



PROJECT TITLE

# MARKET BASKET INSIGHTS



# PHASE 1: PROBLEM DEFINITION AND DESIGN THINKING

## PROBLEM DEFINITION

### PROBLEM STATEMENT

THE PROBLEM OF MARKET BASKET INSIGHTS AIMS TO UNCOVER PATTERNS AND RELATIONSHIPS WITHIN CONSUMER SHOPPING DATA TO BETTER UNDERSTAND HOW PRODUCTS ARE PURCHASED TOGETHER. THIS ANALYSIS IS CRUCIAL FOR VARIOUS STAKEHOLDERS, INCLUDING RETAILERS, E-COMMERCE PLATFORMS, AND MARKETING TEAMS, AS IT PROVIDES VALUABLE INFORMATION FOR OPTIMIZING SALES, MARKETING STRATEGIES, AND OVERALL BUSINESS OPERATIONS.

## KEY ELEMENTS OF THE PROBLEM:

1. TRANSACTION DATA: THE CORE OF THIS PROBLEM IS TRANSACTIONAL DATA, WHICH INCLUDES RECORDS OF CUSTOMER PURCHASES OVER A SPECIFIC PERIOD. EACH TRANSACTION LISTS THE PRODUCTS BOUGHT AND THEIR QUANTITIES.
2. ASSOCIATION PATTERNS: THE PRIMARY OBJECTIVE IS TO IDENTIFY ASSOCIATION PATTERNS AMONG PRODUCTS. THIS INVOLVES FINDING OUT WHICH PRODUCTS TEND TO BE BOUGHT TOGETHER FREQUENTLY AND QUANTIFYING THE STRENGTH OF THESE ASSOCIATIONS.
3. BUSINESS GOALS:
  - PRODUCT RECOMMENDATIONS: RETAILERS WANT TO RECOMMEND COMPLEMENTARY PRODUCTS TO CUSTOMERS, INCREASING SALES AND ENHANCING USER EXPERIENCE.

- INVENTORY MANAGEMENT:** EFFICIENTLY MANAGE INVENTORY BY UNDERSTANDING WHICH PRODUCTS HAVE CORRELATED DEMAND, REDUCING WASTAGE, AND OPTIMIZING STOCK LEVELS.
- **MARKETING AND PROMOTION:** TARGETED MARKETING CAMPAIGNS AND CROSS-SELLING STRATEGIES BASED ON MARKET BASKET INSIGHTS CAN BOOST REVENUE.
- **STORE LAYOUT AND PRODUCT PLACEMENT:** FOR PHYSICAL STORES, INSIGHTS CAN HELP ARRANGE PRODUCTS IN-STORE TO ENCOURAGE ADDITIONAL PURCHASES.

4. **DATA CHALLENGES:** CHALLENGES INCLUDE HANDLING LARGE VOLUMES OF TRANSACTION DATA EFFICIENTLY, DEALING WITH NOISE AND OUTLIERS, AND ENSURING DATA PRIVACY AND SECURITY COMPLIANCE.

5. ALGORITHMIC APPROACHES: MARKET BASKET INSIGHTS ARE TYPICALLY OBTAINED THROUGH TECHNIQUES LIKE ASSOCIATION RULE MINING, WITH ALGORITHMS SUCH AS APRIORI AND FP-GROWTH. MACHINE LEARNING MODELS MAY ALSO BE EMPLOYED FOR MORE ADVANCED ANALYSIS.

6. VISUALIZATION AND INTERPRETATION: BEYOND DISCOVERING ASSOCIATIONS, PRESENTING THE RESULTS IN AN UNDERSTANDABLE AND ACTIONABLE FORMAT IS CRUCIAL. DATA VISUALIZATION TOOLS AND DASHBOARDS PLAY A SIGNIFICANT ROLE IN THIS ASPECT.

7. CONTINUOUS IMPROVEMENT: SHOPPING PATTERNS EVOLVE, SO THE SOLUTION SHOULD BE DYNAMIC AND ADAPTABLE, WITH THE ABILITY TO CONTINUOUSLY MONITOR AND UPDATE INSIGHTS.

# DESIGN THINKING

## 1. EMPATHIZE: UNDERSTAND THE USER AND THE PROBLEM

- BEGIN BY EMPATHIZING WITH THE USERS (E.G., RETAILERS, E-COMMERCE PLATFORMS) TO UNDERSTAND THEIR GOALS AND CHALLENGES.
- CONDUCT INTERVIEWS, SURVEYS, OR OBSERVATIONAL RESEARCH TO GATHER INSIGHTS ABOUT THEIR NEEDS AND PAIN POINTS RELATED TO MARKET BASKET ANALYSIS.

## 2. DEFINE: FRAME THE PROBLEM

- CLEARLY DEFINE THE PROBLEM BY CREATING A PROBLEM STATEMENT OR USER STORY THAT ENCAPSULATES THE CHALLENGES AND GOALS OF THE USERS.
- FOR EXAMPLE, "HOW MIGHT WE IMPROVE PRODUCT RECOMMENDATIONS BASED ON MARKET BASKET INSIGHTS TO INCREASE SALES?"

### 3. IDEATE: GENERATE IDEAS

- BRAINSTORM CREATIVE SOLUTIONS FOR COLLECTING AND ANALYZING MARKET BASKET DATA.
- ENCOURAGE CROSS-FUNCTIONAL TEAMS TO COLLABORATE AND COME UP WITH INNOVATIVE APPROACHES.
- CONSIDER USING TECHNIQUES LIKE IDEATION WORKSHOPS AND MIND MAPPING.

4. PROTOTYPE: BUILD A SOLUTION - CREATE A PROTOTYPE OR PROOF OF CONCEPT FOR YOUR MARKET BASKET ANALYSIS SYSTEM. - THIS COULD INVOLVE DESIGNING A DATA PIPELINE FOR COLLECTING TRANSACTION DATA, IMPLEMENTING ALGORITHMS FOR ASSOCIATION RULE MINING, AND DEVELOPING A USER INTERFACE FOR VISUALIZING INSIGHTS.

## 5. TEST: GATHER FEEDBACK

- TEST YOUR PROTOTYPE WITH REAL USERS TO GATHER FEEDBACK AND ITERATE ON YOUR SOLUTION.
- ANALYZE THE EFFECTIVENESS OF YOUR MARKET BASKET INSIGHTS AND WHETHER THEY MEET USER NEEDS.

## 6. IMPLEMENT: DEPLOY THE SOLUTION

- ONCE YOU'VE REFINED YOUR SOLUTION BASED ON USER FEEDBACK, IMPLEMENT IT IN A REAL-WORLD SETTING.
- MONITOR ITS PERFORMANCE AND MAKE NECESSARY ADJUSTMENTS.



## 7. ITERATE: CONTINUOUSLY IMPROVE:

- MARKET BASKET INSIGHTS ARE NOT A ONE-TIME TASK; THEY REQUIRE ONGOING ANALYSIS AND IMPROVEMENT.
- CONTINUOUSLY COLLECT AND ANALYZE DATA TO IDENTIFY CHANGING CONSUMER BEHAVIORS AND PREFERENCES.

## 8. SCALE: EXPAND AND OPTIMIZE:

- AS YOUR MARKET BASKET INSIGHTS SOLUTION PROVES ITS VALUE, CONSIDER SCALING IT TO SERVE A LARGER AUDIENCE OR EXPANDING ITS CAPABILITIES.
- OPTIMIZE YOUR SOLUTION TO HANDLE LARGER DATASETS AND PROVIDE MORE ADVANCED INSIGHTS.

The background features a light gray base with large, soft-edged organic shapes in muted red and olive green. A thin white line outlines a shape on the right. In the top left, there is a faint, light gray sketch of a leafy branch.

THANK YOU !