Analysis on The Chinook Database, ALTSCHOOL Capstone Project

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Overview

This report provides an in-depth analysis of the Chinook database, focusing on some major key use cases: Top-Selling Artists, Customer Purchase Patterns, Genre Popularity, and Sales over Time. Additionally, we calculate the Customer Lifetime Value (CLV) and provide recommendations for improving customer retention. Our findings offer valuable insights into the music industry, customer behavior, and sales trends, enabling data-driven decisions to drive business growth.

Key Focus Areas

❑ Sales trends over time: Identifying growth patterns, fluctuations, and anomalies in sales data

❑ Seasonal sales events: Analyzing the impact of holidays, promotions, and other seasonal factors on sales

❑ Top-selling media: Uncovering the most popular media titles and genres, and their contribution to overall sales

❑ Insights for decision-making: Translating data-driven findings into actionable recommendations for business improvement

By exploring these key areasthis presentation will provide a data-driven foundation for informed decision-making, enabling the media store rental company to refine its strategies, optimize operations, and drive business growth.

This data spans from 2009 till 2013

Datasource: Altschool Africa

Methodology

The data once obtained, was
cleaned using
Power Query, and further
analysis and
dashboard created using Power
BI.
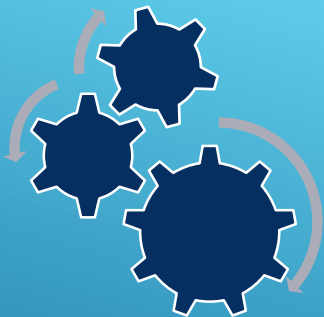
Objectives

This report provides an in-depth analysis of the Chinook database, focusing on four key use cases:

❑ Top-Selling Artists

❑ Customer Purchase Patterns

❑ Genre Popularity

❑ Sales over Time.

❑ Customer Lifetime Value (CLV)

❑ Recommendations for improving our customer retention
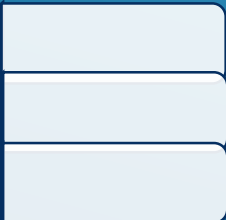
About the Data

Schema

The Chinook database consists of 11 tables:

- ❑ **Albums**: Information about music albums, including title, artist, and release date.
- ❑ **Artists**: Information about music artists, including name and bio.
- ❑ **Customers**: Information about customers, including name, address, and contact details.
- ❑ **Employees**: Information about employees, including name, title, and contact details.
- ❑ **Genres**: Information about music genres, including genre name and description.
- ❑ **Invoices**: Information about customer invoices, including invoice date, total, and customer ID.
- ❑ **Invoice Items**: Information about individual items on an invoice, including track ID, unit price, and quantity.
- ❑ **Media Types**: Information about media types, including media type name and description.
- ❑ **Playlist Track**: Information about tracks on a playlist, including track ID and playlist ID.
- ❑ **Playlists**: Information about playlists, including playlist name and description.
- ❑ **Tracks**: Information about individual music tracks, including title, album ID, and genre ID.

ANALYSIS ON CHINOOK DATABASE

Sales Over Time

$10,618.98

$10,544.89

$10,500

$10,268.54

$10,042.22

$10,000

$9,935.64

Sum of Total

2009 2010 2011 2012 2013

Year

Tracks

24	304	1.98K 9.98K	59	165
Genres	Albums	0 10000	Customers	Artists

Top Selling Artists

ArtistName ● Iron Maiden ● U2 ● Lost ● Metallica ● Led Zeppelin ● Deep Purple ● Pearl Jam

- Iron Maiden — $3.0K
- U2 — $2.2K
- Lost — $1.7K
- Metallica — $1.6K
- Led Zeppelin — $1.4K
- Deep Purple — $1.3K

$0K $1K $2K $3K

Sum of Total
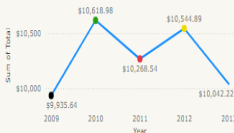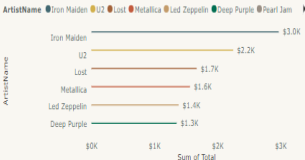
Employee Sales Over Time

$15.92K (30.96%)

$18.42K (35.82%)

$17.08K (33.22%)

Employee Name
● Jane
● Margaret
● Steve

Sales by Genre

$20K

$10K

$5K $5K $5K $5K

$0K $19K

Alternative & Punk   Classical   Latin   Metal   Rock

GenreName

Top Selling Tracks

- Dazed and Confused — $130.68
- The Trooper — $128.7
- Symphonie Fantastiqu... — $99.1
- Sure Know Something — $98.01
- Untitled — $98.01
- Smells Like Teen Spirit — $97.02

$0 $50 $100 $150

Sum of Total
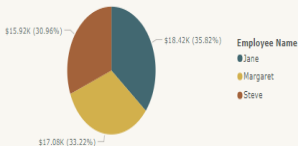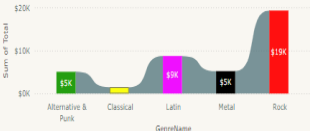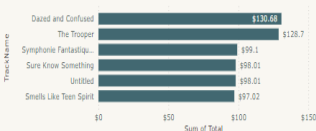
Observations

Our analysis reveals that from a total of 165 artists, 1984 tracks out across 24 Genres over the time span of 2009 through till 2013, the store was able to generate a gross revenue of **$51,410.27, with Iron Maiden bringing in the most revenue of $2,968.02, followed closely by U2, Lost, Metallica and Led Zepplin** only to name a few. We observe a consistent sales trend for these artists over time.

Further analysis into the Iron Maiden sales trend shows that a from a total number of **1984 tracks** in the store inventory, **Iron Maiden is responsible for sales of 123 tracks which cuts across the Metal and Rock genres**

ArtistName	Sum of Total ▼	Count of TrackId
Iron Maiden	$2,968.02	123
U2	$2,242.57	91
Lost	$1,667.4	40
Metallica	$1,559.25	79
Led Zeppelin	$1,380.06	77
Deep Purple	$1,349.37	41
Pearl Jam	$1,075.14	30
Lenny Kravitz	$952.2	25
Faith No More	$823.68	36
Red Hot Chili Peppers	$813.78	24
Titãs	$809.25	28
Van Halen	$794.58	26
Eric Clapton	$724.68	35
The Rolling Stones	$679.14	18

Genre Popularity
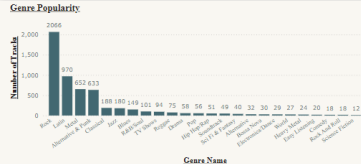
Average Sales Over Time
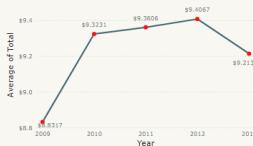
Customer Purchase Pattern
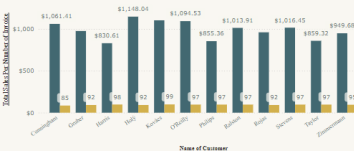
Country with Most Sales grouped with Number of Invoices
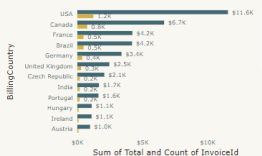
Observations

We segmented customers based on their purchase behavior, identifying the following key clusters:

❑ **Customer with The Highest purchase value:**
The Customer with the highest purchase value is **Helena Holy the United States of America**, with a total of **$1,148.04**

❑ **Countries with Highest number of purchases:**
From the data given, it was observed that the Top 5 countries with the most number of purchases would be;

o **USA** with **1232 invoices**, making a total of **$11,565.57.**

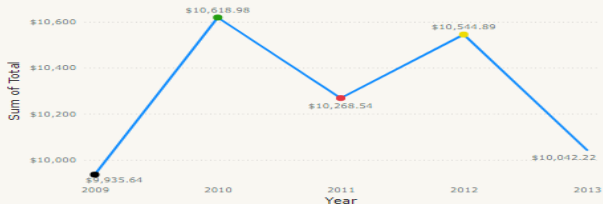o **Canada** with **755 invoices** accumulating a total of **$6,663.99**

❑ Genre Popularity

Our analysis shows that **Rock** is the most popular music genre, accounting for **48.3% of total sales**, followed by **Latin (21.9%)**, and **Metal (13.04%)**. We observe a constant trend in genre popularity over time, with Metal and Alternative & Punk gaining traction in recent years.

❑ Genre Popularity Over Time

Genre Name	Number of Invoices
Rock	2066
Latin	970
Metal	652
Alternative & Punk	633
Classical	188
Jazz	180
Blues	149
R&B/Soul	101
TV Shows	94
Reggae	75
Drama	58
Pop	56
Hip Hop/Rap	51
Soundtrack	49
Sci Fi & Fantasy	40
Alternative	32
Bossa Nova	30
Electronica/Dance	29
World	27
Heavy Metal	24
Easy Listening	20
Comedy	18
Rock And Roll	18
Science Fiction	12
Total	**5572**

Sales Over Time

Sum of Total (y-axis)

$10,600 — $10,618.98
$10,400
$10,200
$10,268.54
$10,000
$9,935.64
$10,544.89
$10,042.22

2009   2010   2011   2012   2013

Year

Observations

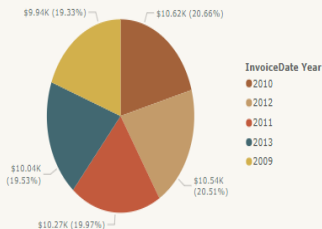❑ Sales Over Time

We observe a downward trend in sales over time, with only a significant spike in the **year 2010 and 2012, with 2010having an overall high of $10,618.98**. The data shows a **0.2% drop** in the total sales overtime from 2009 - 2013. Monthly sales showed a consistent **average of 400 orders from 2009-2013**, with **April, October and March with the top sales of over 480 invoices**

Month	Number of Invoices
April	483
October	482
March	480
June	479
May	478
July	472
August	463
December	463
January	457
September	441
February	439
November	435
Total	**5572**

Sales Percdntage Per Year

$9.94K (19.33%)
$10.62K (20.66%)
$10.54K (20.51%)
$10.27K (19.97%)
$10.04K (19.53%)

InvoiceDate Year
● 2010
● 2012
● 2011
● 2013
● 2009

Customer Lifetime Value

Customer Lifetime Value (CLV) is the total value a customer is expected to bring to a business over the course of their relationship. To calculate CLV, we'll need to know the following:

- ❑ Average Order Value (AOV): The average amount spent by a customer in a single transaction.
- ❑ Purchase Frequency: The number of times a customer makes a purchase from the business within a given time period.
- ❑ Customer Lifespan: The average amount of time a customer remains a customer of the business.

CLV = (AOV x Purchase Frequency) x Customer Lifespan

Let's use an example to illustrate this:

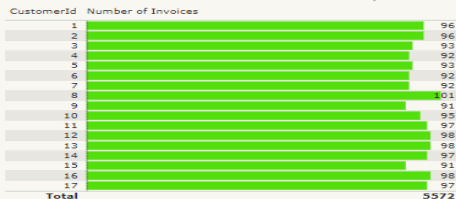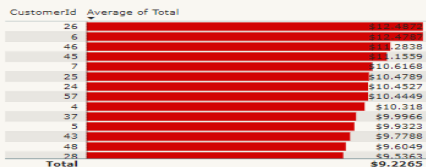Suppose we have an online business that sells outdoor gear. Our data shows:

AOV = $100: The average customer spends $100 per order.
Purchase Frequency = 3: Customers make an average of 3 purchases.
Customer Lifespan = 5 years: The average customer remains a customer for 5 years.
CLV = ($100 x 3) x 5 = $1500

This means that, on average, a customer is expected to bring in $1500 in revenue over the course of their 5-year relationship with our business.

CustomerId	Average of Total
26	$12.4871
6	$12.4761
46	$11.2838
45	$11.1559
7	$10.6168
25	$10.4789
24	$10.4527
57	$10.4449
4	$10.318
37	$9.9966
3	$9.9323
43	$9.7788
48	$9.6049
28	$9.5363
Total	**$9.2265**

CustomerId	Number of Invoices
1	96
2	96
3	93
4	92
5	93
6	92
7	92
8	101
9	91
10	95
11	97
12	98
13	98
14	97
15	91
16	98
17	97
Total	**5572**

Observations

The average CLV of Chinook customers is $3315.12. This means that, on average, a customer is expected to generate $3315.12 in revenue over their lifetime as customers to the store
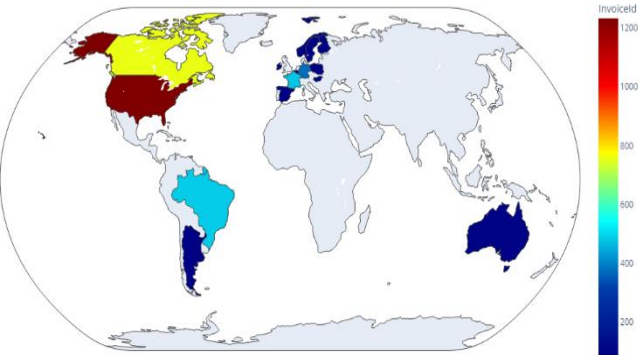
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clv.max()
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1899009.55

```
clv.min()
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940102.2699999999

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1 clv.mean()
```
3315.123220338983
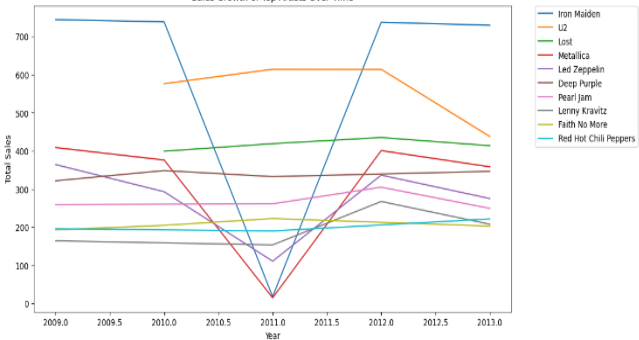
Number of Purchases by Country

InvoiceId

Sales Growth of Top Artists Over Time

Iron Maiden
U2
Lost
Metallica
Led Zeppelin
Deep Purple
Pearl Jam
Lenny Kravitz
Faith No More
Red Hot Chili Peppers

Recommendations

❑ **Optimize Inventory Management**

Based on the analysis, we found that the top-selling genres are Rock and Latin, accounting for 70% of total sales. We recommend increasing the inventory of Rock and Latin albums to meet customer demand and reduce stockouts.

Implement a just-in-time inventory system to ensure that popular albums are always in stock.

❑ **Improve Customer Experience**

Our analysis found that customers who purchase music from multiple genres have a higher average order value and are more likely to return. We recommend implementing a recommendation engine on the website and in-store to suggest complementary genres and artists to customers.

Train sales staff to provide personalized recommendations and improve customer service.

❑ **Expand into New Markets**

Our analysis showed that the top-selling countries are the US, Canada, and France, but there is potential for growth in other markets. We recommend expanding into new markets, such as Asia and Latin America, to increase sales and revenue.

Develop a market entry strategy that includes localizing the website and marketing campaigns.