Part B: Data Models for Starbucks

3. Supplier Management System (SMS)

The Supplier Management System (SMS) is a vital operational system for Starbucks, designed to streamline the management of supplier relationships, procurement processes, and inventory sourcing. Given Starbucks' reliance on high-quality ingredients like coffee beans, tea, and other raw materials sourced globally, an efficient Supplier Management System ensures consistency in product quality, timely deliveries, and cost optimization.

Components of the SMS:

a. Suppliers Table:

- This table serves as the master record for all suppliers working with Starbucks. It contains:
    - **SupplierID (Primary Key):** A unique identifier for each supplier.
    - **SupplierName:** The name of the supplier or company providing raw materials.
    - **ContactNumber and Email:** Essential contact information for communication.
    - **Address:** Physical location or headquarters of the supplier for logistical purposes.

b. Supplier Products Table:

- This table acts as a link between suppliers and the products they supply to Starbucks. Key fields include:
    - **SupplierProductID (Primary Key):** A unique identifier for the supplier-product relationship.
    - **SupplierID (Foreign Key):** Links the supplier to the product they provide.
    - **ProductID (Foreign Key):** Identifies the product supplied.
    - **Price:** Tracks the price charged by the supplier for the specific product.

c. Products Table:

- This table stores details of all products sourced by Starbucks from suppliers, including:
    - **ProductID (Primary Key):** A unique identifier for each product.
    - **ProductName:** The name of the product (e.g., Coffee Beans, Green Tea, Paper Cups).
    - **ProductDescription:** Additional details about the product, such as origin or quality specifications.

How the SMS Works:

The Supplier Management System integrates these three tables to manage supplier relationships and ensure the smooth flow of materials. For example:

- When Starbucks needs to order coffee beans, it retrieves information from the Products Table and identifies the corresponding suppliers using the Supplier Products Table.
- Contact details and pricing information are fetched from the Suppliers Table for procurement decisions.
- The system allows Starbucks to evaluate which supplier offers the best terms for a specific product, ensuring cost-efficiency and timely delivery.

Use Cases of the SMS at Starbucks:

1. Supplier Relationship Management:
- Starbucks uses the SMS to maintain strong relationships with its global network of coffee farmers, tea growers, and other suppliers. The system ensures suppliers meet quality and sustainability standards.

2. Procurement Planning:
- The SMS enables Starbucks to plan procurement by tracking product demand and supplier performance. This helps avoid supply shortages or overstocking.

3. Cost Optimization:
- By analyzing the price data stored in the **Supplier Products Table**, Starbucks can identify cost-saving opportunities or negotiate better deals with suppliers.

4. Product Traceability:
- The system helps Starbucks trace raw materials back to their source, ensuring compliance with quality and sustainability certifications (e.g., Fair Trade or ethically sourced materials).

5. Risk Management:
- By maintaining detailed records of suppliers and their products, Starbucks can quickly identify alternative suppliers in case of disruptions, such as delays.

Relationships in the SMS:

1. One-to-Many Relationship:
- A single supplier can provide multiple products (one-to-many relationship between Suppliers Table and Supplier Products Table).

2. Many-to-One Relationship:
- Multiple suppliers may provide the same product (many-to-one relationship between Supplier Products Table and Products Table).
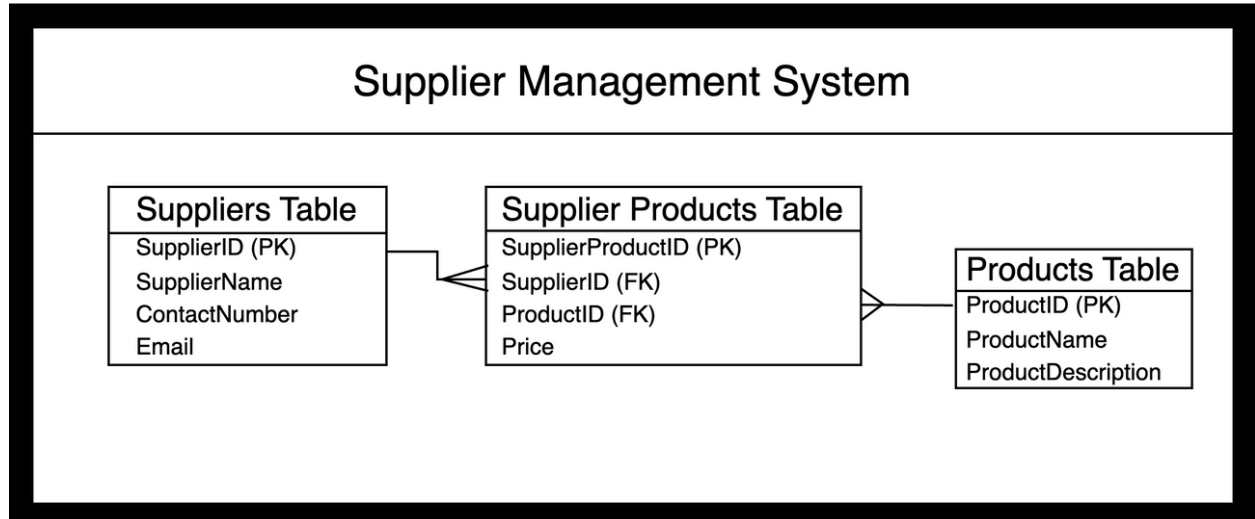
Why the SMS is Crucial for Starbucks:

The Supplier Management System is essential for Starbucks' operations because it ensures:

1. **Consistency in Quality:** By maintaining detailed records of suppliers and their products, Starbucks can uphold its commitment to providing high-quality beverages and goods.
2. **Operational Efficiency:** The system streamlines procurement and inventory management, reducing delays and inefficiencies.
3. **Sustainability Goals:** Starbucks can use the SMS to ensure suppliers meet sustainability standards, supporting the company's corporate responsibility initiatives.
4. **Cost Control:** The SMS helps Starbucks manage procurement costs by tracking prices and supplier performance.

Challenges Without an Effective SMS:

Without a robust Supplier Management System, Starbucks would face issues such as:

- Delays in raw material procurement, leading to stockouts or disruptions.
- Lack of visibility into supplier performance and product quality.
- Difficulty in tracking costs and negotiating better deals.
- Inability to meet sustainability or ethical sourcing goals.

Supplier Management System

Suppliers Table
- SupplierID (PK)
- SupplierName
- ContactNumber
- Email

Supplier Products Table
- SupplierProductID (PK)
- SupplierID (FK)
- ProductID (FK)
- Price

Products Table
- ProductID (PK)
- ProductName
- ProductDescription

BIGQUERY: