Problem Statement Worksheet (Hypothesis Formation)

How to help customers reduce maintenance costs by 20% and machine wear by 10% over the next 1000 hours of usage through customizing a machine maintenance plan?

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1 Context

A machine log dataset was provided by a customer. The engineering department desires to customize a machine maintenance plan that effectively reduces maintenance costs and increases the machine's lifetime.

2 Criteria for success

Reduce maintenance events by 20% and machine weary by 10% for next 1000 hours of usage.

3 Scope of solution space

A new machine maintenance plan will be implemented, which includes a customized maintenance schedule and strategies to reduce the rate of failure modes.

4 Constraints within solution space

The customized maintenance plan will be based on a summary of only 5 months' worth of data. It is important to note that unexpected failure modes may not have been captured yet.

5 Stakeholders to provide key insight

Customer service Manager
Database Manager
Product manager
Engineering Manager

6 Key data sources

The dataset consists of 10 000 data points stored as rows with 14 features in columns. Five failure modes have been captured, including, tool wear failure (TWF), heat dissipation failure (HDF), power failure (PWF), overstrain failure (OSF), random failures (RNF).

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