Preliminary Research Into CPG Retail Analytics Tools Outside Native Power BI Functionality

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Emerson Group Interview

Research Areas And Tools To Solve them
All Results Can Still Be Shown Alongside Traditional Dashboards

1. *Estimating Demand*
    a. *Problem: Estimating demand and what impacts demand*
    b. *Tool: OLS Regression*
        i. *Python: statsmodels*
2. *Price Analysis*
    a. *Problem: Targeting discounts, deciding who needs discounts*
    b. *Tool: Elasticity Modelling*
        i. *Python: statsmodels*
3. *Valuing Market Communications*
    a. *Problem: How should I invest marcomm spending?*
    b. *Tool: OLS Regression using PDL*
        i. *Python: statsmodels*
4. *Forecasting Future Demand*
    a. *Problem: How can future demand best be predicted?*
    b. *Tool: Autoregression and/or ARIMA*
        i. *Python: Pandas, statsmodels*
5. *Targeting The Right Customers*
    a. *Problem: Who should my strategies target?*
    b. *Tool: Logistic Regression*
        i. *Python: Sklearn*
6. *Maximizing Mailing Impact*
    a. *Problem: Who should I e-mail for best results?*
    b. *Tool: Logistic Regression and Lift/Gain Charts*
        i. *Python: Sklearn*
7. *Product Bundling Analysis*
    a. *Problem: What products should be bundled?*
    b. *Tool: Logistic Regression and Predictive Market Basket Analysis*
        i. *Python: Sklearn*
8. *Estimating Time Of Purchase*
    a. *Problem: When are my customers most likely to buy?*
    b. *Tool: Survival Analysis*
        i. *Python: Sklearn*
9. *Increasing Customer Lifetime Value*
    a. *Problem: How do I assess and increase customer lifetime value?*

    b. *Tool: Survival and Tobit Analysis*
        i. *Python: Sklearn*
        ii. *R: Tobit*
10. *Modelling Transactions*
    a. *Problem: How to explain number of transactions and purchases?*
    b. *Tool: Poisson Regression*
        i. *Python: Sklearn*
11. *Quantifying Complexity Of Customer Behavior*
    a. *Problem: How does factors like price affect different brands or products?*
    b. *Tool: Simultaneous Equations*
        i. *Python: Sympy*
12. *Designing Effective Loyalty Programs*
    a. *Problem: How can I design programs to increase loyalty?*
    b. *Tool: Loyalty Design and Survival Modelling For Earn-Burn*
        i. *Python: Sklearn*
13. *Identifying Loyal Customers*
    a. *Problem: How do I quantify loyalty and how can I identify types of loyalty?*
    b. *Tool: Structural Equation Modelling*
        i. *Python: Semopy*
14. *Segmentation*
    a. *Problem: What analytics are really needed and how can they be used to better understand my customer market?*
    b. *Tool: Hierarchical Clustering, K-Means Clustering, Latent Class Analysis*
        i. *Python: Scipy, Sklearn*
        ii. *R: Latent Class Analysis*