Preliminary Research Into Analysis Tools Outside Native Power BI Functionality [HVAC Is Highlighted]

Lukas Taylor

Research Areas And Tools To Solve them

All Results Can Still Be Shown Alongside Traditional Dashboards

1. Estimating Demand [Estimating Energy Demand For Energy (We Are The Demanders)]
   1. Problem: Estimating demand and what impacts demand
   2. Tool: OLS Regression
      1. Python: statsmodels
2. Price Analysis [Input Prices For HVAC]
   1. Problem: Targeting discounts, deciding who needs discounts
   2. Tool: Elasticity Modelling
      1. Python: statsmodels
3. Valuing Market Communications
   1. Problem: How should I invest marcomm spending?
   2. Tool: OLS Regression using PDL
      1. Python: statsmodels
4. Forecasting Future Demand [Estimating Future Demand For Energy]
   1. Problem: How can future demand best be predicted?
   2. Tool: Autoregression and/or ARIMA
      1. Python: Pandas, statsmodels
5. Targeting The Right Customers
   1. Problem: Who should my strategies target?
   2. Tool: Logistic Regression
      1. Python: Sklearn
6. Maximizing Mailing Impact
   1. Problem: Who should I e-mail for best results?
   2. Tool: Logistic Regression and Lift/Gain Charts
      1. Python: Sklearn
7. Product Bundling Analysis
   1. Problem: What products should be bundled?
   2. Tool: Logistic Regression and Predictive Market Basket Analysis
      1. Python: Sklearn
8. Estimating Time Of Purchase [Estimating When HVAC Tools Will Be Used]
   1. Problem: When are my customers most likely to buy?
   2. Tool: Survival Analysis
      1. Python: Sklearn
9. Increasing Customer Lifetime Value
   1. Problem: How do I assess and increase customer lifetime value?
   2. Tool: Survival and Tobit Analysis
      1. Python: Sklearn
      2. R: Tobit
10. Modelling Transactions [Transactions Of Inputs For HVAC]
    1. Problem: How to explain number of transactions and purchases?
    2. Tool: Poisson Regression
       1. Python: Sklearn
11. Quantifying Complexity Of Customer Behavior
    1. Problem: How does factors like price affect different brands or products?
    2. Tool: Simultaneous Equations
       1. Python: Sympy
12. Designing Effective Loyalty Programs
    1. Problem: How can I design programs to increase loyalty?
    2. Tool: Loyalty Design and Survival Modelling For Earn-Burn
       1. Python: Sklearn
13. Identifying Loyal Customers
    1. Problem: How do I quantify loyalty and how can I identify types of loyalty?
    2. Tool: Structural Equation Modelling
       1. Python: Semopy
14. Segmentation
    1. Problem: What analytics are really needed and how can they be used to better understand my customer market?
    2. Tool: Hierarchical Clustering, K-Means Clustering, Latent Class Analysis
       1. Python: Scipy, Sklearn
       2. R: Latent Class Analysis