Product: Recommendation System by Market Basket Analytics

Roadmap: https://miro.com/app/board/uXjVNbEJREk=/?share_link_id=320853273093

Problem statement: In the modern retail landscape, businesses face the challenge of effectively leveraging market basket analytics to develop advanced recommendation systems that enhance customer satisfaction and drive revenue. The traditional "one-size-fits-all" approach to product recommendations is no longer sufficient to meet the diverse and evolving needs of customers.

To address this issue, we need to develop a recommendation system that utilizes market basket analytics to understand and anticipate customer preferences. The primary problem lies in designing an intelligent, personalized recommendation system that not only suggests products but also offers cross-selling and upselling opportunities, ultimately increasing sales and fostering customer loyalty.

Use Cases

Our Product Use Cases (Solution):

1. Optimizing Product Placement and Promotions:

Market Basket Analysis provides insights into customer purchase patterns, enabling businesses to optimize product placement, design effective promotions, and increase cross-selling and upselling opportunities.

2. Enhancing Customer Experience:

Understanding purchasing behaviors allows businesses to tailor their offerings and customer experiences, ultimately enhancing customer satisfaction and loyalty.
3. Streamlining Inventory Management:

Analyzing market baskets helps businesses streamline inventory management, reduce overstocking or stockouts, and improve overall operational efficiency.

Backlog:

1. Market Basket Data Collection and Processing (Automated Data Retrieval):
   Subtasks:
   - Develop a tool to collect market basket data from retail transactions.
   - Retrieve data related to items purchased together and their frequencies.
   - Assign to: Backend + Data Scientist
   - Priority: High!

2. Data Processing and Transformation Pipeline for Market Basket Analysis:
   Subtasks:
   - Transform raw data into a format suitable for Market Basket Analysis (e.g., transaction-item format).
   - Handle missing or inconsistent records.
   - Implement data preprocessing techniques (e.g., item grouping, filtering).
   - Save processed data to a suitable storage format (e.g., database, warehouse).
   - Assign to: Data Scientist
   - Priority: High!

3. Market Basket Analysis and Association Rule Mining:
   Subtasks:
   - Implement algorithms for Association Rule Mining (e.g., Apriori, FP-growth).
   - Extract frequent itemsets and generate association rules.
   - Identify strong associations and patterns within the market basket data.
   - Assign to: Data Scientist
   - Priority: High!

4. Visualization and Insights:
   Subtasks:
   - Create a dashboard to display market basket analysis results.
   - Visualize association rules, support, confidence, and lift values.
   - Provide insights on item co-occurrences and purchasing trends.
   - Assign to: Frontend, Data Scientist
   - Priority: High!

Github: https://github.com/ArtashesMezhlumyan/Marketing-analysis

References

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API

https://gist.github.com/asagar60/1516f87e72b7029e253bdfdba2ccfccb

Dataset

https://www.kaggle.com/datasets/hamzajabbarkhan/online-retail-store-data-from-uci-ml-repo/