

Comprehensive Analysis of Music Sales and Customer Insights

Introduction

This project focuses on analyzing music sales data to uncover trends and actionable insights. By leveraging SQL queries, we explore various aspects of the dataset, including revenue sources, customer behavior, and regional sales distributions. Our goal is to use these insights to inform strategic decision-making and optimize marketing efforts.

Aim of the Project

The primary aim of this project is to provide a detailed understanding of our music sales data and derive actionable insights to:

1. Identify key revenue sources.
2. Understand customer behavior and preferences.
3. Optimize marketing strategies.
4. Enhance strategic decision-making.


Questions Addressed

- 1.** Which countries have the most Invoices?
- 2.** What are top 3 values of total invoice?
- 3.** Who is the senior most employee, find name and job title?
- 4.** Which city has the best customers? We would like to throw a promotional Music Festival in the city we made the most money. Write a query that returns one city that has the highest sum of invoice totals. Return both the city name & sum of all invoice totals
- 5.** Who is the best customer? The customer who has spent the most money will be declared the best customer. Write a query that returns the person who has spent the most money.

- 6.** We want to find out the most popular music Genre for each country. We determine the most popular genre as the genre with the highest amount of purchases. Write a query that returns each country along with the top Genre. For countries where the maximum number of purchases is shared return all Genres.
- 7.** Write query to return the first name, last name, email & Genre of all Rock Music listeners. Return your list ordered alphabetically by email starting with A.
- 8.** Let's invite the artists who have written the most rock music in our dataset. Write a query that returns the Artist name and total track count of the top 10 rock bands.
- 9.** Return all the track names that have a song length longer than the average song length. Return the Name and Milliseconds for each track. Order by the song length with the longest songs listed first.
- 10.** Find how much amount spent by each customer on artists? Write a query to return customer name, artist name and total spent.
- 11.** Write a query that determines the customer that has spent the most on music for each country. Write a query that returns the country along with the top customer and how much they spent. For countries where the top amount spent is shared, provide all customers who spent this amount.



Q1: What are top 3 values of total invoice?

```
SELECT total
FROM invoice
ORDER BY total DESC
limit 3;
```

	total double precision 
1	23.7599999999999998
2	19.8
3	19.8



Q2: Which countries has the most invoices?

```
SELECT COUNT(*) AS c, billing_country
FROM invoice
GROUP BY billing_country
ORDER BY c DESC
```

	c bigint 	billing_country character varying (30) 
1	131	USA
2	76	Canada
3	61	Brazil
4	50	France
5	41	Germany
6	30	Czech Republic
7	29	Portugal
8	28	United Kingdom

Q3: Identify the city with the highest total invoice amounts and name it as the best customer city for a promotional Music Festival.

```
SELECT billing_city, SUM(total) AS InvoiceTotal
FROM invoice
GROUP BY billing_city
ORDER BY InvoiceTotal DESC
LIMIT 1;
```

	invoice_total double precision 	billing_city character varying (30) 
1	273.24000000000000	Prague

Q4: Determine the customer who has spent the most money in total and declare them as the best customer.

```
SELECT customer.customer_id, first_name, last_name, SUM(total) AS total_spending
FROM customer
JOIN invoice ON customer.customer_id = invoice.customer_id
GROUP BY customer.customer_id
ORDER BY total_spending DESC
LIMIT 1;
```

	customer_id [PK] integer	first_name character (50)	last_name character (50)	total double precision
1	5	R	Madhav	144.54000000000000

Q5: Who is the senior most employee based on job title?

```
SELECT title, last_name, first_name
FROM employee
ORDER BY levels DESC
LIMIT 1
```

employee_id [PK] character varying (50)	last_name character (50)	first_name character (50)	title character varying (50)
9	Madan	Mohan	Senior General Manag...

Q6: List all the track names that have a duration longer than the average track length, ordered by duration.

```
SELECT name, milliseconds
FROM track
WHERE milliseconds > (
    SELECT AVG(milliseconds) AS avg_track_length
    FROM track
)
ORDER BY milliseconds DESC;
```

	avg_track_length numeric
1	393599.2121039109

	name character varying (150)	milliseconds integer
1	Occupation / Precipice	5286953
2	Through a Looking Glass	5088838
3	Greetings from Earth, Pt. 1	2960293
4	The Man With Nine Lives	2956998
5	Battlestar Galactica, Pt. 2	2956081
6	Battlestar Galactica, Pt. 1	2952702
7	Murder On the Rising Star	2935894
8	Battlestar Galactica, Pt. 3	2927802

Q7: Find out how much each customer has spent on the top artist (the artist with the most total sales).

```
WITH best_selling_artist AS (  
  SELECT artist.artist_id, artist.name AS artist_name, SUM(invoice_line.unit_price * invoice_line.quantity) AS total_sales  
  FROM invoice_line  
  JOIN track ON track.track_id = invoice_line.track_id  
  JOIN album ON album.album_id = track.album_id  
  JOIN artist ON artist.artist_id = album.artist_id  
  GROUP BY artist.artist_id  
  ORDER BY total_sales DESC  
  LIMIT 1  
)
```

	artist_id [PK] character varying (50)	artist_name character varying (120)	total_sales double precision
1	51	Queen	190.08000000000000

```
SELECT c.customer_id, c.first_name, c.last_name, bsa.artist_name, SUM(il.unit_price * il.quantity) AS amount_spent  
FROM invoice i  
JOIN customer c ON c.customer_id = i.customer_id  
JOIN invoice_line il ON il.invoice_id = i.invoice_id  
JOIN track t ON t.track_id = il.track_id  
JOIN album alb ON alb.album_id = t.album_id  
JOIN best_selling_artist bsa ON bsa.artist_id = alb.artist_id  
GROUP BY c.customer_id, c.first_name, c.last_name, bsa.artist_name  
ORDER BY amount_spent DESC;
```

	customer_id integer	first_name character (50)	last_name character (50)	artist_name character varying (120)	amount_spent double precision
1	46	Hugh	O'Reilly	Queen	27.719999999999999
2	38	Niklas	Schröder	Queen	18.81
3	3	François	Tremblay	Queen	17.82
4	34	João	Fernandes	Queen	16.830000000000000

Q8: Identify the most popular music genre in each country by the highest number of purchases.

```
WITH popular_genre AS (  
    SELECT COUNT(il.quantity) AS purchases, c.country, g.name, g.genre_id,  
           ROW_NUMBER() OVER(PARTITION BY c.country ORDER BY COUNT(il.quantity) DESC) AS RowNo  
    FROM invoice_line il  
    JOIN invoice i ON i.invoice_id = il.invoice_id  
    JOIN customer c ON c.customer_id = i.customer_id  
    JOIN track t ON t.track_id = il.track_id  
    JOIN genre g ON g.genre_id = t.genre_id  
    GROUP BY c.country, g.name, g.genre_id  
    ORDER BY c.country, purchases DESC  
)  
  
SELECT country, name  
FROM popular_genre  
WHERE RowNo = 1;
```

	purchases bigint	country character varying (50)	name character varying (120)	genre_id character varying (50)	rowno bigint
1	17	Argentina	Alternative & Punk	4	1
2	34	Australia	Rock	1	1
3	40	Austria	Rock	1	1
4	26	Belgium	Rock	1	1

Q9: Write a query to return the email, first name, last name, & Genre of all Rock Music listeners.

```
SELECT DISTINCT email,firstname, lastname
FROM customer
JOIN invoice ON customer.customer_id = invoice.customer_id
JOIN invoiceline ON invoice.invoice_id = invoiceline.invoice_id
WHERE track_id IN(
    SELECT track_id FROM track
    JOIN genre ON track.genre_id = genre.genre_id
    WHERE genre.name LIKE 'Rock'
)
ORDER BY email;
```

	email character varying (50) 🔒	firstname character (50) 🔒	lastname character (50) 🔒	name character varying (120) 🔒
1	aaronmitchell@yahoo...	Aaron	Mitchell	Rock
2	alero@uol.com.br	Alexandre	Rocha	Rock
3	astrid.gruber@apple.at	Astrid	Gruber	Rock
4	bjorn.hansen@yahoo....	Bjørn	Hansen	Rock
5	camille.bernard@yah...	Camille	Bernard	Rock

Q10: Let's invite the artists who have written the most rock music in our dataset. Write a query that returns the Artist name and total track count of the top 10 rock bands.

```
SELECT artist.artist_id, artist.name, COUNT(artist.artist_id) AS number_of_songs
FROM track
JOIN album ON album.album_id = track.album_id
JOIN artist ON artist.artist_id = album.artist_id
JOIN genre ON genre.genre_id = track.genre_id
WHERE genre.name LIKE 'Rock'
GROUP BY artist.artist_id
ORDER BY number_of_songs DESC
LIMIT 10;
```

	artist_id [PK] character varying (50)	name character varying (120)
1	22	Led Zeppelin
2	150	U2
3	58	Deep Purple
4	90	Iron Maiden
5	118	Pearl Jam
6	152	Van Halen
7	51	Queen
8	142	The Rolling Stones

Q11: Write a query that determines the customer that has spent the most on music for each country. Write a query that returns the country along with the top customer and how much they spent. For countries where the top amount spent is shared, provide all customers who spent this amount.

```
WITH Customer_with_country AS (  
    SELECT customer.customer_id,first_name,last_name,billing_country,SUM(total) AS total_spending,  
    ROW_NUMBER() OVER(PARTITION BY billing_country ORDER BY SUM(total) DESC) AS RowNo  
    FROM invoice  
    JOIN customer ON customer.customer_id = invoice.customer_id  
    GROUP BY 1,2,3,4  
    ORDER BY 4 ASC,5 DESC)  
SELECT * FROM Customer_with_country WHERE RowNo <= 1
```

	customer_id integer	first_name character (50)	last_name character (50)	billing_country character varying (30)	total_spending double precision	rowno bigint
1	56	Diego	Gutiérrez	Argentina	39.6	1
2	55	Mark	Taylor	Australia	81.18	1
3	7	Astrid	Gruber	Austria	69.3	1
4	8	Daan	Peeters	Belgium	60.389999999999999	1
5	1	Luís	Gonçalves	Brazil	108.899999999999998	1

Data-Driven Actionable Strategies

Personalized Campaigns: Use insights from the data to create personalized marketing campaigns, offering recommendations and promotions that match individual customer preferences.

Target High-Value Segments: Identify high-value customer segments and target them with exclusive offers, premium packages, and personalized experiences to maximize revenue.

Identify Key Revenue Sources: Focus on products, services, or genres that generate the highest revenue and explore opportunities to expand these offerings.

Bundling schemes: Develop bundling and upselling strategies to increase the average transaction value, such as offering discounts on related tracks or genres.

Promotional Events: Plan and execute promotional events, such as music festivals or exclusive online releases, in top-performing regions to boost sales.

Loyalty Programs: Develop loyalty programs that reward repeat purchases and long-term customer engagement, including exclusive access to new releases or VIP events.

Feedback and Engagement: Regularly collect customer feedback to understand their preferences and improve service offerings. Engage with customers through newsletters, surveys, and personalized communication.

Geographic Expansion: Focus on regions with high sales potential and consider expanding marketing efforts and distribution channels in these areas.

Regular Track Performance Analysis: Regularly analyze the performance of different tracks and genres to understand what resonates most with customers and adjust the approach accordingly create personalized playlists for them.

Exclusive Content: Offer exclusive content, such as behind-the-scenes videos, interviews, or early access to new releases, to attract and retain customers.