Project Title: Market Basket insights

Problem statement:

Unveiling Customer Behaviour through Association Analysis: Utilize market basket analysis on the provided dataset to uncover hidden patterns and associations between products, aiming to understand customer purchasing behaviour and identify potential cross-selling opportunities for the retail businesses.

The approach is based on the theory that customers who buy a certain item (or group of items) are more likely to buy another specific item (or group of items). For example: while at a quick-serve restaurant (QSR), if someone buys a sandwich and cookies, they are more likely to buy a drink than someone who did not buy a sandwich. This correlation becomes more valuable if it is shown to be stronger than that between the sandwich and drink without the cookies.

Machine learning is extremely useful for the retail industry. It helps the retail sector in every aspect, from predicting sales success to recognizing customers. A well-known use of machine learning in retail is market basket analysis (MBA). Stores and websites can be arranged consistently by merchants knowing which products customers often purchase together. Most of it is done by examining their past purchasing patterns. Companies utilize it as a technique for cross-selling products on their online platform. However, it's not limited to the retail sector; it's also utilized in insurance claims and fraudulent

The Predictive Market Basket Analysis is one of the types of market basket analysis

This type uses supervised learning techniques like classification and regression. Essentially, it aims to mimic the market in order to investigate the variables that impact occurrences. It essentially uses the items purchased in a specific order to identify cross-selling.

Market Basket Insights looks for what combinations of products most frequently occur together in transactions. These relationships can be used to increase profitability through cross-selling, recommendations, promotions, or even the placement of items on a menu or in a store.

PURPOSE OF THE BASKET INSIGHTS

A market basket refers to a selection of goods and services that are consistently purchased and sold throughout an economic system. Economists, politicians, and financial analysts use market baskets to track price changes over time and determine inflation levels.

EXAMINING DIFFERENTIAL MARKET BASKET:

This type of analysis is helpful for competition analysis. The system analyzes purchase histories across brands, time periods, seasons, days of the week, etc. to uncover interesting patterns in consumer behavior.

FEATURES:

1.It invloves identifying frequent item sets and generating association rules that express the likelihood of one item being purchased with the purchase of another item. It is used to identify the releation or association between items in a transcation dataset.

2. This type of market basket analysis focuses on the order in which items are purchased in a transcation. It identifies frequent item sequences and generate sequential association rules describing the likelihood of one item sequence being followed by another.

3. Market basket analysis is a business startegy used to design store layouts based on customer's shopping behaviour and purchase histories.

This idea is also applicable to machine learning algorithms to teach machines to help businesses, especially in the e-commerce sector.

4.Market basket analysis (MBA) can be applied to data of customers from the point of sale(POS) systems.

It help retailerd in the following ways:

•Increases customer engagement

•Boosts sales and increases rol

•improves customer experience

•optimize marketing strategies and pattern