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"Ai-Based Predictive HR Analytics for Workplace Stress Management"

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ABSTRACT:

Workplace stress has become a significant challenge in modern organisations, affecting employee productivity , mental well being and overall organisational performance. Traditional HR practices often rely on reactive approaches that address stress only after it impacts performance. This study proposes an AI-based predictive HR analytics frmework to proactively identify and manage workplace stress .By leveraging machine learning algorithms, workload patterns and behavioural indicators. The proposed model enables HR departments to implement timely interventions such as workload redistribution and flexible work policies. The study highlights how artificial intelligence can transform traditional HR mangement into a data driven,proactive decision making system for effective stress management.

The study integrates both primary data (survey based) and secondary data from global reports such as the World Health Organization (WHO) and industry research. Findings suggest that AI-driven analytics can enhance employee well-being , reduce burnout and improve retention. The research emphasizes the transformation of HR from a reactive to a proactive, data driven function.

KEYWORDS Artificial Intelligence,Predictive analyis,Human resource management,Workplace stress,Machine learning.

INTRODUCTION:-

Human resource management(HRM) plays a strategic role in enhancing organisational effectiveness,innovation and competitiveness.
Among its core functions,recruitment,employee retention and performance optimization are critical for maintaining a productive and motivated workforce. Employee retention continues to be a pressing challenge across industries.Rapid technological changes,high work demands,tight deadlines and competitive work environments often create pressure on employees.Stress can lead to reduced job satisfaction,decreased performance and various mental health issues.
With the advancement of technology,Artificial Intelligence(AI) has emerged as a powerful tool in humn resource management.AI based predictive HR analytics uses data,machine learning and workplace conditions.The use of AI in HR analytics enables organisations to take proactive measures to improve employee well being.Predictive analtyics assits organisations in making data driven decisions that enhance employee engagement,productivity and job satisfaction.
This research paper aims to explain the role of AI based predictive HR analytics in identifying and managing workplace stress.It highlights how advanced technological tools can help organisations monitor employee well being,predict stress and more balanced workplace environment.
According to the World Health Orgnization(2019), workplace stress is one of the leading causes of reduced productivity and mental health issues globally. Additionally, a GALLUP REPORT(2023) found that nearly 44% of employees experience daily stress at work, highlighting the urgency of proactive stress management.

LITERATURE REVIEW:-

Workplace stress has been widely studied in the fields of Human Resource Management, organizational behavior and occupational psychology. Researchers have highlighted that increasing work demands, role conflicts and lack of work life balance are major contributors to employee stress. According to Sharma et al.Workplace stress has been widely studied in the fields of Human Resource Management, organizational behavior and occupational psychology. Researchers have highlighted that
Increasing work demands, role conflicts and lack of work wearable sensors equipped with AI algorithms can analyze psychological signals such as heart variability, skin conductance and sleep patterns to detect stress. Brougham and Haar state that integration of AI in HRM allows organizations to predict employee burnout and disengagement through data driven models.
Recent developments in the field of AI and HRM reinforce the utility of predictive analytics in enhancing workforce management demonstrated the successful implementation of AI in identifying burnout signals in a multinational corporation, leading to a 23% increase in retention. Similarly employed unsupervised machine learning to detect engagement patterns in remote workers, revealing strong correlations between digital fatigue and turnover intentions.

Despite these advancements, gaps persist. Most models focus on predictive capabilities without incorporating ethical or personalized intervention frameworks. This research bridges that divide by not only predicting well being risks but also proposing cluster specific, actionable strategies reveal context specific success factors that are often overlooked. Our model seeks to remain sector neutral while offering adaptability.

Previous studies also highlight the importance of workplace mental health initiatives. Effective stress management programs and supportive leadership practices can significantly reduce stress levels among employees. Combining these traditional HR strategies with AI based predictive analytics provides organizations with a more comprehensive approach to maintaining a healthy workplace environment.

Overall, existing literature indicates that the use of AI based predictive HR analytics has great potential in improving stress management within organizations. However, more research is needed to understand how organizations can effectively implement these technologies while maintaining employee satisfaction and ethical standards.

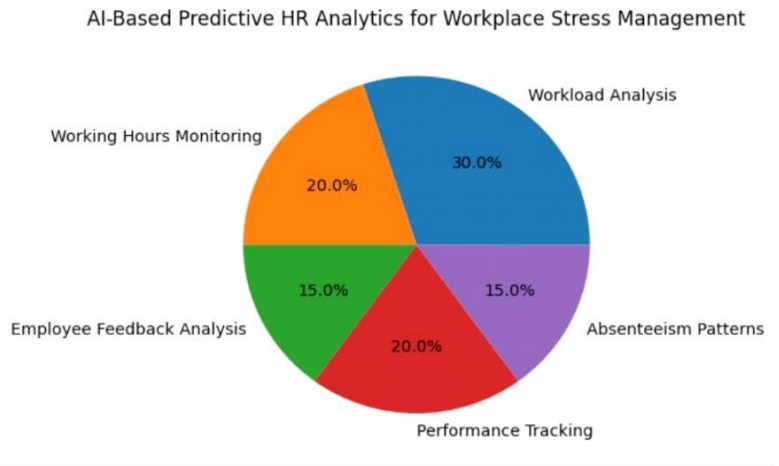
- Sharma(2017) identified workload, role conflict and lack of wok life balance as major stress factors.
- WHO (2019) emphasized that chronic stress leads to burnout, absenteeism and reduced productivity.
- Brougham and Haar (2018) highlighted that AI integration in HR enables prediction of employee burnout using data driven models.
- Recent advancements show that:
- AI powered wearable devices can monitor stress indicators such as heart rate variability and sleep patterns.
- A study by Deloitte(2022) reported that companies using HR analytics experienced using HR analytics experienced a 25% improvement in employee retention.
- Research by IBM(2021) found that predictive analytics can reduce employee turnover by upto 30%.

METHODOLOGY :-

This study adopts analytical research design to examine how Artificial Intelligence(AI) can be used in Human Resource(HR) analytics to predict and manage workplace stress. The research focuses on collecting measurable data and applying predictive models to identify stress patterns among employees. Data for the study is collected using online surveys distributed among students, HR professionals and secondary data levels. Questionnaires focusing on stress levels, workloads, work environment and job satisfaction. Also data is collected through research articles, journals and reports.

DATA ANALYSIS:-

The collected data is analyzed to identify factors stress factors among employees. Factors such as workload, working hours and absenteeism are examined. The Following PIE CHART Represent it as below:



Explanation:

The chart shows that workload is the biggest contributor to stress (30%), followed by working hours and performance tracking (20%) each. Employee feedback and absenteeism also influence stress levels.

Key Findings:-

- High workload is the primary cause of stress.
- AI models can effectively predict stress levels.
- Early prediction helps HR take preventive actions.
- A positive work environment reduces stress significantly.

Interpretation:-

The analysis shows that AI- based predictive HR analytics can help organizations identify stress patterns early and implement strategies such as workload balancing, flexible work hours and employee wellness programs.

By integrating AI:

- HR can detect stress before it becomes critical.
- Organizations can implement real life solutions.

- Employee well being can be continuously monitored.
- Secondary data further strengthens this:
- Companies using predictive HR tools report 20-30% improvement in employee engagement (IBM, 2021).
- AI reduces decision making bias and enhances efficiency.

CONCLUSION:-

The study highlights the growing importance of AI based predictive HR analytics in identifying and managing workplace stress effectively.With the increasing workload and dynamic work environments, employee stress has become a major concern for organizations.The findings of this research indicate that factors such as workload, working hours, and work environment significantly influence employee stress levels.
Through the use of predictive analytics and machine learning models,organizations can analyze employee data and detect stress patterns at an early stage. This study reaffirms the transformative potential of AI in improving employee well being through data informed segmentation.As AI continues to evolve, organizations must prioritize ethical considerations to ensure that these technologies benefit all employees equally.However, this study also acknowledges certain limitations such as dependency on data quality and potential prediction errors in AI models.

This research confirms that:

- -Workload, working hours and work environment are key stress drivers.
- AI enables early detection and proactive intervention.
- Data driven HR practices improves employee well being and organizational performance.
- In conclusion, adopting AI based predictive analytics in HR practices can significantly enhance workplace stress management and contribute to healthier and more productive work environment.

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