Domain Example: E-commerce – Online Retail Store

Scenario: You are an online retailer (like Amazon or Flipkart) and want to understand **factors affecting customer purchases** to improve sales.

1. Business Understanding

Objective:

- Increase revenue by predicting which customers are likely to make purchases in the next month.

- Improve marketing campaigns by targeting high-potential customers.

Business Questions:

- Who are our most valuable customers?

- Which products are likely to be purchased together?

- Which promotions drive repeat purchases?

Success Criteria:

- Increase in **conversion rate** (percentage of users making a purchase).

- Increase in **average order value (AOV)**.

- Improved **customer retention rate**.

Constraints / Assumptions:

- Data privacy must be maintained (e.g., GDPR compliance).

- Limited marketing budget → need to target effectively.

- Seasonal trends (holidays, sales) affect purchase behavior.

2. Data Understanding (Initial Exploration)

Data Sources:

- Customer profiles: age, gender, location

- Transaction history: products purchased, purchase dates, prices

- Website behavior: clicks, time on site, abandoned carts

- Marketing data: emails sent, promotions used

Key Questions:

- Are there missing or inconsistent values?

- Are there patterns by product category, season, or geography?

3. Potential Metrics / KPIs

KPI	Definition / Formula	Importance
Conversion Rate	Purchases ÷ Website Visits	Measures marketing success
Average Order Value (AOV)	Total Revenue ÷ Number of Orders	Indicates customer spending
Repeat Purchase Rate	Customers with ≥2 purchases ÷ Total customers	Loyalty / retention
Customer Lifetime Value (CLV)	Average revenue per customer × retention period	Long-term business impact

4. Expected Insights

- Identify **high-value customers** for targeted campaigns.

- Predict which **products are likely to be purchased together** → cross-selling opportunities.

- Discover **seasonal trends** to optimize inventory and promotions.

- Segment customers based on **behavioral patterns** (e.g., frequent buyers vs. one-time buyers).

. Refined Business Objective

- **Primary Goal:** Maximize revenue and customer satisfaction through predictive insights.

- **Secondary Goals:**
  - Reduce cart abandonment
  - Optimize product recommendations
  - Improve marketing ROI by targeting likely buyers

2. Key Stakeholders

Stakeholder	Role / Interest
Marketing Team	Wants to increase conversion rate & campaign ROI

Stakeholder	Role / Interest
Sales / Revenue Team	Wants higher revenue and customer retention
Product Team	Wants insights on popular products & bundles
IT / Data Team	Needs actionable metrics and accurate reporting

3. Business Questions

1. **Customer Behavior:**
   - Which customers are likely to make repeat purchases?
   - What is the expected Customer Lifetime Value (CLV) for different segments?

2. **Product Insights:**
   - Which products are purchased together frequently?
   - Which products are seasonal, and which sell consistently year-round?

3. **Marketing Campaigns:**
   - Which type of promotion (discount, free shipping, bundle) drives the most conversions?
   - Which customers respond better to email campaigns vs. app notifications?

4. Success Criteria & Metrics

Objective	Metric / KPI	Target / Benchmark
Increase conversion rate	Purchases ÷ Website visits	> 5%
Increase average order value	Revenue ÷ Number of orders	+10% YoY
Reduce cart abandonment	Abandoned carts ÷ Total carts	< 20%
Improve customer retention	Repeat purchase rate	> 30%
Optimize marketing ROI	Revenue from campaigns ÷ Marketing cost	> 3×

5. Constraints / Assumptions

- **Data Quality:** Some customer behavior data may be incomplete or inconsistent.
- **Privacy & Compliance:** Must anonymize PII to comply with GDPR / CCPA.
- **Seasonality Effects:** Holidays, sales, or product launches may distort trends.
- **Budget Limits:** Marketing spend and promotions must remain cost-effective

6. Expected Insights & Actionable Outcomes

- **Segmentation:** High-value vs. low-value customers → personalized campaigns

- **Predictive Targeting:** Likely buyers → send targeted promotions

- **Inventory Management:** Predict popular products → reduce stockouts

- **Marketing Optimization:** Identify campaigns with highest ROI → allocate budget efficiently