Apple iTunes Music Analysis Project

Project Goal: **To gain deeper insights into customer behavior, music preferences, and overall sales performance from the iTunes relational database to improve product offerings, customer targeting, and operational efficiency .**

Tools Used- SQL, Power BI, Data CSV

Phase 1: Database Setup

1. Design a Relational Schema using the Provided CSVs:

- **We analyzed the structure and content of each CSV file (media_type.csv, playlist.csv, playlist_track.csv, track.csv, invoice_line.csv, customer.csv, invoice.csv, artist.csv, employee.csv, genre.csv, album.csv) to understand their columns and data types.**
- **We identified potential primary and foreign key relationships between these datasets.**

2. Create SQL Tables:

- **We generated CREATE TABLE SQL queries for each of the identified tables.**
- **The order of table creation was carefully considered to respect foreign key dependencies (e.g., artist before album, employee before customer, customer before invoice, etc.).**
- **Data types were chosen based on the CSV content (e.g., SERIAL PRIMARY KEY for auto-incrementing IDs, VARCHAR for text, NUMERIC(10, 2) for prices, DATE or TIMESTAMP for dates).**
- **NOT NULL constraints were applied to columns where data was mandatory.**

3. Establish Relationships using Primary and Foreign Keys:

- **PRIMARY KEY constraints were defined for the unique identifier columns in each table (e.g., track_id in track table).**

- **FOREIGN KEY constraints were added to link related tables, ensuring data integrity (e.g., album_id in track table referencing album_id in album table). A self-referencing foreign key (reports_to) was also included in the employee table.**

4. Import Data

We imported the data in the tables directly by clicking on the import data option.

Phase 2: Exploratory Analysis & Advanced Analytics (SQL Queries)

We have generated SQL queries to address many of the "Realistic Business Questions" outlined in your document, covering various aspects of the analysis:

- **Customer Analytics:**
  - **Identifying the best customer by total spending.**
  - **Determining the city with the highest total invoice sum.**
  - **Finding the customer who spent the most for each country.**
- **Sales & Revenue Analysis:**
  - **Identifying top invoice values.**
  - **Determining countries with the most invoices.**
- **Product & Content Analysis:**
  - **Finding the most popular song (by purchases).**
  - **Calculating average prices for different music types (genres and media types).**
- **Artist & Genre Performance:**
  - **Identifying the most popular artists (by tracks sold).**
  - **Finding the most popular music genre for each country (by purchases).**
  - **Identifying top rock artists by track count.**
- **Customer Engagement:**
  - **Listing all Rock Music listeners.**
- **Operational Efficiency:**
  - **Identifying tracks longer than the average song length.**

- **Calculating amount spent by each customer on artists.**

Conclusions and Recommendations for Improvement

These insights allow us to formulate targeted recommendations to enhance various aspects of the business:

1. **For Marketing & Customer Targeting:**
    - **Customer Segmentation: Develop specific marketing campaigns for high-spending customers, re-engagement strategies for inactive customers (e.g., those who haven't purchased in the last 6 months), and personalized offers for one-time purchasers to encourage repeat business.**
    - **Geographic Campaigns: Tailor promotional efforts and content recommendations to specific countries and cities where certain genres or artists are most popular. Focus marketing spend on top-performing regions.**
    - **Promotional Timing: Leverage insights from monthly and quarterly revenue trends to schedule major sales events or new music releases during peak sales periods.**
2. **For Product & Content Offerings:**
    - **Content Acquisition: Prioritize acquiring new music from the top-performing artists and in the most popular genres to meet existing demand.**
    - **Inventory Optimization: Review and potentially promote, bundle, or even discontinue tracks and albums that have never been purchased. This frees up resources and streamlines the catalog.**
    - **Pricing Strategy: Analyze average prices across genres and media types to optimize pricing strategies and potentially offer dynamic pricing based on popularity or type.**
    - **Curated Playlists: Based on insights into the most common combinations of tracks purchased together and most popular playlists, create and promote more curated playlists.**
3. **For Operations & Employee Efficiency:**

- **Sales Representative Optimization: Acknowledge and potentially reward top-performing sales representatives. Consider re-allocating customer portfolios to ensure an equitable distribution of high-value customers among support staff.**
- **Regional Investment: Allocate operational resources more effectively by focusing on high-revenue generating employee regions.**
- **Underserved Regions: Investigate and address potential issues in underserved geographic regions (high users, low sales) to convert interest into revenue.**

Project by

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