

Market Basket Insights:

Phase 2:

1. Data Collection: Gather transaction data that includes information on items purchased, transaction IDs, and timestamps. This data can come from point-of-sale systems, e-commerce platforms, or any other relevant sources.

2. Data Preprocessing: Clean and preprocess the data to ensure accuracy. Remove duplicates, handle missing values, and format the data for analysis.

3. Basket Creation: Group transactions by unique transaction IDs to create "baskets" containing the items purchased together during each transaction.

4. Support and Confidence Calculation:

Support: Calculate the support for each itemset (combination of items) in the dataset. Support measures the frequency of occurrence of an itemset in the baskets.

Confidence: Calculate the confidence for association rules. Confidence measures the likelihood that if item A is purchased, item B will also be purchased.

5. Association Rule Mining:

- Use algorithms like Apriori or FP-Growth to discover association rules.
- Association rules consist of antecedents (items in the "if" part) and consequents (items in the "then" part). For example: $\{A\} \Rightarrow \{B\}$.

6. Filtering and Interpretation:

- Set thresholds for support and confidence to filter out relevant rules. This helps focus on meaningful insights.
- Interpret the generated association rules to understand which products are frequently bought together. For example, you might find that customers who purchase milk are likely to buy bread as well.

7. Visualization and Reporting:

- Create visualizations, such as scatter plots or network graphs, to represent the relationships between products.

- Generate reports that highlight actionable insights for merchandising, marketing, and inventory management teams.

8. Implementation:

- Implement the insights gained from market basket analysis into business strategies. This could involve optimizing store layouts, creating bundled promotions, or improving recommendation systems for e-commerce platforms.

9. Iterative Analysis:

- Continuously monitor and analyze market basket data to identify evolving trends and adapt strategies accordingly.