

Executive summary

Salifort Motors: Initial Analysis and Model

Salifort Motors

Analysis of Employee Retention

ISSUE / PROBLEM

Salifort Motors seeks to identify problems with employee retention.

They need to understand what factors might cause an employee to leave.

RESPONSE

The data has been examined as follows:

- (1) Look for trends by plotting relevant graphs.
- (2) Generate a model that can predict whether or not someone is likely to leave.

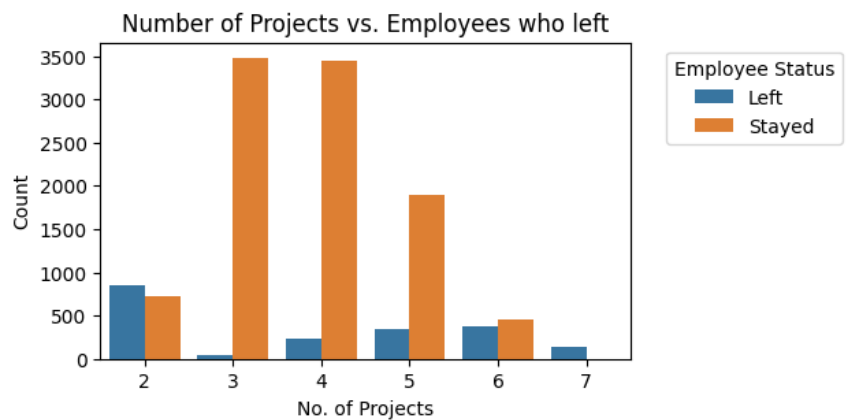
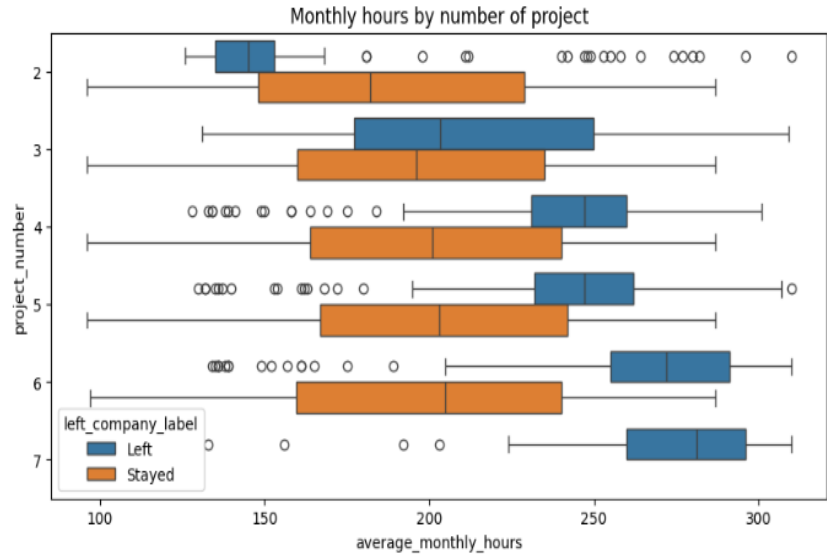
We generated graphs that showed significant trends in the data and built a random forest and XGBoost model, both of which are good predictors.

ANALYSIS OF DATA

The major concern identified is represented in these graphs, which relate to the number of projects and hours worked.

The plots shows two extremes.

- Staff with only two projects and who worked for less than 150 hours a month left.
- Staff with 6 or 7 projects who worked long hours left. All staff with 7 projects and long hours left.



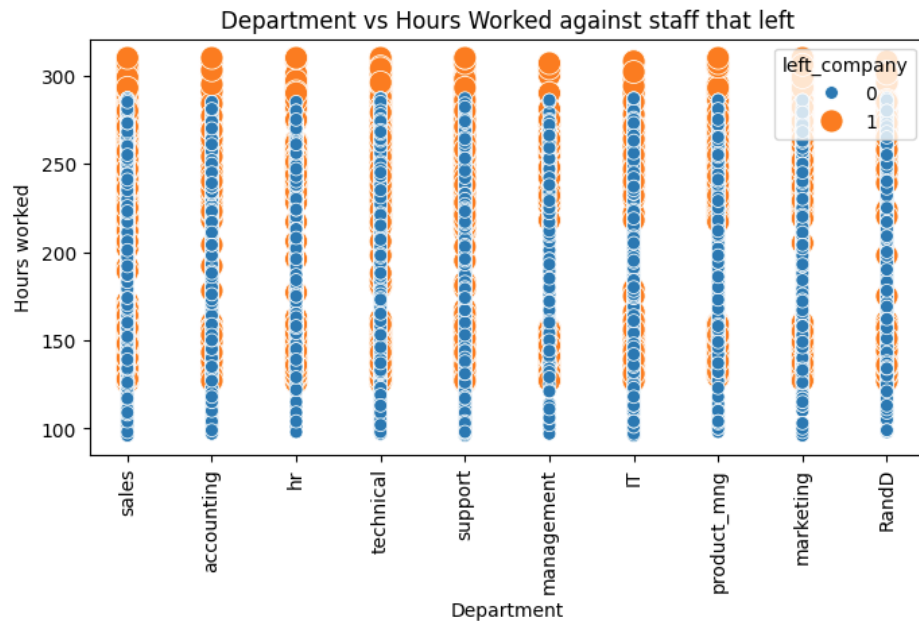
KEY INSIGHTS

Management needs to further analyze the following:

- Why are some staff members being given such a small number of projects? Do they not have the required skills? Is the company not employing staff with the correct profile? Of those with 2 projects, 54% left.
- Why are others being given so many projects and are working such long hours? Again, is there a shortage of a certain type of skill? They are working nearly twice as many hours a month as those with only 2 projects.
- Does the problem lie in management not adequately utilizing staff and allocating projects?

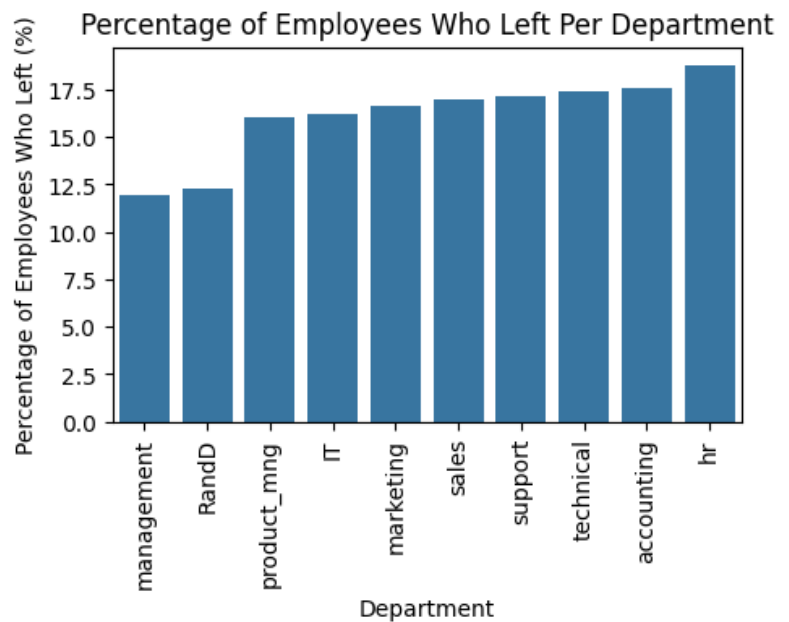
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Analysis of Employee Retention



ANALYSIS OF DATA

- There is nothing highly significant in the distribution of staff who leave per department.
- However, in every department, the staff who are overworked end up leaving.

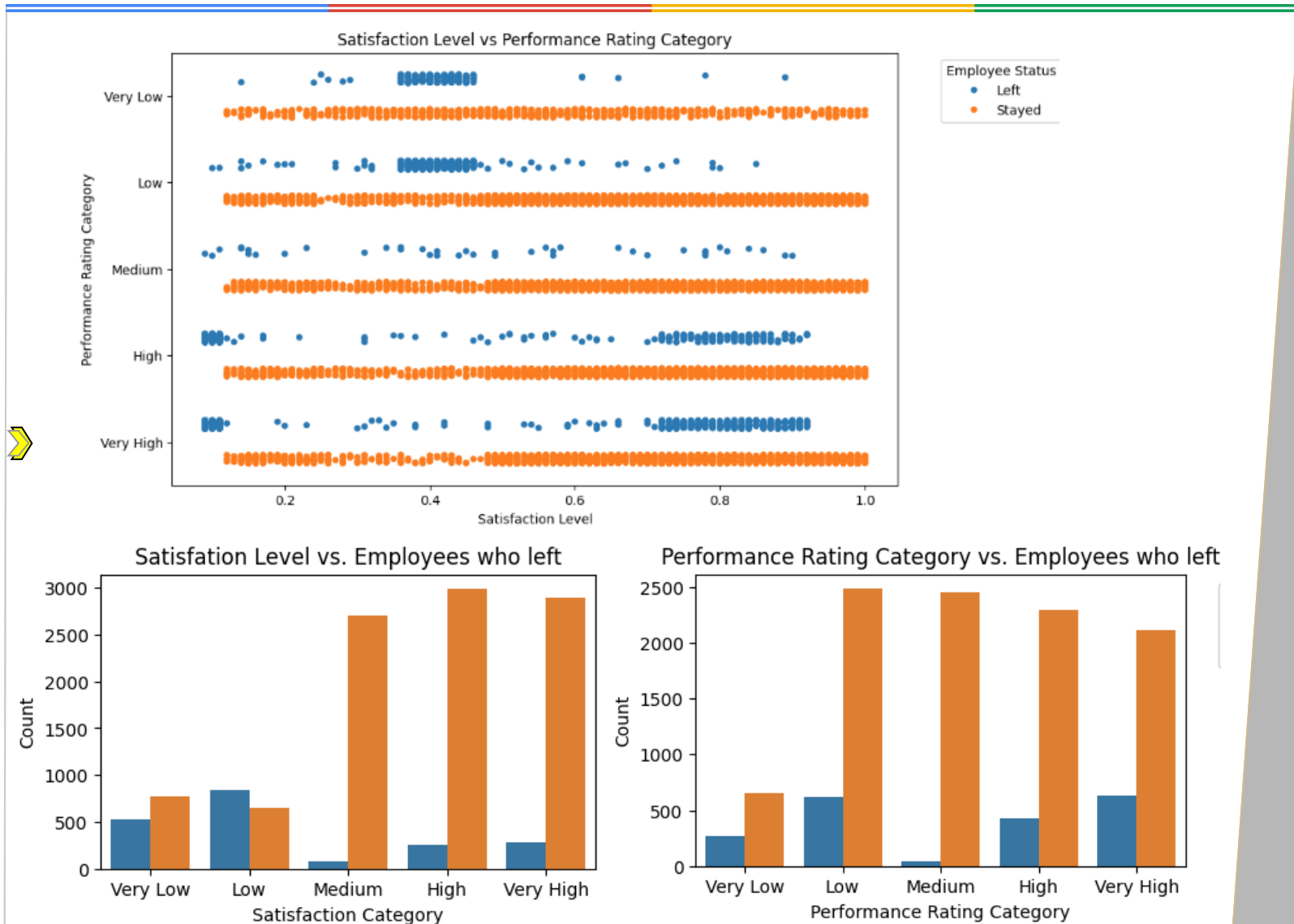


KEY INSIGHTS

- Being overworked is a definite issue in this company and this occurs throughout all departments.

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ANALYSIS OF DATA

It is strange that staff who received a high and very high performance rating, and who have a high satisfaction level, would leave. It is equally strange that employees with high and very high performance ratings have low satisfaction levels. There are 1067 such employees.

On the other hand, the staff with very low and low performance ratings who left are not as extremely satisfied or dissatisfied. There are 882 such employees.

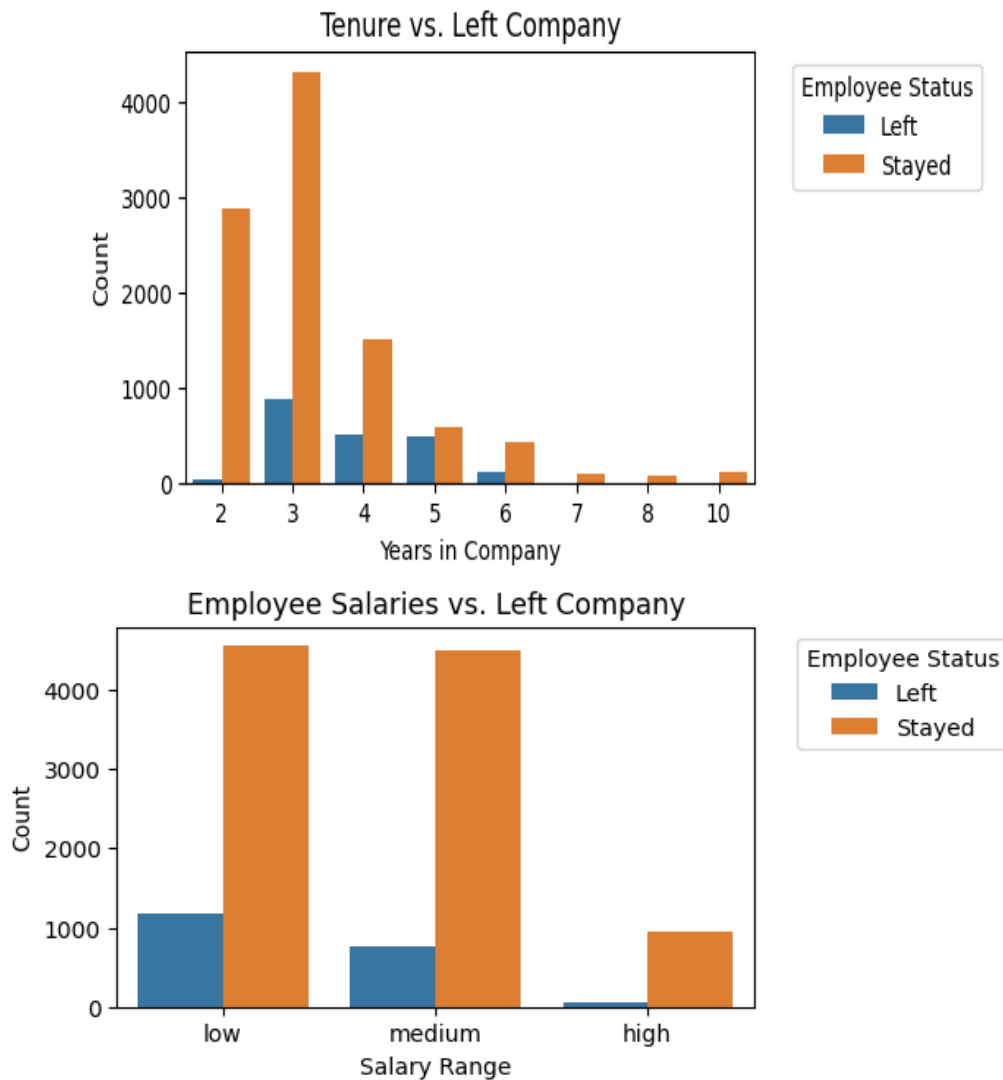
KEY INSIGHTS

Management needs to further analyze the following:

- What factors are causing people who receive excellent performance ratings to leave? This could suggest that they have not been adequately rewarded for their efforts. For example, they may have received a performance bonus that is not in line with company profit levels.
- There is a problem when people who are so highly dissatisfied receive a high performance rating. There is a possibility that there is a problem in the data that has been recorded. The lowest satisfaction level is 0.09. This needs to be verified.
- Is the performance rating system appropriate? Does it serve to better understand the staff and their issues?

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ANALYSIS OF DATA

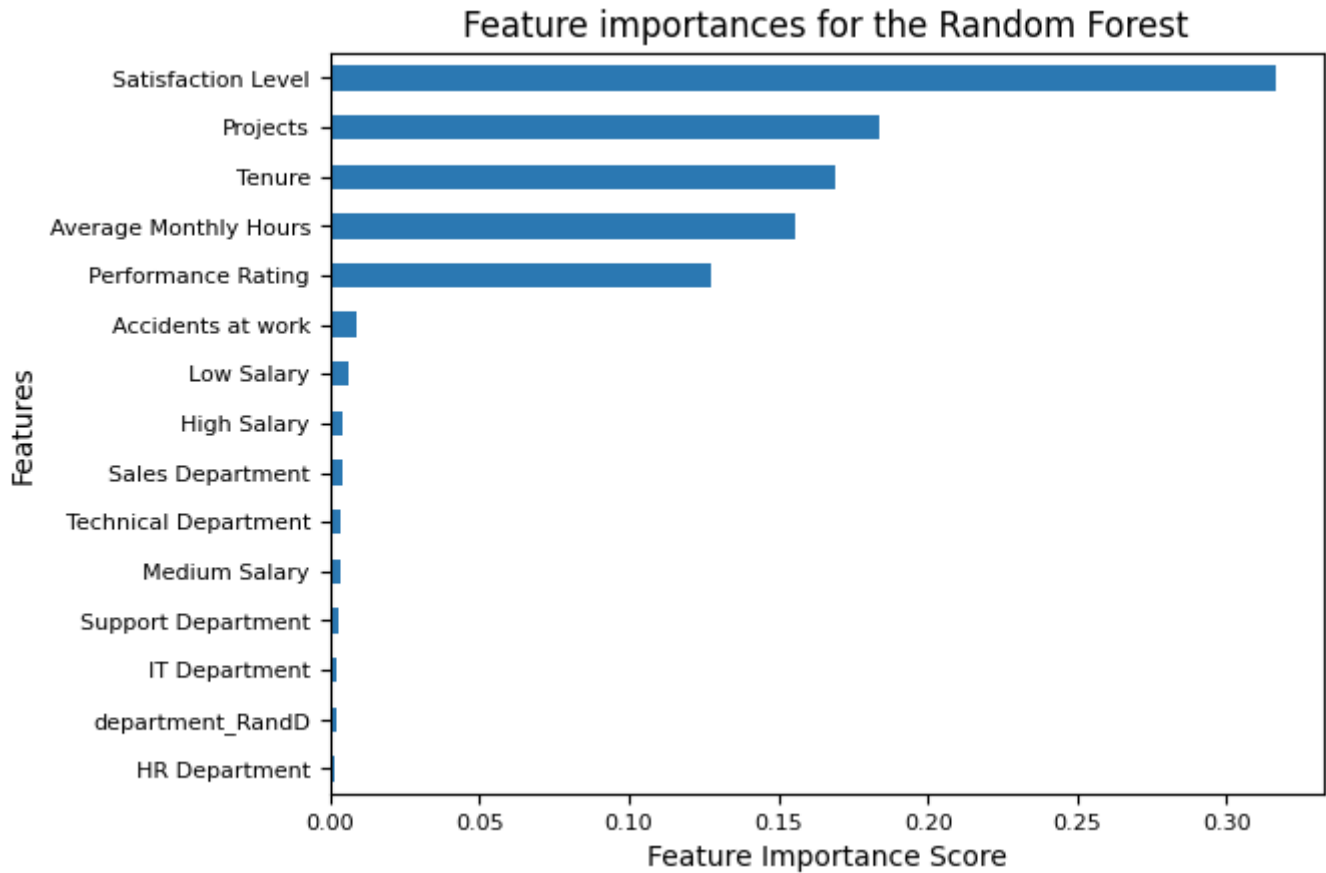
- A significant proportion of those who leave do so after working for the company for between 3 and 5 years.
- Based on the salary distribution, are people leaving due to being underpaid?
- Only 1.7% of employees have been promoted. Could this be the cause of people leaving?

KEY INSIGHTS

- It is not unusual for staff to leave after 3 – 5 years. Because Salifort Motors is involved in an innovative sector that is developing alternate energy vehicles, and is carrying out research in highly innovative areas, are staff being head-hunted?
- Are staff leaving because almost no-one is being promoted? Promotions serve to acknowledge the contribution someone has made, and this is clearly lacking in this company.

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ANALYSIS USING A RANDOM FOREST MODEL

- A Random Forest and a XGBoost model were created. Both are able to predict whether or not an employee will leave, with a very high accuracy.
- Both models identified that the primary factor contributing to an employee leaving is his satisfaction level.
- Other significance factors are the number of projects he has been given and the number of hours he has worked per month.
- The employee's current tenure is another important factor in identifying whether or not he will leave.
- All the factors given priority by the model has been extensively analyzed.

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Final Analysis

OVERVIEW

The model generated can be used to successfully identify employees who are most likely to leave the company. Although this is an important contribution to aid the company in improving retention, it is necessary for management to investigate the work environment thoroughly as there are definite issues that have been identified.

PROJECT STATUS

Given the available data, the model generated is capable of accurately identifying who will leave. This aspect of the analysis is satisfactory.

There is however a small possibility that there are errors in the satisfaction levels recorded, as some staff leaving have an excellent performance rating, yet are highly dissatisfied.

Adding more information to the dataset is necessary to further enhance the analysis.

NEXT STEPS

The next logical step would be to add more data, such as why staff left, whether they left voluntarily, date of departure and project complexity. The model can then be regenerate.

Although the model can successfully predict whether or not someone will resign, this is not sufficient information to improve staff retention. However, it is a useful short-term aid to management.

KEY INSIGHTS

There are several factors that need looking into:

- Why is there such an unbalanced distribution in projects and hours worked? This can only lead to dissatisfaction,
- Why are staff with high performance ratings and high satisfaction levels leaving?
- Why do staff leave after 3 – 5 years? Are they being head-hunted or are they inadequately trained for the specialized research work required? Are they receiving adequate financial rewards?
- Why is such a small percentage of staff being promoted? What timeframe does this data represent?