15 Data Analytics for Business Decisions

DATA ANALYTICS METHODS TO *PREDICT* & *DRIVE* BUSINESS DECISIONS

1. LINEAR REGRESSION

- **Purpose:** *Forecast future performance*
- **Objective:** Plan sales, budgets, or operations based on historical data
- **Use Case:** Anticipate revenue dips/spikes and adjust marketing spend proactively

2. LOGISTIC REGRESSION

- **Purpose:** *Predict yes/no business outcomes*
- **Objective:** Identifies which leads or customers are likely to convert or churn
- **Use Case:** Focus your resources on high-impact clients to boost sales or retention

3. DECISION TREES

- **Purpose:** *Simplify decision-making with clear rules*
- **Objective:** Turns past patterns into if/then logic you can use in operations
- **Use Case:** Reduce manual decision time in approvals or escalations

4. RANDOM FOREST

- **Purpose:** *Improve the reliability of predictions*
- **Objective:** Combines multiple decision paths to reduce bias and errors
- **Use Case:** Score customers on risk of churn or default

5. XGBOOST / LIGHTGBM

- **Purpose:** *Make high-accuracy predictions at scale*
- **Objective:** Finds patterns in customer behavior that simpler models miss
- **Use Case:** Predict exactly who will buy, churn, or engage and why

6. TIME SERIES FORECASTING

- **Purpose:** *Plan for future trends and cycles*
- **Objective:** Analyzes seasonality to forecast sales, traffic, or demand
- **Use Case:** Avoid inventory waste, missed targets, or overcapacity by planning ahead

7. K-MEANS (CLUSTERING)

- **Purpose:** *Identify customer segments*
- **Objective:** Groups customers with similar behaviors or preferences
- **Use Case:** Personalize marketing and offers to increase relevance and conversion rates

8. PRINCIPAL COMPONENT ANALYSIS

- **Purpose:** *Focus on what really moves the needle*
- **Objective:** Filters out noise and highlights the most influential metrics
- **Use Case:** Simplify reporting and strategy by zeroing in on your key growth drivers

9. SURVIVAL ANALYSIS

- **Purpose:** *Predict when customers are likely to leave*
- **Objective:** Provides a timeline to act before a customer churns
- **Use Case:** Improve retention by sending timely offers or interventions to at-risk users

10. UPLIFT MODELING

- **Purpose:** *Maximize marketing impact*
- **Objective:** Identifies who changes behavior because of your campaign
- **Use Case:** Reduce wasted spend by targeting only customers who need a push

11. ASSOCIATION RULE MINING

- **Purpose:** *Reveal product buying patterns*
- **Objective:** Finds items that are often bought together
- **Use Case:** Increase AOV recommending complementary products during checkout

12. ANOMALY DETECTION

- **Purpose:** *Catch issues before they become losses*
- **Objective:** Flags unusual patterns in real time
- **Use Case:** Detect fraud, reporting errors, or underperformance as it happens

13. RECOMMENDATION SYSTEMS

- **Purpose:** *Personalize user experience*
- **Objective:** Increase customer engagement and repeat purchases
- **Use Case:** Offer “customers like you also bought…” suggestions on your site

14. NATURAL LANGUAGE PROCESSING

- **Purpose:** *Make sense of customer feedback at scale*
- **Objective:** Analyzes reviews, surveys, and support tickets
- **Use Case:** Identify trending issues and product improvement ideas quickly

15. SHAP / LIME

- **Purpose:** *Explain why a prediction or score was made*
- **Objective:** Build trust in AI-driven decisions with clear reasoning
- **Use Case:** Justify actions (like pricing, offers, risk ratings) in a transparent way

Yassine Mahboub Follow for more **Data & Business Intelligence** Insights

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