TEAM VEGA

PROJECT PRESENTATION ON DATA-DRIVEN EMPLOYEE PERFORMANCE AND RETENTION PLATFORM FOR 10ALYTICS.

DATE: JANUARY 2025

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INTRODUCTION

The data-driven employee performance and retention platform is designed to empower 10alytics with actionable insights to improve employee retention and optimize performance management.

Leveraging advanced data analytics and machine learning, the platform addresses pressing business challenges such as high attrition rates and declining employee performance. This initiative aims to shift HR operations from a reactive to a proactive approach, ultimately enhancing employee satisfaction and organizational success.

ABOUT THE TEAM

We are **Team Vega,** a dedicated and multidisciplinary team committed to transforming employee management at **10alytics** through the development of the **data-driven employee performance and retention platform.** Combining expertise in business analysis, agile/scrum project management, data analytics, machine learning, and human resources, our mission is to deliver a cutting-edge solution that empowers HR teams with actionable insights to reduce attrition, optimize performance, and foster employee satisfaction.

With a collaborative approach and a passion for innovation, Team Vega is here to drive meaningful change and support the company's growth objectives.

BACKGROUND

Employee turnover has far-reaching consequences, including increased recruitment costs, operational disruptions, and loss of institutional knowledge. Current HR practices at **10alytics** are largely reactive, addressing issues only after employees leave or performance deteriorates. This lack of foresight limits the company's ability to mitigate risks effectively.

The development of a predictive analytics platform will enable **10alytics** to gain deeper insights into employee behavior, forecast risks, and implement timely interventions, ensuring sustained organizational growth and employee well-being.

DATA COLLECTION AND PROCESSING

Data Sources:
The platform utilizes multiple data sources to ensure comprehensive insights, including:

- **Employee Records:** Tenure, job roles, salary progression, promotions, and department affiliations.
- **Performance Data:** Historical performance reviews, project evaluations, and departmental benchmarks.
- **Engagement Metrics:** Survey responses, feedback sessions, and employee Net Promoter Scores (eNPS).
- **Attrition Data:** Historical records of employee exits and associated reasons.

Preprocessing Steps:

- **Data Cleaning:** Address missing values, correct inconsistencies, and standardize formats for uniformity.
- **Feature Engineering:** Generate predictive variables such as engagement trends, promotion frequency, and cross-department interactions.
- **Data Transformation:** Normalize and encode categorical data for compatibility with machine learning models.
- **Integration:** Consolidate structured and unstructured data into a unified analytical dataset.

EXPLORATORY DATA ANALYSIS (EDA)

Key Insights Derived:

Attrition Trends: Departments with high workload intensity exhibited the highest turnover rates.

Correlation Analysis: Engagement levels and stagnated salary growth were strong predictors of attrition risk.

Performance Insights: Employees with declining performance scores often displayed early signs in engagement metrics.

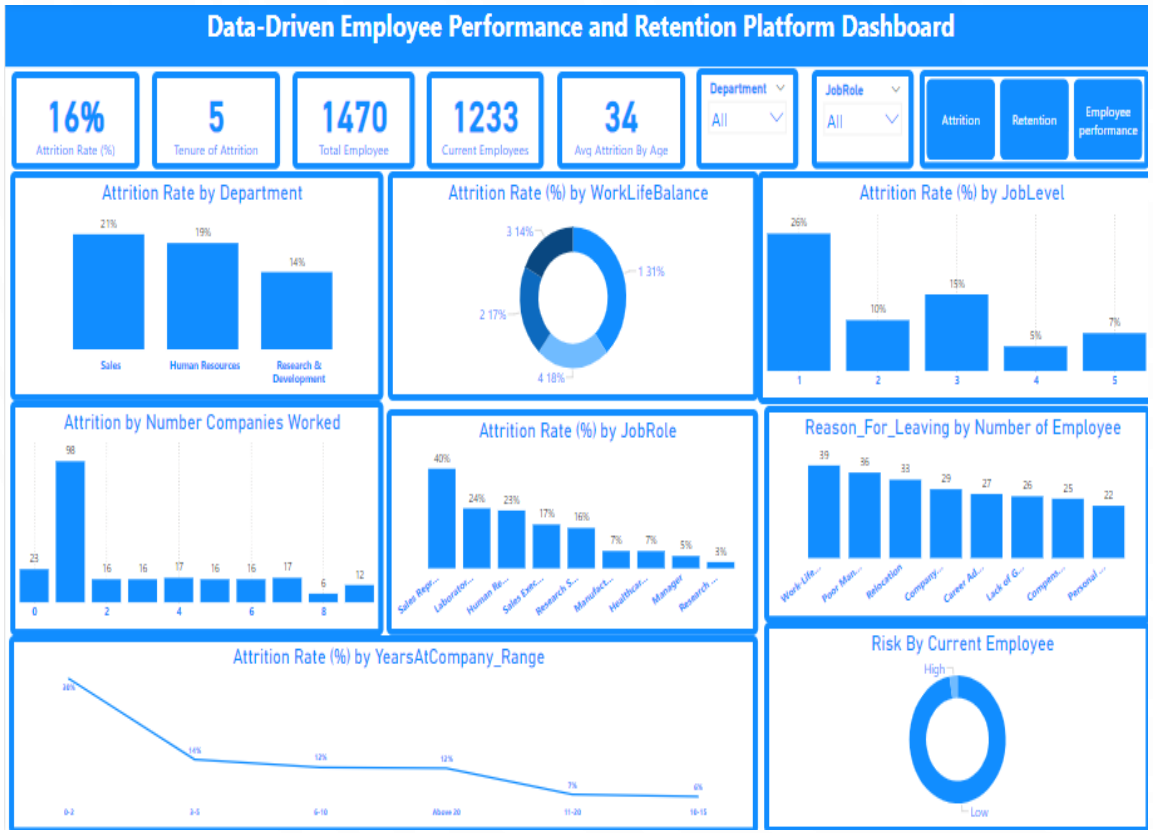
Visual Representations:

Attrition Heatmap: Visualizing turnover by department and tenure.

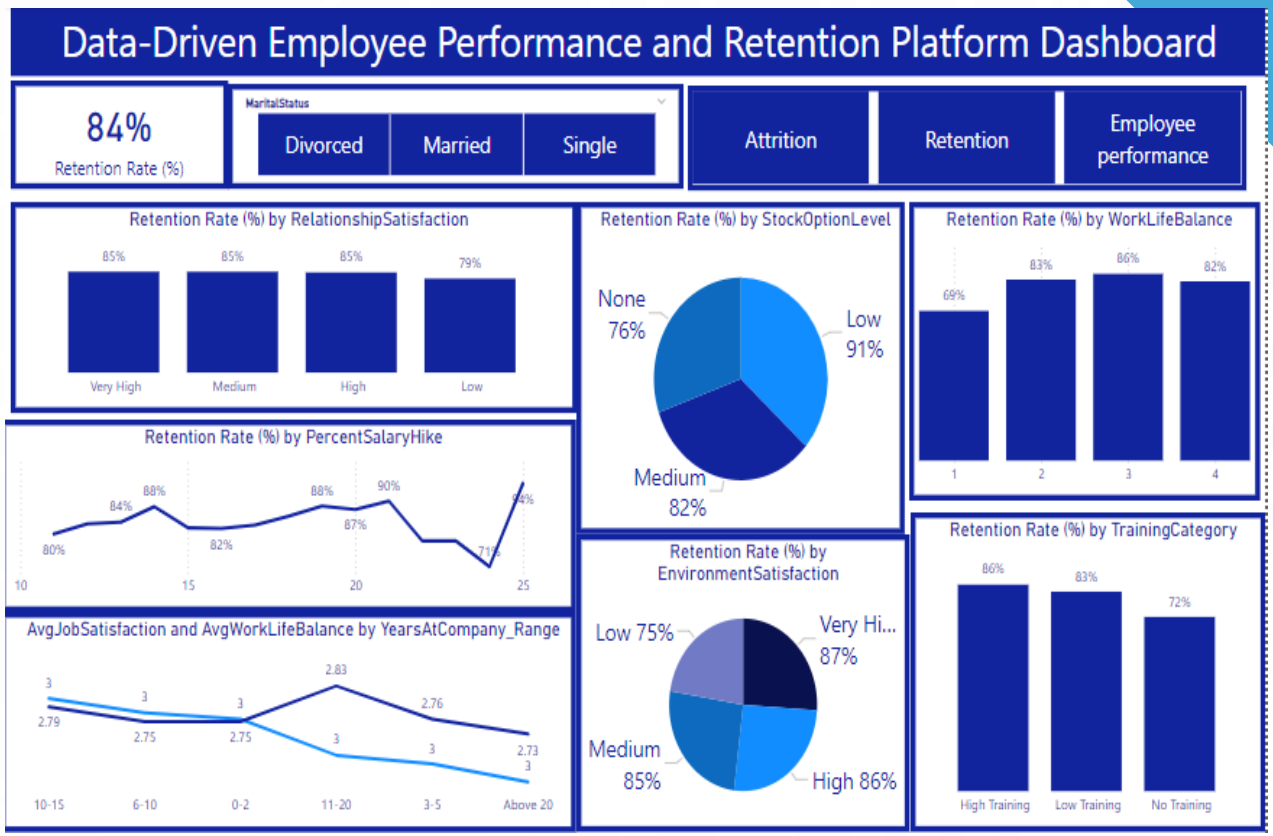
Correlation Matrix: Highlighting relationships between predictors (E.G., Salary growth and attrition risk).

Engagement Vs. Performance Scatterplot: Showing patterns of declining engagement correlating with performance dips.

VISUAL REPRESENTATIONS

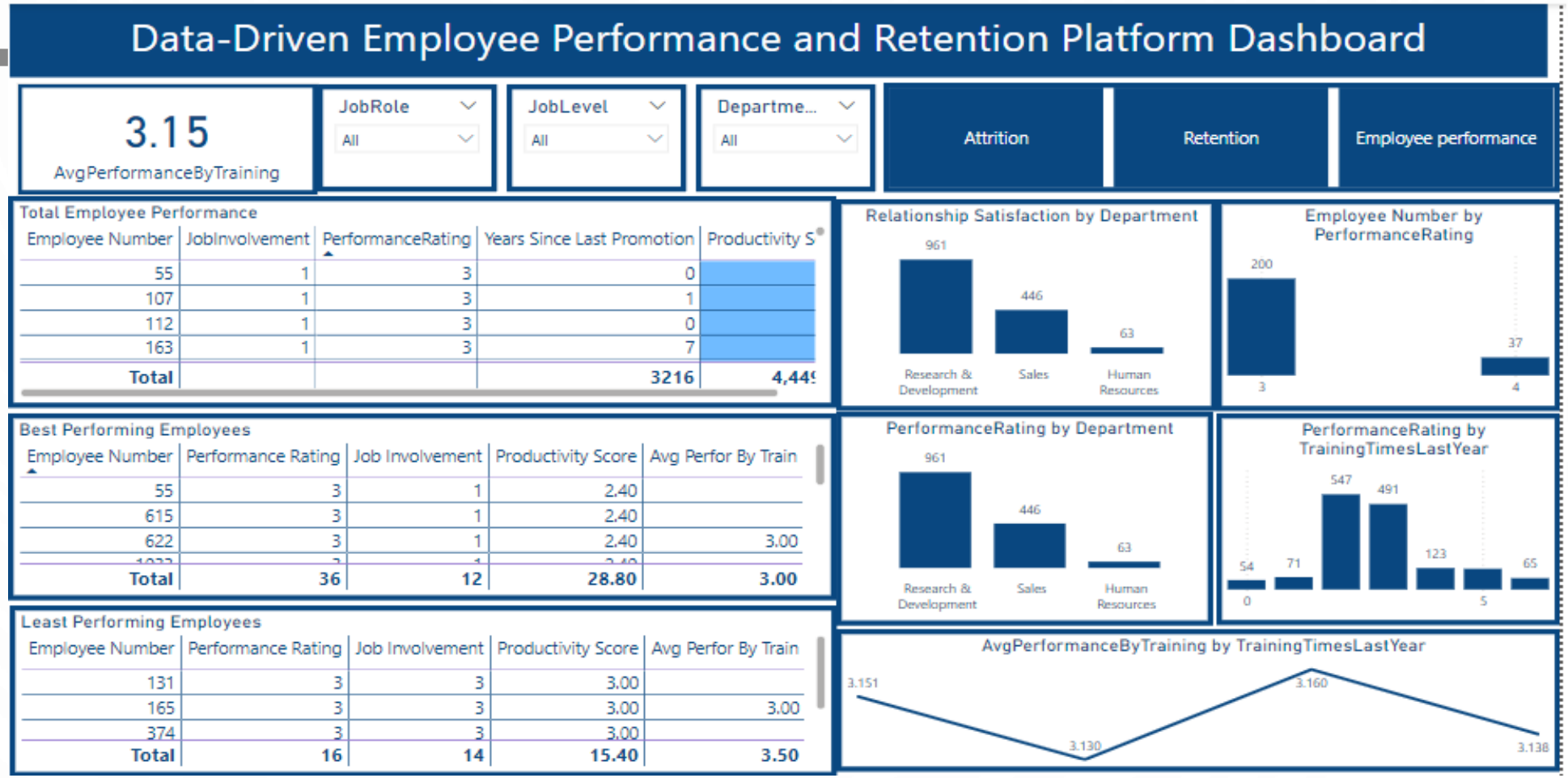


Attrition Dashboard



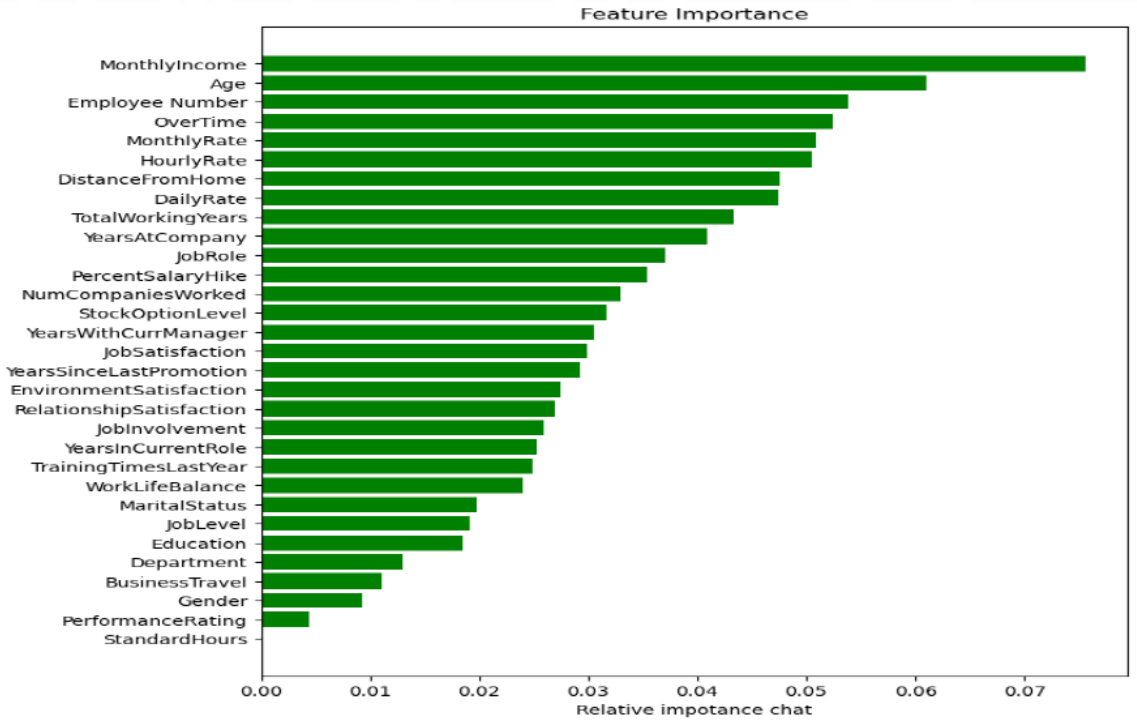
Retention Dashboard

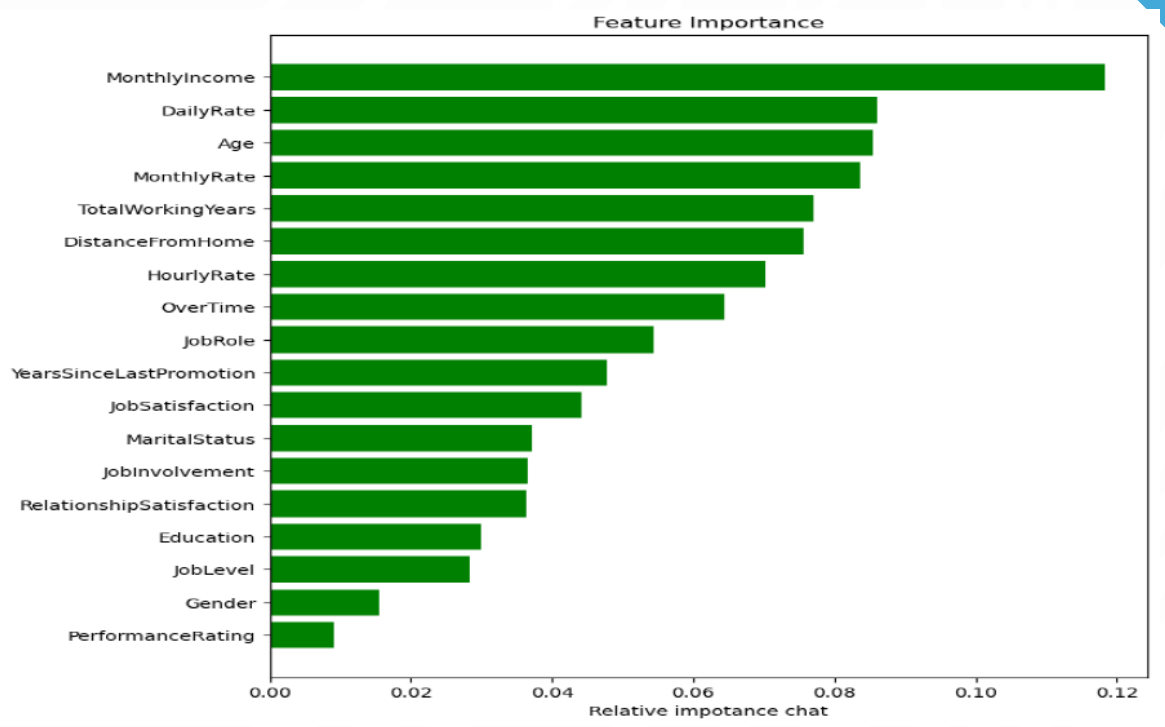
VISUAL REPRESENTATION CONTD.



Performance Dashboard

ORDER OF INFLUENCE ON ATTRITION & MODEL FEATURES





CORRELATION MATRIX

The analysis reveals that attrition is negatively correlated with the following factors:

Age

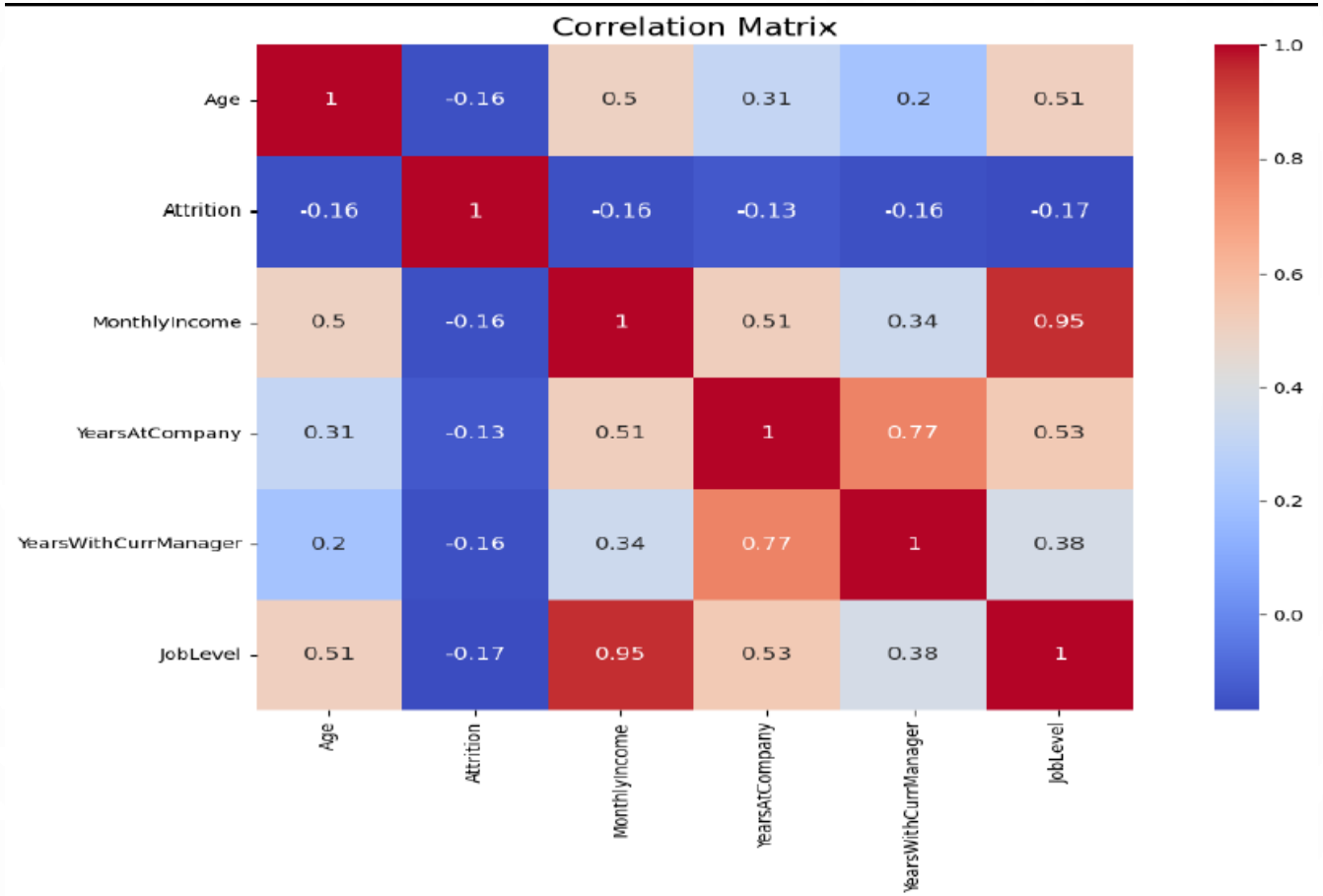
Monthly income

Years in the company

Years with the current manager

Job level

This means that as these factors increase, the likelihood of attrition decreases. In other words, older employees, those with higher monthly income, longer tenure, longer time with their current manger, and higher job levels tend to have lower rate of attrition



METHODOLOGY

The Platform Development Follows A Structured And Iterative Methodology

Analytical Methods:

Attrition Prediction: Logistic Regression, Random Forest, and Gradient Boosting to identify at-risk employees.

Performance Prediction: Time-series modeling (arima, lstm) to forecast individual and team performance trends.

Recommendation System: Collaborative filtering to generate personalized retention strategies.

Platform Development Tools:

Data Analytics: Python (pandas, numpy, scikit-learn), SQL for data querying.

Visualization: Tableau and Power BI for interactive dashboards.

Machine Learning: Tensorflow, Keras for predictive model training and evaluation.

RESULT

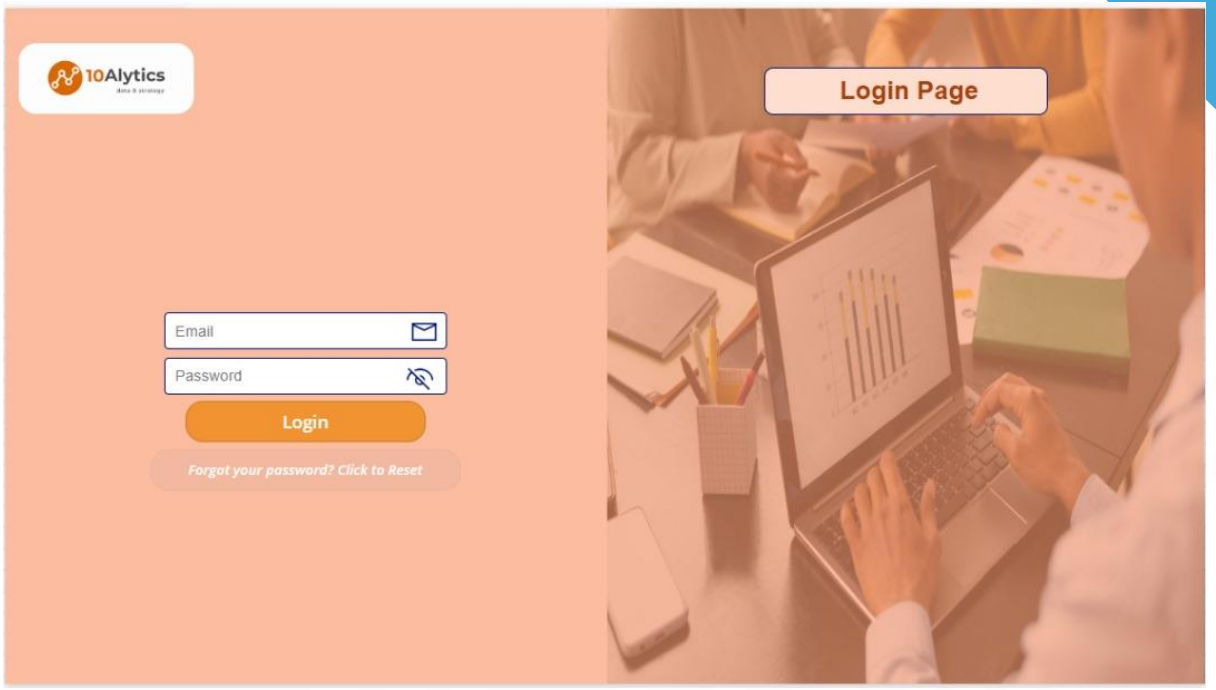
MODEL PERFORMANCE: The most suitable and selected model for the project is Logistic Regression. The Confusion Matrix for the Logistic Regression Model provides more insights after cross validation:-

- **False Negative (FN) rate: 2.27% (i.e., 2.27% of actual attritors were misclassified as retainers)**
- **True Positive (TP) rate: 70.5% (i.e., 70.5% of actual attritors were correctly classified as attritors)**
- **Average Recall for attrition (class 1): 70%**
- **Average Recall for retention (class 0): 71%**

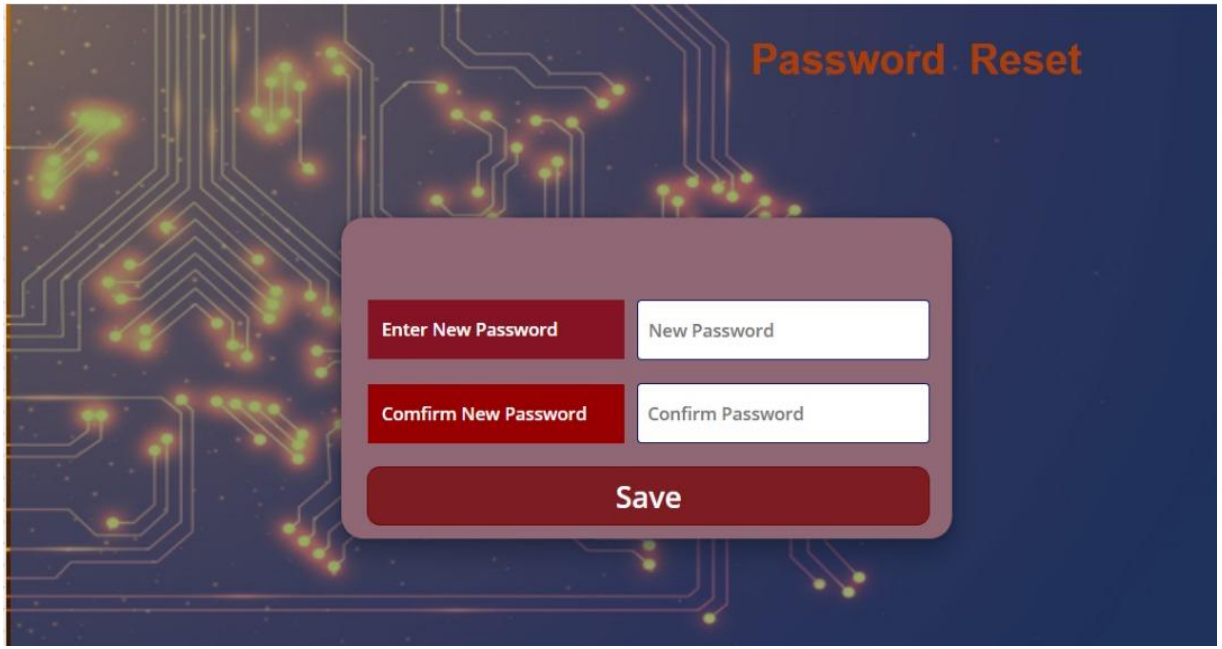
Further work is being done to improve on the model performance.

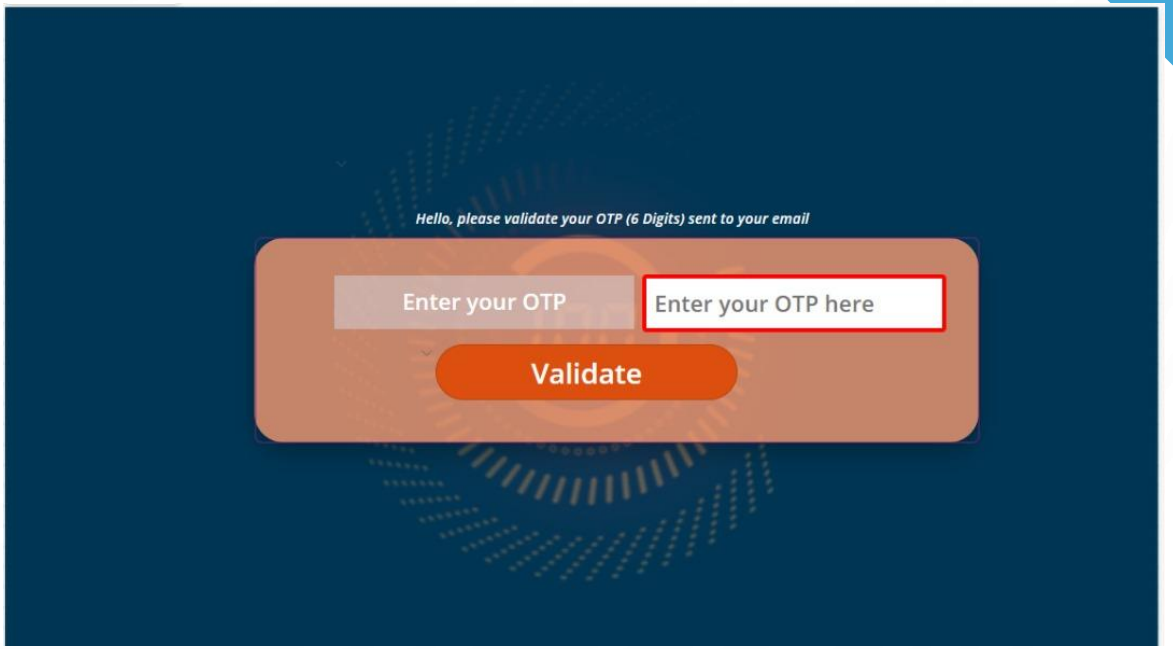
DEVELOPMENT INTERFACES

(HOME & LOGIN PAGES)



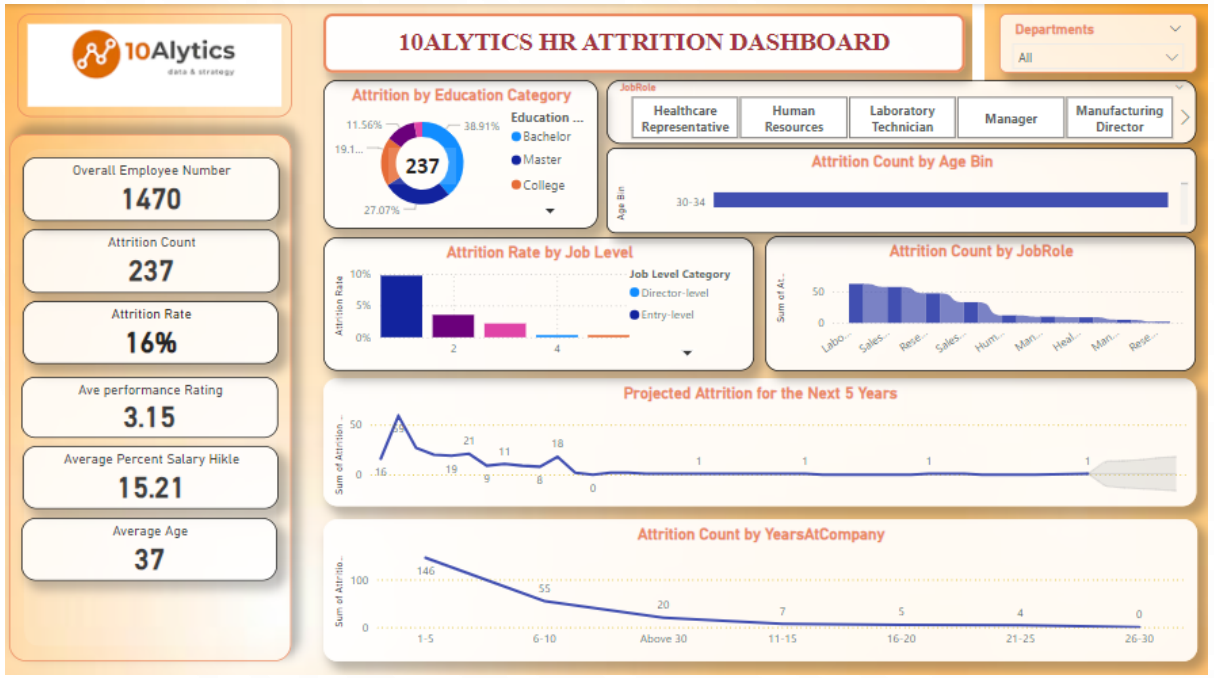
DEVELOPMENT INTERFACE
(PASSWORD RESET & OTP VALIDATION PAGES)

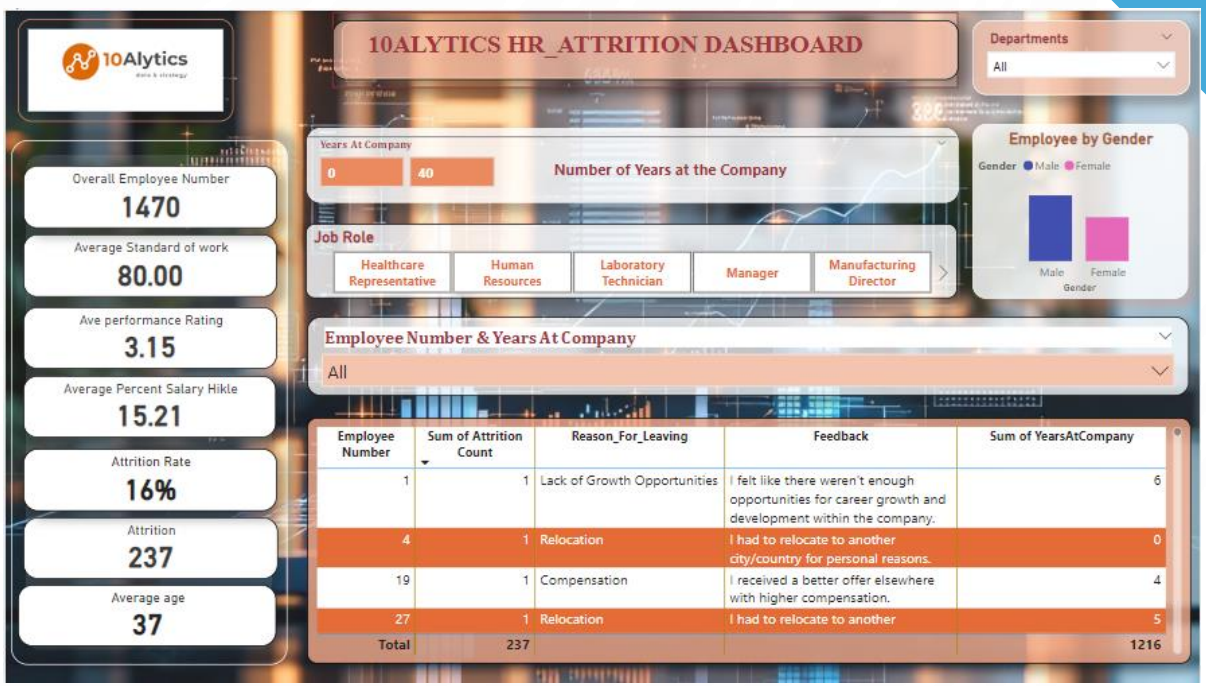




DEVELOPMENT INTERFACE

(ATTRITION PAGES)

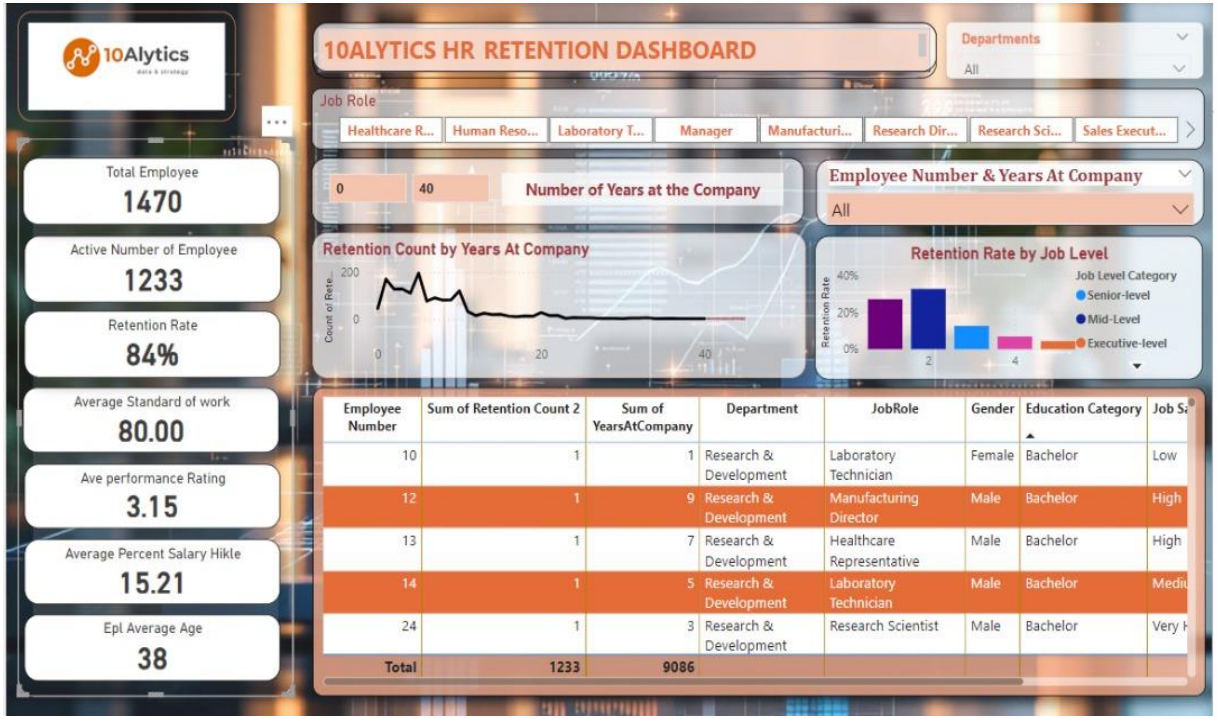


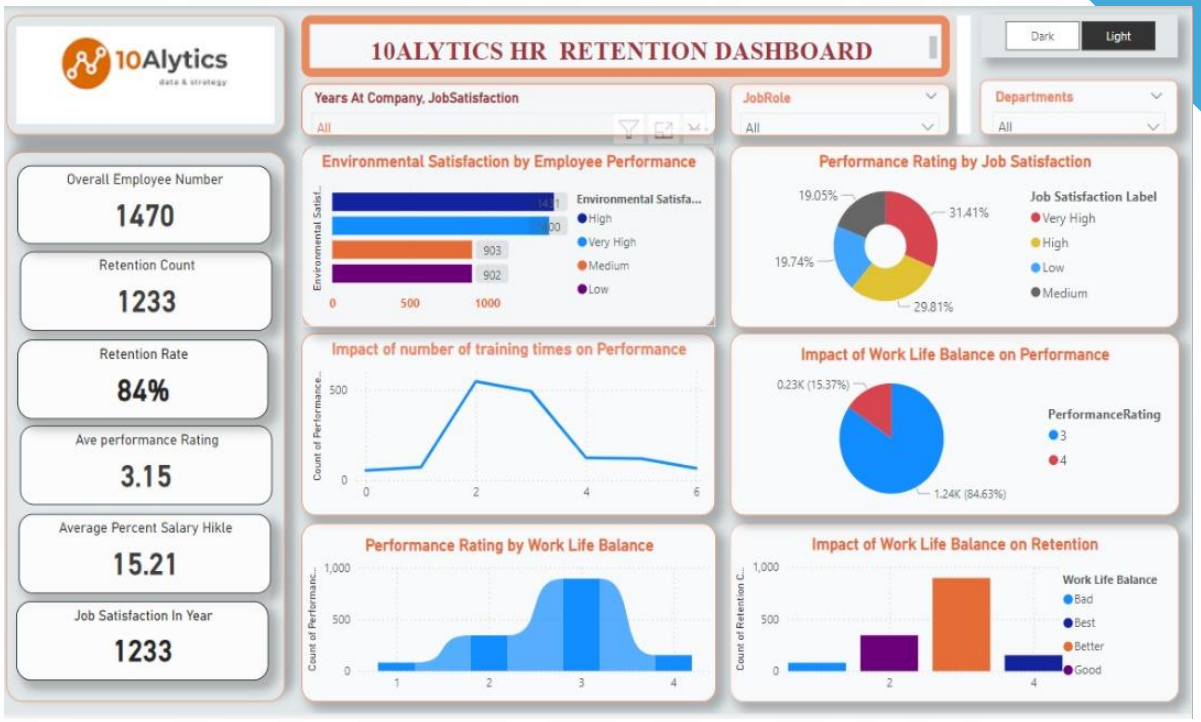


DEVELOPMENT INTERFACE
(ATTRITION RISK LEVEL PAGE)

DEVELOPMENT INTERFACE

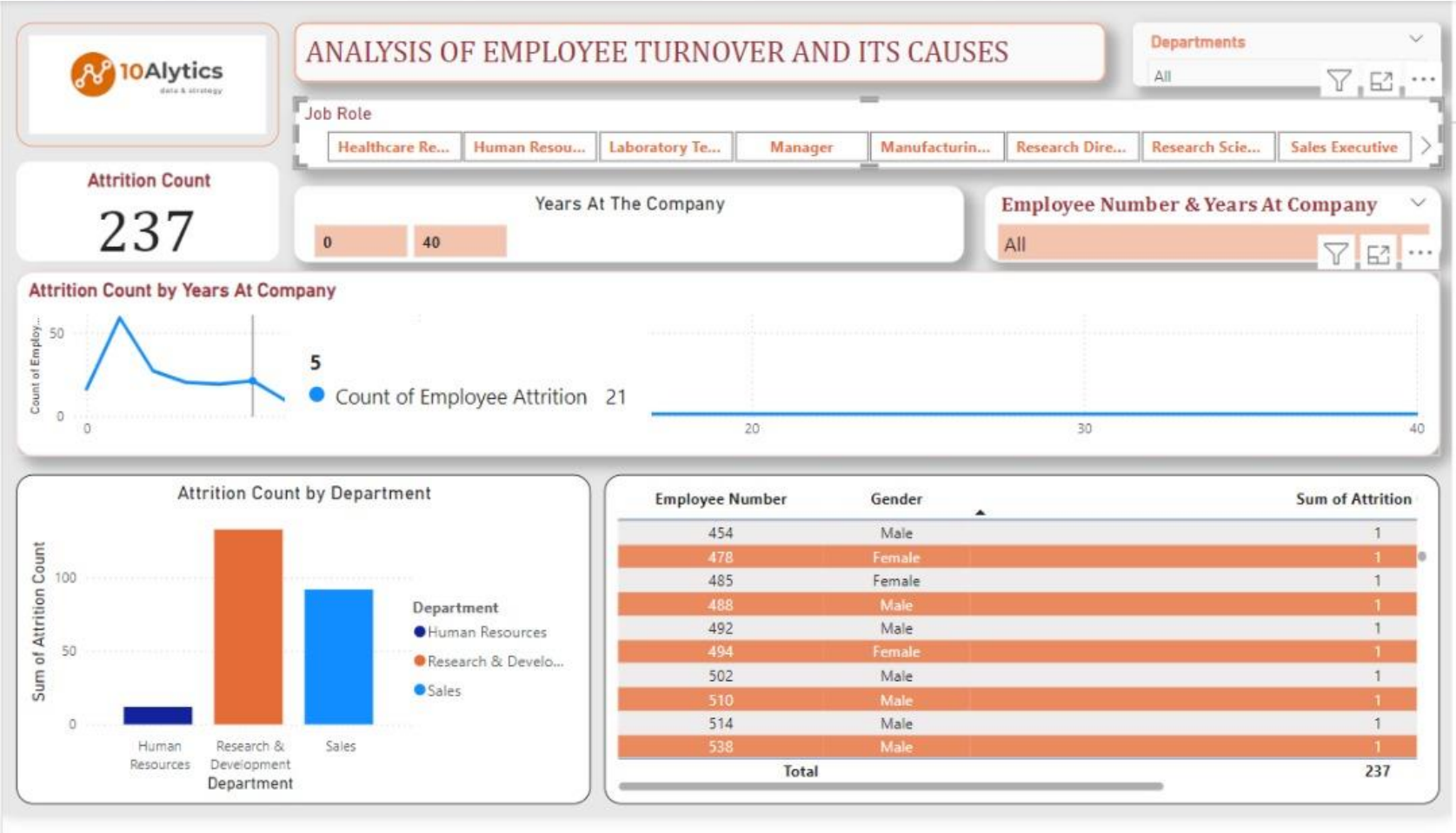
(RETENTION PAGES)





DEVELOPMENT INTERFACE

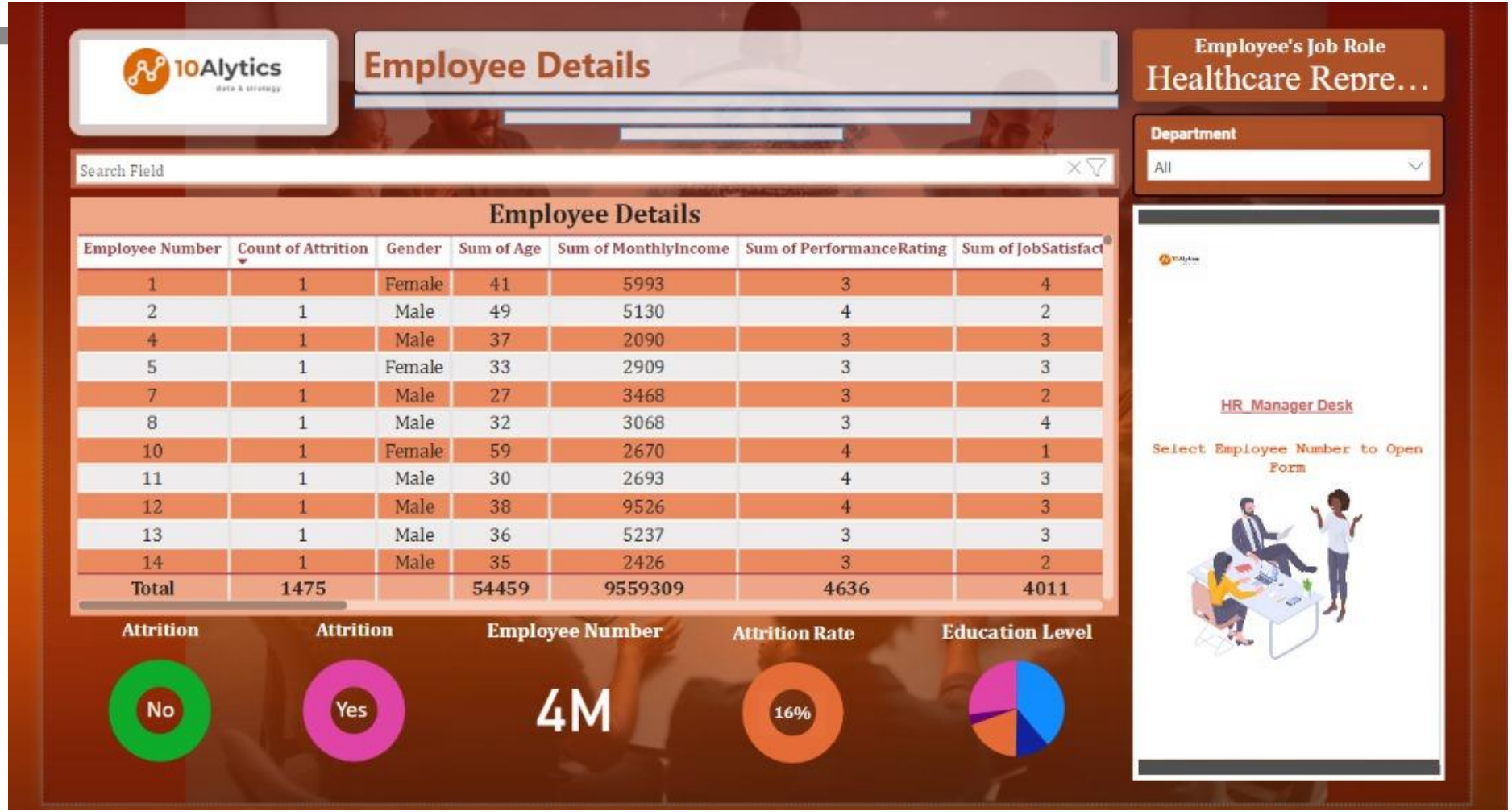
(TURNOVER & CAUSES DASHBOARD)



DEVELOPMENT INTERFACE
(PERFORMANCE DASHBOARD)

DEVELOPMENT INTERFACE

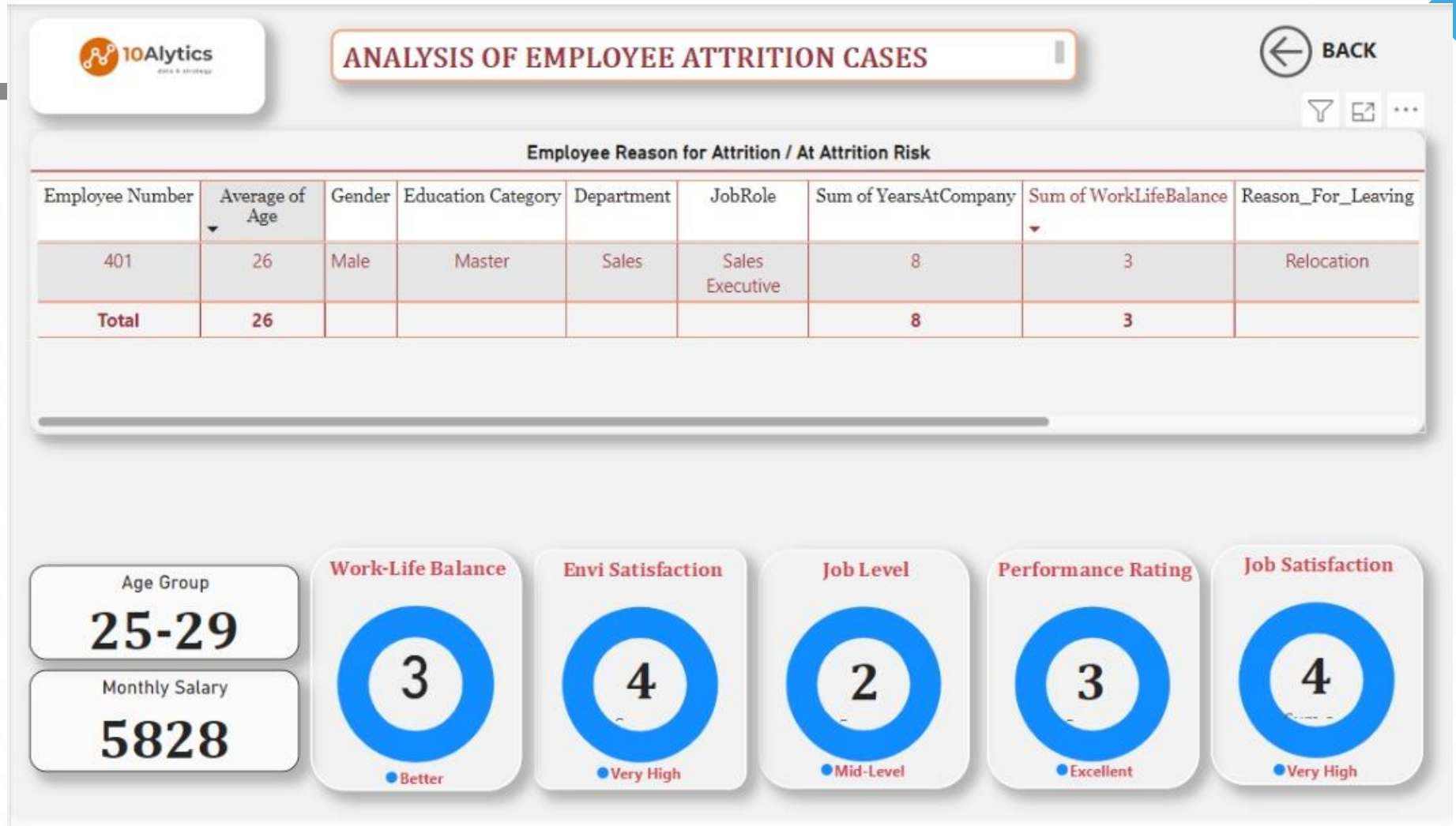
(HR MANAGER PLATFORM – EMPLOYEE DETAILS)



DEVELOPMENT INTERFACE
(TOP & LEAST PERFORMING EMPLOYEES)

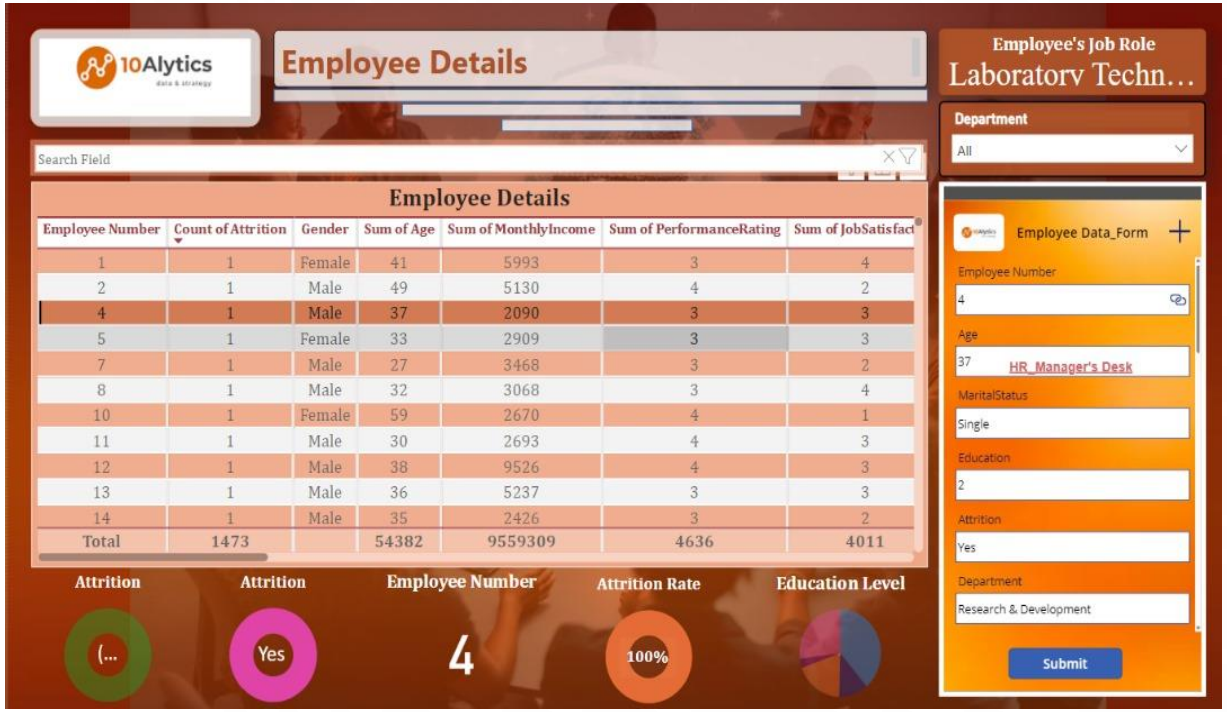
DEVELOPMENT INTERFACE

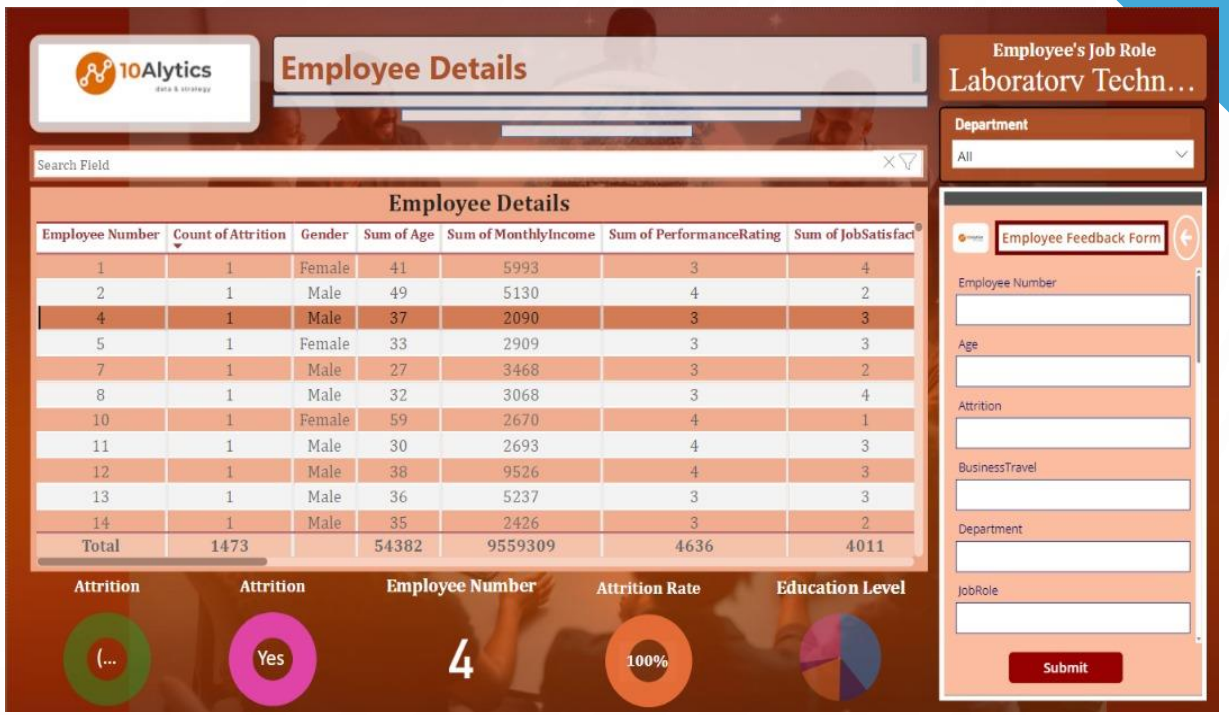
(EMPLOYEE DRILL DOWN INSIGHT)



DEVELOPMENT INTERFACE

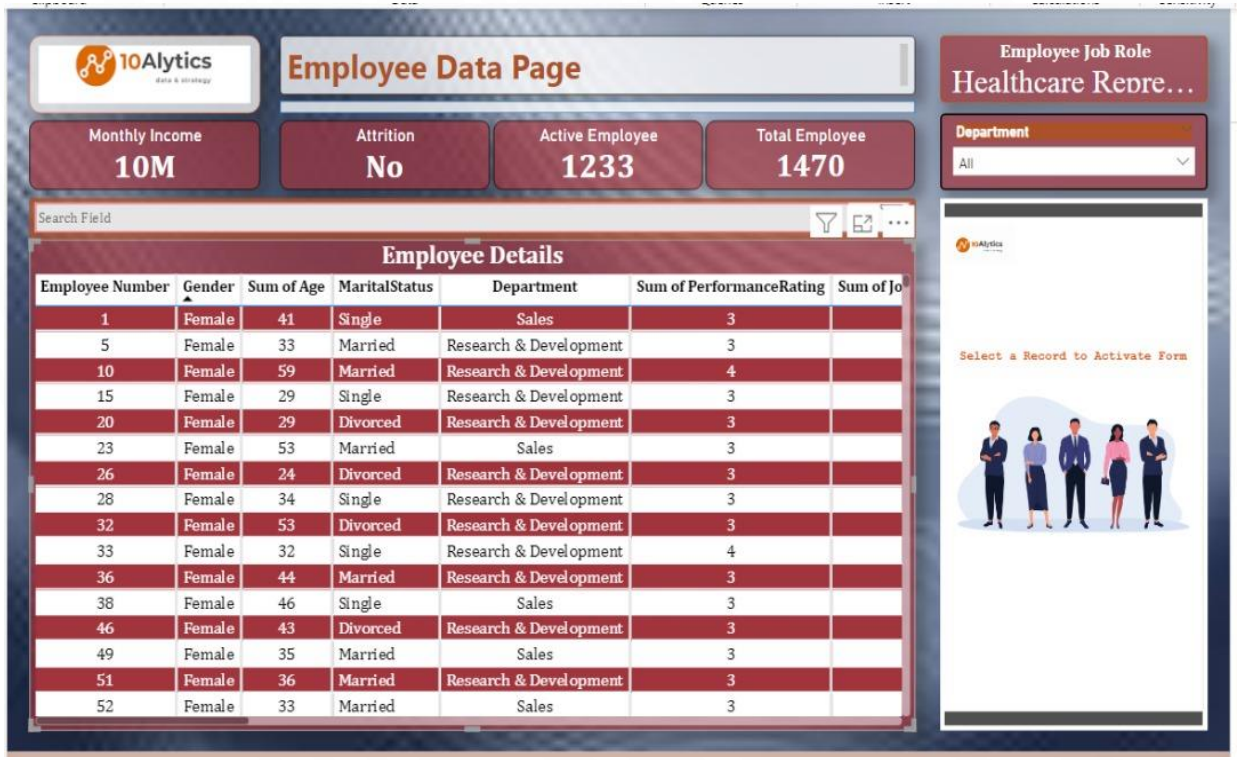
(HR MGR UPLOAD & MODIFY PAGES)

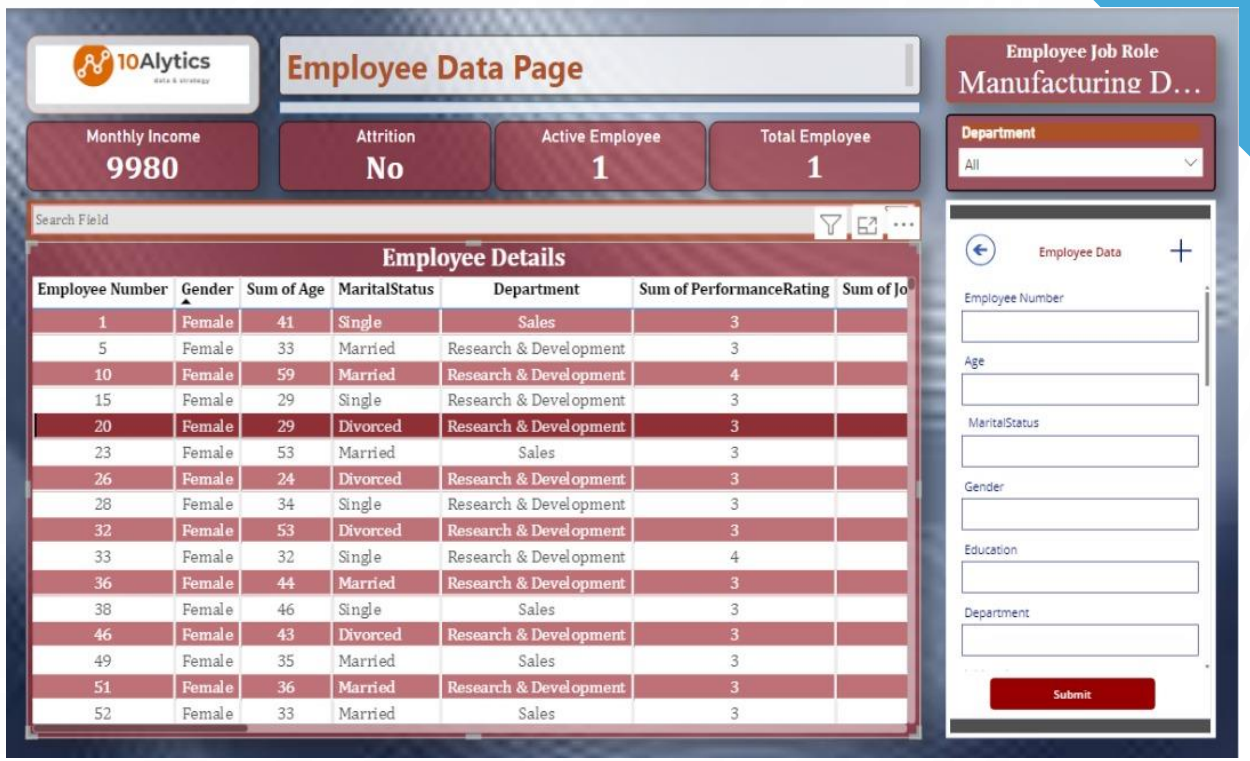




DEVELOPMENT INTERFACE

(LINE MGRS. VIEW & UPLOAD PAGES)





KPI METRICS

Retention Factors Metrics	
Overall Employee No:	1,470
Retention Count	1,233
Retention Rate	83.88%
Average Performance Rating	3.15
Average Percentage Salary Hike	15.21%
Job Satisfaction in Year	1,233
Average Age	38
Average Standard at Work	80.00

Attrition Factors Metrics	
Overall Employee No:	1,470
Attrition Count	237
Attrition Rate	16%
Average Performance Rating	3.15
Average Percentage Salary Hike	15.21%
Average Attrition Age	37

RECOMMENDATIONS

Based On The Findings, The Following Actionable Steps Are Recommended:

Customized Retention Programs: Target high-risk departments with mentorship, skill enhancement, education assistance program and wellness initiatives.

Proactive Engagement Strategies: Increase regular feedback touchpoints for employees flagged with declining engagement.

Compensation Adjustments: Reassess salary progression and promotion timelines to enhance job satisfaction.

Predictive Monitoring: Continuously update the platform with real-time data to adapt retention strategies dynamically.

FUTURE WORK

To Further Enhance The Platform, Potential Areas Of Expansion Include:

Incorporating External Benchmarks: Compare internal data with industry standards for competitive analysis.

Behavioral Analytics: Use sentiment analysis on employee feedback to gain nuanced insights.

Mobile Integration: Develop a mobile application for easier access to platform features by HR personnel.

Ai-driven Recommendations: Enhance retention strategy suggestions using advanced ai algorithms for more precise outcomes.

CONCLUSION

The **data-driven employee performance and retention platform** provides **10alytics** with A transformative tool to predict and mitigate employee attrition risks while optimizing performance management.

By adopting this data-driven approach, **10alytics** demonstrates its commitment to fostering a supportive and innovative work environment. The platform's ability to deliver real-time insights and actionable recommendations ensures long-term organizational success and employee satisfaction.

THANK YOU

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HR ANALYSTS

DATA ANALYSTS

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