for companies of all sizes.

3. **Workday:** Workday [4] is a cloud-based HR management system that offers HR analytics. It offers users real-time analytics on workforce data, allowing them to make data-driven decisions about talent. Workday is particularly popular for its powerful analytics features, including predictive analytics and machine learning, and is a great choice for companies looking to upgrade their HR analytics game.

4. **Visier:** Visier [5] is a cloud-based people analytics platform that offers HR analytics to HR professionals. It offers a variety of HR analytics features, including workforce planning, talent acquisition and retention analytics. Visier is a leading HR analytics platform with robust analytics and an intuitive interface, making it a popular choice for companies seeking to automate their HR analytics workflows.

5. **ADP Data Cloud:** ADP Data Cloud [6] is a cloud-based solution that offers HR analytics insights. It offers a variety of HR analytics features, including talent acquisition, retention, and compliance analytics. ADP Data Cloud is easy to use and integrate with other systems, making it a great option for companies of all sizes.

3.1 Ethical and Legal Considerations in HR Analytics

HR Analytics is a powerful tool for such organizations which want to improve their human resource management. But there are ethical and legal issues associated with the use of HR Analytics that need to be addressed. Organizations must know the laws and regulations that are applicable to HR Analytics. These issues can include laws and regulations regarding privacy and security like General Data Protection Regulation (GDPR) in Europe and laws protecting employees e.g. Americans with Disabilities Act (ADA) in the US. It is important for organizations to follow these laws and regulations to avoid legal consequences.

In ethical context, HR Analytics raises issues of equity, bias and discrimination. HR Analytics models could be biased against certain employee groups (for example, women or ethnic minorities). Organizations must make sure that their HR Analytics models are not biased against any group of employees. To ensure this, trust and transparency must be the key ethical issues in HR Analytics. Organizations should be transparent about the data they are gathering and the way they are using it. Employees should be able to trust that their data is being used ethically. Accountability and responsibility are also important ethical considerations in HR Analytics. They must be responsible for the decisions they make using HR Analytics and accountable for any unintended consequences on employees. To use HR Analytics ethically and legally, organizations should develop policies and guidelines, ethical and legal risk assessments and transparency around their HR Analytics practices. Finally, case studies can offer insights for organizations seeking to address the ethical and legal aspects of HR Analytics. Overall, ethical and legal considerations are an integral part of HR Analytics, and organizations need to consider these issues carefully to ensure that all employees are treated fairly and equitably.

4 Challenges and Limitations of Human Resource Analytics

4.1 Challenges

- Cost: HR professionals need to ensure that the benefits of using analytics outweigh the costs.
- ROI challenges: The return on investment (ROI) of HR analytics can be hard to measure, as it may take some time for the benefits of using analytics to become apparent. HR professionals need to have a strategy for measuring and communicating the ROI and benefits.
- Data availability: HR professionals may not have access to all the data they need to inform their decisions. For instance, they may not have access to data on the external labor market or competitor data.
- Data integration challenges: HR data may be stored in multiple systems, which can make it challenging

to integrate and analyses data from multiple sources. HR professionals need to ensure that they have a data integration plan in place.

- Failure to align with business goals: HR analytics projects must be aligned with the business goals of the company. HR professionals need to make sure that they are tracking the right metrics that are important to the business and are driving its success.

- Too much focus on technology: Technology can play an important role in HR analytics, but it should not be the sole focus. HR professionals need to consider the human factor when analyzing data and making decisions.

- Stakeholders buy-in: HR analytics may not be successful if there is little support from stakeholders (such as management and employees). HR professionals must involve stakeholders in the process and explain to them the value of analytics.

- Lack of effective communication: HR professionals may be able to collect and analyze data, but they may not be able to effectively communicate insights to stakeholders. HR professionals should focus on data visualization and storytelling skills to effectively communicate their insights.

4.2 Limitations Of Human Resource Analytics

While human resource analytics has numerous benefits, it also has limitations that organizations should be aware of when implementing an HR analytics program. Some of the limitations of HR analytics include:

- Limited data availability: The quality of HR analytics is dependent on the quality of data that is available. If an organization does not have access to accurate, relevant, and timely data, then HR analytics may not provide accurate insights or be effective in supporting decision-making.

- Difficulty in measuring intangible factors: While HR analytics can be effective in measuring quantitative factors such as employee turnover or training effectiveness, it can be challenging to measure intangible factors such as employee morale, job satisfaction, or company culture.

- Overreliance on historical data: HR analytics can provide insights based on historical data, but it may not always provide accurate predictions or be effective in forecasting future outcomes. This is particularly true in situations where there are significant changes in the business environment, such as economic downturns or sudden shifts in industry trends.

- Complexity of data analysis: HR analytics can be complex and require skilled analysts who are proficient in data analysis and statistics. Organizations that do not have in-house expertise may need to invest in training or outsourcing to ensure that their HR analytics program is effective.

- Privacy and ethical concerns: HR analytics involves the collection and analysis of sensitive employee data, which can raise privacy and ethical concerns. Organizations need to ensure that they have appropriate policies and safeguards in place to protect employee privacy and ensure that HR analytics is being used ethically.

- Difficulty in aligning HR analytics with business objectives: HR analytics can provide valuable insights, but it may not always be aligned with overall business objectives. Organizations need to ensure that their HR analytics program is aligned with the strategic goals of the organization and that it is providing insights that can be used to support decision-making at all levels of the organization.

5 Real World Examples of how Human Resource Analytics Has Transformed Organizations

- Walmart: Walmart implemented HR analytics to identify the characteristics of high-performing

employees in different job roles [7]. Based on this analysis, the company was able to create a predictive model to identify potential high-performing candidates and tailor their hiring and development strategies to improve workforce productivity and performance.

- IBM: IBM used HR analytics to identify skill gaps in its workforce and develop targeted training programs to fill those gaps [8]. As a result, the company was able to improve employee

performance and productivity, reduce employee turnover rates, and save costs associated with external training programs.

- Royal Bank of Scotland (RBS): RBS implemented HR analytics to analyze employee turnover rates and identify factors contributing to high turnover rates [9]. Based on this analysis, the company was able to develop targeted retention initiatives, such as flexible working hours and career development programs, to improve employee satisfaction and reduce turnover rates.

- Xerox: Xerox used HR analytics to analyze employee data and identify factors contributing to low employee engagement and satisfaction levels [10]. Based on this analysis, the company was able to develop targeted initiatives, such as flexible work arrangements and employee recognition programs, to improve employee satisfaction and engagement levels.

- Netflix: Netflix used HR analytics to analyze employee data and identify the factors that con-tribute to employee success within the organization [11]. The company analyzed performance data, feedback from managers and peers, and employee characteristics to create a predictive model that helps identify employees who are likely to be successful in their role.

- UPS: UPS implemented HR analytics to optimize its workforce scheduling and reduce labor costs [12]. The company used data analytics to forecast peak workloads and develop predictive models to help schedule staff efficiently, ensuring the right number of staff is working at the right time. This approach helped the company reduce labor costs, improve employee productivity, and enhance customer satisfaction.

6 Future Trends in Human Resource Analytics

- Integration of HR analytics with other business functions: HR analytics will become more integrated with other business functions, such as finance and operations. This integration will enable organizations to take a more holistic view of their business performance and to make more informed decisions based on the insights generated by HR analytics.

- Focus on skills and talent management: With the rise of the gig economy and the increasing importance of skills-based work, HR analytics will play a critical role in identifying and man-aging talent. Organizations will use data to identify the skills that are most in demand, to assess the skills of their existing workforce, and to develop training and development programs that help employees to acquire the skills they need to succeed.

- Increased use of data visualization: As data continues to grow in volume and complexity, HR professionals will increasingly rely on data visualization tools to communicate insights to stakeholders. Data visualization tools can help to simplify complex data sets and make it easier for stakeholders to understand and act on the insights generated by HR analytics.

- Enhanced focus on ethics and privacy: As the use of HR analytics becomes more widespread, there will be increased scrutiny of the ethical and privacy implications of this technology. Organizations will need to ensure that they are using HR analytics in a responsible and ethical manner, and that they are taking steps to protect the privacy of their employees.

- Increased use of natural language processing: Natural language processing (NLP) is a technology

that enables machines to understand and interpret human language. As NLP technology continues to improve, it will become increasingly valuable for analyzing employee feedback and sentiment data. NLP can help organizations to identify key themes and issues in employee feedback, and to develop more targeted programs and initiatives that address these issues.

- Focus on diversity, equity, and inclusion: Diversity, equity, and inclusion (DEI) will continue to be a key focus for many organizations in the coming years, and HR analytics will play a critical role in measuring and improving DEI outcomes. Organizations will use data to track diversity metrics, such as gender and race/ethnicity, and to identify areas where they need to improve.

7 Conclusion

Human Resource Analytics has become a significant practice in enhancing human resource management in today's organizations. It allows HR managers and professionals to leverage data on the workforce to support decision-making, enhance employee performance, engagement, and retention, and boost organizational performance. The research demonstrates that HR analytics is not only concerned with gathering data but also assists the analytical process of employee-related data to form effective HR policies and practices. This paper shows that HR analytics can be applied to many HR processes, such as recruiting, talent development, performance appraisal, succession management, employee health and workforce planning. Different types of analytics like descriptive, diagnostic, predictive and prescriptive can be used by organizations to gain insights into workforce trends, identify problems and overcome challenges in less time. The case studies suggest that companies can use HR analytics to minimize attrition, enhance productivity, detect skills shortages, and improve HR initiatives. There can be several implications of HR analytics on data quality, privacy, fairness, and ethical use of employee data. Problems such as data integration, the lack of analytical expertise, cost of implementation and potential bias in decision-making should be removed for successful implementation. As a result, HR analytics should be used in a transparent and ethical way to maintain trust among employees. It can be considered as a key element for evidence-based HR management to align HR practices with business goals and anticipate future talent needs. The adoption of new technologies such as artificial intelligence, machine learning, natural language processing and data visualization will make HR analytics more important in informing strategic HR decisions and enhancing performance.

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