Executive Summary

Employee Turnover Analysis & Predictive Modeling — Salifort Motors

1. Overview

Salifort Motors has experienced an increase in employee turnover in recent years. High turnover negatively impacts productivity, increases recruitment and training costs, and disrupts team continuity. This project analyzes historical HR data to identify **key drivers of employee turnover** and develops a **predictive model** to proactively detect employees who may be at risk of leaving.

2. Project Objective

The primary objectives of this analysis were to:

1. Understand **why employees leave** Salifort Motors.
2. Identify **which employees are most likely to leave** using predictive modeling.
3. Provide **actionable insights** and **strategic recommendations** to reduce turnover and improve employee retention.

3. Key Insights

1. Employee Satisfaction is the Most Critical Factor

Low satisfaction is the strongest predictor of turnover. Employees with lower satisfaction levels had a significantly higher probability of leaving the company.
Implication: Improving employee satisfaction should be a top priority for retention efforts.

2. Tenure Significantly Influences the Likelihood of Leaving

Employees with **3–5 years** of tenure are at the highest risk of turnover. This period often represents a career inflection point where employees expect advancement or greater opportunities.
Implication: Mid-tenure employees should be proactively supported with growth and development initiatives.

3. Workload and Burnout Contribute to Turnover

High average monthly hours, multiple concurrent projects, and consistently high performance evaluations collectively indicate **work overload**. Employees with these characteristics exhibit much higher turnover rates.
Implication: Workload balancing and realistic performance expectations are crucial for preventing burnout.

4. Salary Level Has a Secondary Impact

While lower salaries are associated with higher turnover, salary alone is **not a primary driver** of attrition. Dissatisfied or overworked employees will leave regardless of pay level.
Implication: Compensation adjustments are beneficial but will not solve turnover without addressing satisfaction and workload concerns.

4. Predictive Model Performance

A **Random Forest classification model** was developed to predict turnover risk with high accuracy.

Model Results:

- **Accuracy:** 99%
- **Precision (Left):** 98%
- **Recall (Left):** 96%
- **F1-Score (Left):** 97%
- **ROC-AUC:** 0.992

These results demonstrate that the model can reliably distinguish between employees who stay and those who leave.
It can be deployed as an operational HR tool to flag at-risk employees before they disengage or resign.

5. Strategic Recommendations

Based on the findings, the following actions are recommended:

1. Elevate Employee Satisfaction

- Conduct regular satisfaction surveys
- Address workplace concerns promptly
- Introduce recognition programs
- Strengthen communication between employees and management

Improving satisfaction will directly reduce the strongest driver of turnover.

2. Support Mid-Tenure Employees

- Implement structured career development paths
- Offer training and upskilling programs
- Create opportunities for internal mobility and advancement

Targeted support during this critical tenure window will reduce attrition significantly.

3. Balance Workloads to Prevent Burnout

- Redistribute workloads and projects more effectively
- Monitor overtime hours
- Hire additional staff in high-demand functions
- Encourage a healthy work-life balance

Burnout prevention will improve both retention and productivity.

4. Use the Predictive Model for Proactive Retention

- Review risk predictions monthly
- Flag high-risk employees for follow-up
- Conduct stays interviews
- Adjust workload, role, or development plans as needed

This shifts HR strategy from reactive to **data-driven and proactive**.

6. Conclusion

This analysis reveals that employee turnover at Salifort Motors is primarily driven by satisfaction levels, workload intensity, and tenure patterns. The predictive model developed for this project demonstrates exceptional accuracy and provides a powerful tool for early detection of employees at risk of leaving.

By focusing on satisfaction improvement, career development initiatives, and workload management—and by leveraging predictive analytics—Salifort Motors can significantly reduce turnover, enhance employee engagement, and strengthen organizational stability.