MANUFACTURING MANAGEMENT SYSTEM: HUMAN RESOURCES 4 (GRIEVANCE MANAGEMENT, EMPLOYEE ENGAGEMENT, EMPLOYEE COMMUNICATION, AND WORKFORCE ANALYTICS) WITH ADAPTIVE LEARNING AND DEVELOPMENT PATHWAY USING TENSORFLOW

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Introduction

This project is about making a system to help manage people better in a manufacturing company. It focuses on four main things: grievance management, employee engagement, employee communication, and workforce analytics. The goal is to improve how workers feel and perform at work. The system uses TensorFlow, a machine learning tool, to create a smart learning path for each employee. This means the system can help workers grow and learn based on what they need and how they perform. It also helps managers understand what's going on with their team by using data and predictions. Overall, this system tries to make HR work better by using technology in a simple and helpful way.

Methods

To develop the Manufacturing Management System, we started by focusing on four key areas of human resources: grievance management, employee engagement, employee communication, and workforce analytics. We collected data from various sources like employee surveys, feedback forms, HR records, and performance reports to understand common issues and work behavior. Then, we used TensorFlow, a machine learning tool, to build models that could learn from this data. These models help predict employee concerns, suggest better ways to communicate, and create personalized learning paths for each employee. The system gives each person a custom development plan that updates over time based on their progress. We also created a simple and easy-to-use interface for both HR managers and employees. HR managers can view reports and recommendations, while employees can check their learning plans and give feedback. Finally, we tested the system with a small group of users and collected their feedback to improve the design and accuracy of the system.

Results

After testing the Manufacturing Management System with a small group of employees and HR staff, we saw some positive results. The grievance management feature helped HR respond to employee issues faster and more effectively.
Employee engagement also improved, as more people started participating in company activities and giving feedback. The communication tool made it easier for staff and managers to share updates and have better conversations. The machine learning models in TensorFlow were able to predict some problems, like when employees might leave or when performance might drop, which helped HR take action early. The adaptive learning paths were also useful—employees said the training suggestions felt more relevant to their roles and helped them grow.
Overall, the system made HR processes smoother, more organized, and more personalized, and most users said it was easy to use.

Discussion

The results of our system show that combining machine learning with human resource management can really help improve how a company supports its employees. By focusing on important areas like grievance handling, employee engagement, communication, and workforce analytics, the system was able to make HR processes more efficient and employee-focused. One of the biggest advantages was the use
of TensorFlow, which allowed the system to learn from employee data and adjust training paths based on each person's needs. This made learning and development more personal and effective. Also, being able to predict issues like low performance or unhappy workers gave HR time to act before problems got worse.
However, since we only tested it with a small group, we know the system still needs more testing on a larger scale. In the future, adding more features like voice recognition or deeper analytics could make it even better. Overall, the project shows that smart technology can really help build a better work environment in manufacturing.

Keywords:

Human Resource Management, Manufacturing System, Grievance Management, Employee Engagement, Employee Communication, Workforce Analytics, Adaptive Learning, Machine Learning, TensorFlow, Employee Development, HR Technology, Predictive Analytics, Smart HR Systems.