BRIEF ANALYSIS: RECENT TRENDS AND APPLICATIONS OF BIG DATA IN HUMAN RESOURCES MANAGEMENT

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Abstract: The advent of big data has transformed the way organizations approach to managing Human Resources. Big data analytics can provide valuable insights that help HR professionals make informed decisions about recruitment, retention, training, and development. This article explores the role of big data in HRM (Human Resource Management), its impact on organizational performance, and the challenges organizations face in adopting big data analytics. The use of big data in HRM has a significant impact on organizational performance, leading to improved productivity, employee satisfaction, and profitability. However, organizations need to overcome several challenges in adopting big data analytics, including the lack of skilled professionals and the quality of data. By addressing these challenges, organizations can leverage big data to improve their HR strategies and achieve their business goals. In recent years, the advent of big data has transformed the way organizations approach HRM. Big data analytics provide valuable insights that help HR professionals make informed decisions about recruitment, retention, training, and development. This research article explores the role of big data in HRM, its impact on organizational performance, and the challenges organizations face in adopting big data analytics.

Keywords: Big data, HRM, HR professionals, Recruitment, Retention, Training

Introduction:

The field of HRM has evolved significantly over the past few decades. HR professionals have shifted their focus from traditional HR practices to more strategic and data-driven approaches. With the advent of big data analytics, organizations can now collect and analyze vast amounts of data to gain insights into their employees' behavior, preferences, and performance. Big data analytics in HRM can provide valuable insights that help organizations make informed decisions about recruitment, retention, training, and development [1].
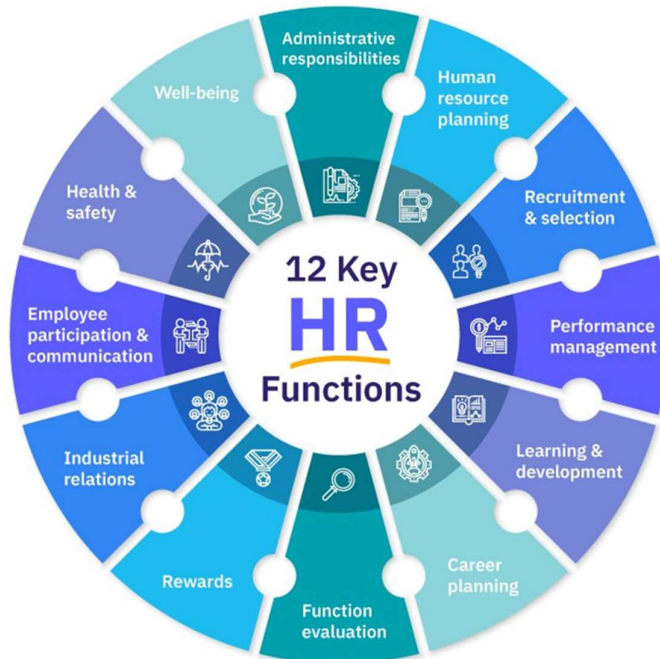
Fig. 1. The 12 key functions of Human Resource Management (ref. 2).

Human Resource Management (HRM) is a critical component of any organization. The traditional approach to HRM involved manual processes, which often lacked objectivity and data-driven decision-making. However, with the advent of big data, organizations can now leverage vast amounts of data to gain insights into their employees' behavior, preferences, and performance [3]. Big data analytics in HRM can provide valuable insights that help organizations make informed decisions about recruitment, retention, training, and development. This research article explores the role of big data in HRM, its impact on organizational performance, and the challenges organizations face in adopting big data analytics. In HRM, big data analytics can help organizations identify patterns in employee behavior and performance, such as absenteeism, turnover, and productivity [4].

Fig. 2. The data processing step by HR professionals in Human Resources Management (ref. 5).

Literature Review:

Several studies have explored the role of big data in HRM. A study by Chen and Huang (2018) found that big data analytics can help organizations identify the characteristics of top-performing employees and use this information to inform their recruitment and selection processes [7]. Similarly, a study by Wang, Liu, and Liao (2019) found that big data analytics can help organizations improve their employee engagement and retention strategies. A study by Deloitte (2017) found that organizations that use big data analytics in HRM have a 120% higher likelihood of achieving their organizational goals than those that do not use analytics [8]. Similarly, a study by Bersin by Deloitte (2018) found that companies that use big data analytics in HRM have a 22% higher revenue growth and a 23% higher profit margin than those that do not use analytics. The study by Budhwar and Debrah (2013) found that organizations face significant challenges in integrating big data analytics into their HRM practices due to the lack of skilled professionals and the complexity of the technology [9].

In a study of Raj Sinha(2018)[1], Data mining refers to extracting or mining knowledge from large amounts of data. This large amounts of data comes from Big Data. Data Mining uses tools such as statistical models, machine learning, and visualization to "Mine" (extract) the useful data and patterns from the Big Data, whereas Big Data processes high-volume and high-velocity data, which is challenging to do in older databases and analysis program. In a study of Raj Sinha(2019)[2], Data Warehouse is centralized data repositories storage for analytical and reporting purposes but Big data is the data which is in enormous form on which technologies can be applied. Sinha Raj. (2019)[3] has said to find predefined relationships in Big Data RDBMS plays a major role.

The Role of Big Data in HRM:

Big data analysis refers to the large and complex data that can be analyzed to reveal patterns, trends, and insights. In HRM, big data analytics can help organizations identify patterns in employee behavior and performance, such as absenteeism, turnover, and productivity. HR professionals can make decisions about the recruitment process, training, and development of human resource on the basis of big data analysis [10].

In recent time, big data analytics is very important role in HR department of any organization that want to make data-driven decisions about their human resources strategies. It can help HR professionals to recognize patterns in employee behavior and performance, such as absenteeism, turnover, and productivity, and use this information to make informed decisions about recruitment, retention, training, and development [4].

Fig. 3. Applications of Big data science in HR data analytics (ref. 11).

One of the significant advantages of big data analytics in HRM is the ability to identify the characteristics of top-performing employees. By analyzing large amounts of data, organizations can identify the skills, experience, and attributes that are most critical to success in specific roles. This information can then be used to inform recruitment and selection processes and ensure that organizations are hiring the best candidates for the job. Another advantage of big data analytics in HRM is the ability to improve employee engagement and retention strategies. By analyzing data on employee satisfaction, organizations can identify the factors that are most important to employee engagement and take steps to address any issues. For example, organizations can use data to identify which benefits and perks are most important to employees and adjust their compensation and benefits packages accordingly.
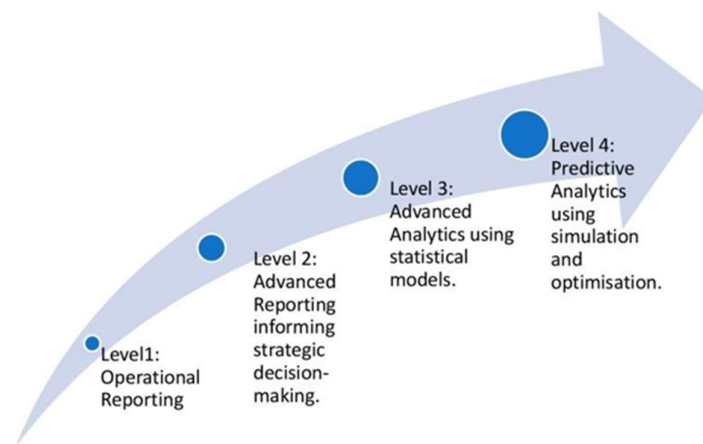

Fig. 4. Levels of big data analysis in HR data analytics (ref. 12)

The input data or store data are use to provide targeted training and development opportunities to employees who need it most. Additionally, big data analytics can help organizations to

identify employee's potential and create development plans to help them reach their full potential. Big data analysis of HRM data can be used in most of the functions of HR departments such as [13]:

✓ Recruitment and selection

✓ Training and development

✓ Job analysis and Job design

✓ Job evaluations and wage and salary administration

✓ Manpower planning

✓ Performance measurements

✓ Employee retention

✓ Career and succession planning

✓ Incentives and benefits

✓ Maintaining employee records

✓ Legal compliance

Overall, the role of big data analytics in HRM is critical for organizations that want to make decisions about their human resources strategies. By leveraging big data, organizations can improve recruitment and selection processes, reduce employee turnover, increase productivity, and improve overall employee satisfaction. The using of big data analytics can help organizations identify the characteristics of top-performing employees and use this data to their recruitment and selection processes. Similarly, by analyzing data on employee turnover, HR professionals can identify the reasons behind turnover and take steps to address the underlying issues. Big data analytics can also help organizations identify skill gaps among employees and design targeted training programs [14].

Analysis of the Impact of Big Data on HRM:
The use of big data analytics in HRM has a significant impact on organizational performance. By leveraging big data, organizations can improve their recruitment and selection processes, reduce employee turnover, increase productivity, and improve overall employee satisfaction. Moreover, big data analytics can help organizations align their HR strategies with their overall business goals, leading to improved performance and profitability. One of the key benefits of Big Data analysis in HRM is its ability to provide predictive analytics. By analyzing large datasets, organizations can identify patterns and trends that can help predict future outcomes. For example, Big Data analysis can help predict which employees are most likely to leave an organization, allowing the organization to take proactive steps to retain them. Similarly, it can help predict which candidates are most likely to succeed in a given role, allowing the organization to make more informed hiring decisions. Another benefit of Big Data analysis in HRM is its ability to help organizations identify and address areas of concern. For example, it can help identify patterns of employee dissatisfaction or turnover, allowing the organization to

address these issues before they become more significant problems. Similarly, it can help identify areas where employees may need additional training.
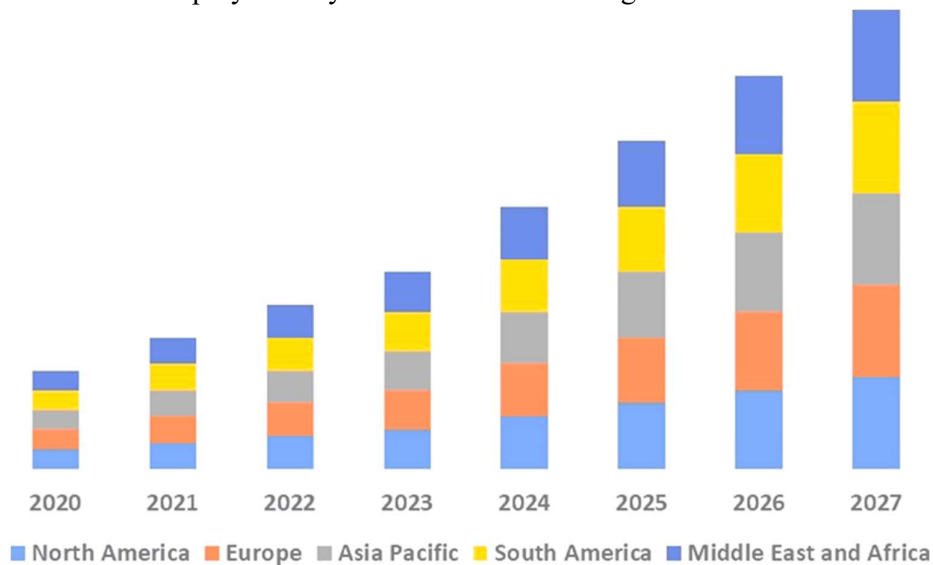

Fig. 5. Human Resources (HR) Big data Market Industry Trends and Forecast to 2028 (ref. 15).

Overall, the analysis of Big Data in HRM has the potential to provide significant benefits to organizations, but it must be done carefully and ethically to ensure that it does not perpetuate bias or violate employee privacy. Organizations that use Big Data analysis in HRM must take steps to ensure that their data is accurate, unbiased, and secure, and they must be transparent about how they are using employee data.

Challenges in Adopting Big Data Analytics in HRM:
Despite the many benefits of big data analytics in HRM, there are several challenges that organizations face in adopting this technology. One of the main challenges is the lack of skilled professionals who can analyze and interpret the data. HR professionals need to have a deep understanding of data analytics tools and techniques to make informed decisions based on the data [16]. The adoption of Big Data Analytics in Human Resource Management (HRM) can bring significant benefits to an organization, including better hiring decisions, increased employee engagement, and improved retention rates. However, there are also several challenges that organizations may face when implementing Big Data Analytics in HRM. Some of these challenges include [17]:

Data Quality: One of the significant challenges in adopting Big Data Analytics in HRM is ensuring the quality of the data. HR data is often scattered across different systems, and the accuracy of the data may vary. Therefore, organizations need to ensure that the data they use for analysis is accurate and up-to-date.
Data Privacy: With the adoption of Big Data Analytics in HRM, organizations need to ensure that they comply with data privacy laws and regulations. HR data is sensitive, and privacy

concerns can arise if employees' personal information is misused or shared without their consent.

Skill Gap: The implementation of Big Data Analytics in HRM requires specialized skills and expertise in data analysis, statistics, and programming. Organizations may need to invest in training employees or hiring new staff with the required skills to ensure the success of the implementation.

Resistance to Change: It is a common challenge that organizations face a problem when implementing new technologies or processes. Some employees may be resistant to the adoption of Big Data Analytics in HRM, fearing that it may replace their roles or that the data may be used against them.

Integration with Existing Systems: Integrating Big Data Analytics with existing HR systems can be a challenge. Organizations need to ensure that the new system works seamlessly with the existing systems to avoid data silos.

Cost: Adopting Big Data Analytics in HRM requires a significant investment in technology, software, and expertise. Organizations need to weigh the costs of implementation against the potential benefits to determine if it is a worthwhile investment.

Organizations need to be aware of these challenges and take steps to address them before adopting Big Data Analytics in HRM. With careful planning and execution, organizations can leverage Big Data Analytics to make informed decisions, improve employee engagement, and drive business success.

Conclusion:

Big data analytics has transformed the way organizations approach HRM. By leveraging big data, HR professionals can make informed decisions about recruitment, retention, training, and development. The use of big data analytics in HRM has a significant impact on organizational performance, leading to improved productivity, employee satisfaction, and profitability. Data quality, data privacy, skill gaps, resistance to change, integration with existing systems, and cost are some of the challenges that organizations face when implementing Big Data Analytics in HRM. Organizations need to address these challenges and take necessary steps to ensure the success of the implementation. There are some challenges and despite these challenges, the adoption of Big Data Analytics in HRM can bring significant benefits to organizations. It can improve decision-making, reduce the time and costs associated with HR processes, and increase employee satisfaction and engagement.

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