

Fufu Republic Dimensional Model for Sales Analysis

Overview

Fufu Republic is a prominent restaurant chain across Nigeria, offering diverse menu options at different branches and accepting various payment methods for customer orders. To better leverage its data, the restaurant seeks to achieve the following goals:

- *Understand sales trends* across branches, payment methods, and dining options (dine-in, take-out, or online).
- *Optimize inventory management* by understanding demand.
- *Enhance the customer experience* by tailoring promotions based on purchasing behaviors.

To fulfill these objectives, we have developed a dimensional model that allows for the comprehensive analysis of sales data across Fufu Republic's locations.

1. Entities, Relationships, and Constraints

#Key Entities:

- *Branch*: Represents the individual outlets of Fufu Republic. Each branch operates with its unique inventory and menu offerings.
- *Menu Item*: Food or beverages sold by the restaurant, which vary across branches.
- *Customer*: Individuals purchasing from Fufu Republic, either in-person or online.
- *Order*: Records every transaction, including the items purchased and the payment method used.
- *Payment*: Details of the payment method used in the transaction (cash, card, or online).
- *Inventory*: Stock levels for each menu item at the respective branch.

#Entity Relationships:

- *Branch ↔ Menu Item*: A branch can offer multiple menu items, and an item can be available at various branches.
- *Order ↔ Customer*: Customers place orders, but some may use guest checkouts.
- *Order ↔ Payment*: Each order is associated with one payment method.
- *Order ↔ Menu Item*: Each order may contain multiple menu items.

#Constraints:

- *Inventory* must be tied to a branch.
- Every *order* must have a corresponding payment method.
- A *customer* is optional for orders (due to guest checkouts).

2. Dimensional Model for Sales

We have chosen the sales process as the foundation of our dimensional model. This model will help Fufu Republic analyze customer order trends and behaviors effectively.

#Key Business Questions to Address:

- What are the *sales trends* across branches?
- Which *payment methods* are the most popular?
- What are the *top-selling menu items*?
- How do *dine-in orders* compare with take-out and online orders?

#Grain:

The grain of the model represents the most detailed level of data, which is a single line item within a customer's order.

#Fact Table: Sales Fact Table

This table contains the following attributes:

- *order_id*: Unique identifier for each order
- *branch_id*: Identifier for the branch
- *item_id*: Identifier for the menu item
- *customer_id*: Identifier for the customer (optional)
- *payment_method_id*: Identifier for the payment method
- *order_type_id*: Type of order (dine-in, take-out, online, etc.)
- *quantity_sold*: Quantity of the item sold
- *total_price*: Total price for the item
- *order_date*: Date and time of the order

#Dimensions:

1. *Time Dimension*:

- *time_id*: Unique identifier for time
- *date*: The actual date
- *day*: Day of the week
- *month*: Month of the year
- *year*: Year

2. *Branch Dimension*:

- *branch_id*: Unique identifier for each branch
- *branch_name*: Name of the branch
- *location*: The geographical location of the branch

3. *Customer Dimension*:

- *customer_id*: Unique identifier for each customer
- *customer_name*: Name of the customer
- *loyalty_status*: Loyalty membership status (if applicable)
- *contact_info*: Email and/or phone number

4. *Menu Item Dimension*:

- *item_id*: Unique identifier for each menu item
- *item_name*: Name of the menu item
- *category*: Category (e.g., food, beverage, etc.)
- *price*: Price of the item

5. *Order Type Dimension*:

- *order_type_id*: Unique identifier for the type of order
- *order_type*: Type of order (dine-in, take-out, online)

6. *Payment Method Dimension*:

- *payment_method_id*: Unique identifier for the payment method
- *payment_type*: Payment mode (cash, card, or online)
- *payment_gateway*: Gateway used for online transactions (e.g., Nomba, Paystack, Interswitch)

Why This Model Works

This dimensional model provides Fufu Republic with a flexible structure for analyzing key business metrics. It supports the following critical analyses:

- *Sales performance by branch*: Understand how different locations perform over time.
- *Payment method trends*: Identify the most popular payment methods across branches.
- *Top-selling items*: Discover which menu items are the most popular.
- *Trends over time*: Use historical data to optimize inventory and offer targeted promotions.

By organizing data in this way, Fufu Republic can easily generate insightful reports using business intelligence (BI) tools, enhancing decision-making across the company.

Conclusion

The dimensional model outlined provides Fufu Republic with a robust framework for utilizing its sales data to make informed business decisions. Through this model, the company can track sales trends, optimize inventory levels, and create personalized customer promotions based on purchasing behavior.