

E-commerce sales project

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"Sales Insights from Online Transactions: A Case Study in Data Cleaning & Analysis"



Online Sales Analysis Using SQL

Objective:

To analyze online sales data to extract actionable business insights by answering key questions around revenue trends, product performance, and customer behavior.

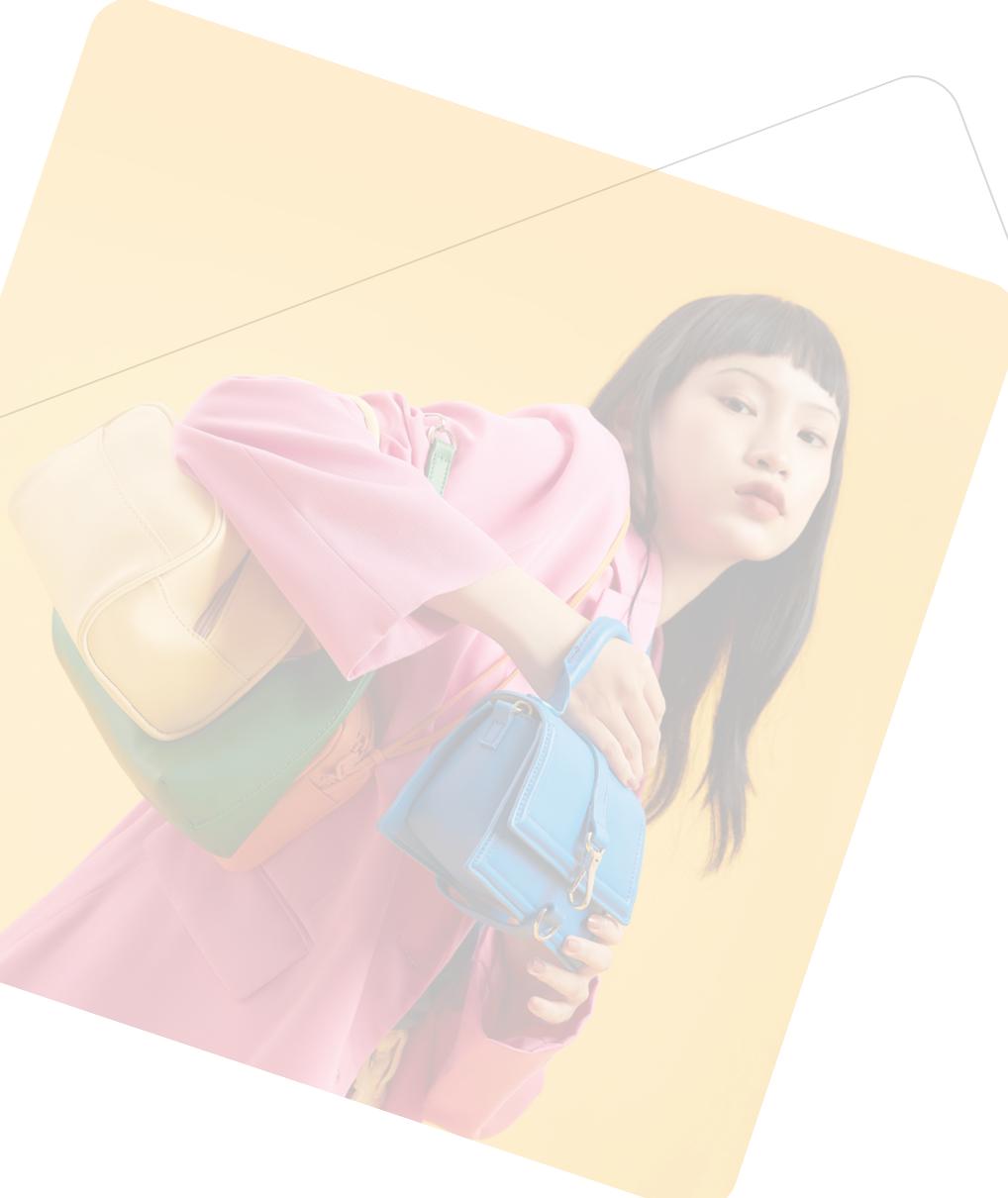


Dataset Overview

Transaction ID	Date	Product Category	Product Name	Units Sold	Unit Price	Total Revenue	Region	Payment Method
10063	2024-03-03 00:00:00	Clothing	Hanes ComfortSoft T-Shirt	10	9.99	99.9	Asia	Debit Card
10009	2024-01-09 00:00:00	Clothing	Nike Air Force 1	6	89.99	539.94	Asia	Debit Card
10048	2024-02-17 00:00:00	Sports	Yeti Rambler Tumbler	6	39.99	239.94	Asia	Credit Card
10084	2024-03-24 00:00:00	Sports	Spalding NBA Street Bask...	6	24.99	149.94	Asia	Credit Card
10099	2024-04-08 00:00:00	Clothing	Gap Essential Crewneck T...	6	19.99	119.94	Asia	Debit Card
10006	2024-01-06 00:00:00	Sports	Wilson Evolution Basketball	5	29.99	149.95	Asia	Credit Card

Data Cleaning

Cleaning Nulls



no nulls were found so
none removed

```
SELECT
  *
FROM
  `online sales data`
WHERE
  `Transaction ID` IS NULL
  OR `Date` IS NULL
  OR `Product Category` IS NULL
  OR `Product Name` IS NULL
  OR `Units Sold` IS NULL
  OR `Unit Price` IS NULL
  OR `Total Revenue` IS NULL
  OR `Region` IS NULL
  OR `Payment Method` IS NULL;
```

Monthly Revenue Trends

SELECT

```
EXTRACT(MONTH FROM `Date`) AS month,  
ROUND(SUM(`Total Revenue`), 2) AS total_sales
```

FROM

```
`online sales data`
```

GROUP BY month

ORDER BY month;

	month	total_sales
▶	1	14548.32
	2	10803.37
	3	12849.24
	4	12451.69
	5	8455.49
	6	7384.55
	7	6797.08
	8	7278.11

Best Selling Categories

SELECT

 `Product Category`, SUM(`Units Sold`) **AS sales**

FROM

 `online sales data`

GROUP BY `Product Category`

ORDER BY sales **DESC;**

	Product Category	sales
▶	Clothing	145
	Books	114
	Sports	88
	Electronics	66
	Home Appliances	59
	Beauty Products	46

Top 5 Products

SELECT

 `Product Name`, SUM(`Units Sold`) **AS** sales

FROM

 `online sales data`

GROUP BY `Product Name`

ORDER BY sales **DESC**

LIMIT 5;

	Product Name	sales
▶	Hanes ComfortSoft T-Shirt	10
	The Catcher in the Rye by J.D. Salinger	7
	Spalding NBA Street Basketball	6
	Gap Essential Crewneck T-Shirt	6
	Nike Air Force 1	6



Revenue Contribution by Category

SELECT

```
  `Product Category` ,  
  ROUND(SUM(`Total Revenue`) * 100.0 / (SELECT  
    SUM(`Total Revenue`))  
  FROM  
    `online sales data` ),  
  2) AS contribution_percentage
```

FROM

```
  `online sales data`  
GROUP BY `Product Category`  
ORDER BY contribution_percentage DESC  
LIMIT 5;
```

Product Category	contribution_percentage
Electronics	43.42
Home Appliances	23.14
Sports	17.78
Clothing	10.09
Beauty Products	3.25



Top Region in Revenue:

SELECT

Region, SUM(`Total Revenue`) AS total_sales

FROM

`online sales data`

GROUP BY Region

ORDER BY total_sales DESC;

Region	total_sales
North America	36844.34000000002
Asia	22455.449999999997
Europe	21268.060000000005



Product Performance by Region:

SELECT

```
Region, `Product Name`, SUM(`Units Sold`) AS sold
```

FROM

```
`online sales data`
```

```
GROUP BY Region , `Product Name`
```

```
ORDER BY sold DESC
```

```
LIMIT 5;
```

Region	Product Name	sold
▶ Asia	Hanes ComfortSoft T-Shirt	10
North America	The Catcher in the Rye by J.D. Salinger	7
Asia	Spalding NBA Street Basketball	6
Asia	Nike Air Force 1	6
Asia	Gap Essential Crewneck T-Shirt	6



Category Trends by Region

SELECT

```
  `Product Category`,  
  Region,  
  SUM(`Units Sold`),  
  SUM(`Total Revenue`)
```

FROM

```
  `online sales data`  
GROUP BY `Product Category` , Region  
ORDER BY SUM(`Units Sold`) DESC , SUM(`Total Revenue`) DESC;
```

	Product Category	Region	SUM(`Units Sold`)	SUM(`Total Revenue`)
▶	Clothing	Asia	145	8128.930000000001
	Books	North America	114	1861.930000000007
	Sports	Asia	88	14326.519999999997
	Electronics	North America	66	34982.41000000001
	Home Appliance	Home Appliances	59	18646.16
	Beauty Products	Europe	46	2621.899999999996

Payment Method Analysis

Most Used Payment Methods:

SELECT

```
  `Payment Method`, COUNT(*) AS times_used, `Product Category`  
FROM  
  `online sales data`  
GROUP BY `Payment Method` , `Product Category`  
ORDER BY times_used DESC;
```

Payment Method	times_used	Product Category
Credit Card	40	Electronics
PayPal	40	Home Appliances
Debit Card	40	Clothing
Credit Card	40	Books

Average Transaction Value by Method:

SELECT

```
  `Payment Method`, AVG(`Total Revenue`) AS avg_revenue  
FROM  
  `online sales data`  
GROUP BY `Payment Method`  
ORDER BY avg_revenue;
```

Payment Method	avg_revenue
Debit Card	203.2232500000004
PayPal	265.8507500000006
Credit Card	426.4238333333345

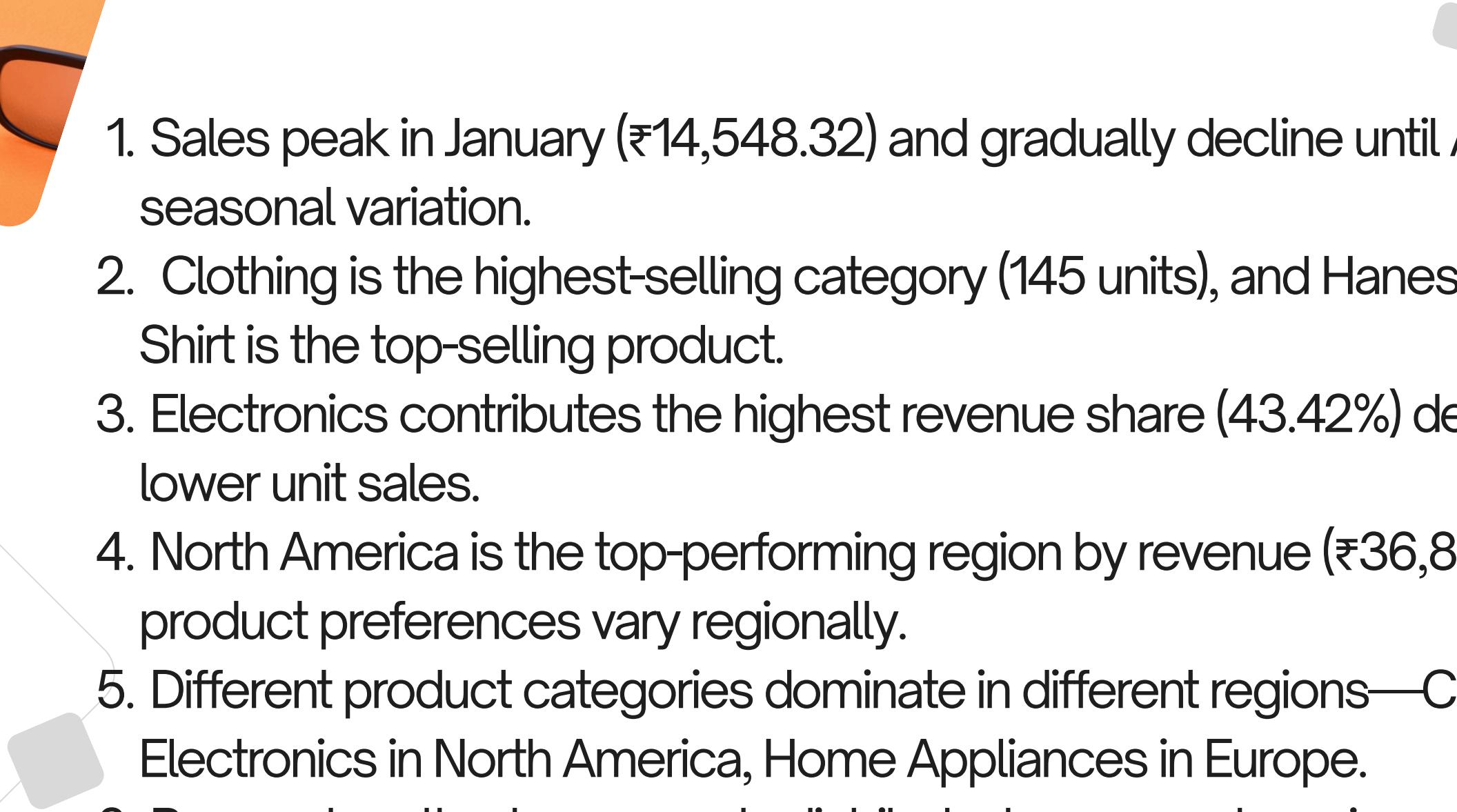
Revenue per Unit:

```
select `Product Name`,( sum(`Unit Price`/`Units Sold`)) as price
from `online sales data`
group by `Product Name`
order by price desc
```

	Product Name	price
▶	Canon EOS R5 Camera	3899.99
	MacBook Pro 16-inch	2499.99
	Apple MacBook Pro 16-inch	2399
	Peloton Bike	1895
	HP Spectre x360 Laptop	1599.99



Conclusions



1. Sales peak in January (₹14,548.32) and gradually decline until August, indicating seasonal variation.
 2. Clothing is the highest-selling category (145 units), and Hanes ComfortSoft T-Shirt is the top-selling product.
 3. Electronics contributes the highest revenue share (43.42%) despite having lower unit sales.
 4. North America is the top-performing region by revenue (₹36,844.34), while product preferences vary regionally.
 5. Different product categories dominate in different regions—Clothing in Asia, Electronics in North America, Home Appliances in Europe.
 6. Payment methods are evenly distributed across categories, with all major methods used equally.
 7. Credit Card users have the highest average transaction value (₹426.42), followed by PayPal and Debit Card.
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Recommendations

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1. Increase marketing and discounting efforts in low-sales months like June to August to improve overall sales balance.
 2. Focus inventory planning and marketing on high-demand categories and top-selling products.
 3. Expand premium electronics and use bundling strategies to enhance high-revenue product lines.
 4. Customize inventory and campaigns based on regional product preferences to boost localized performance.
 5. Allocate warehouse resources and promotional budgets according to category performance in each region.
 6. Maintain all existing payment options to support convenience and reduce checkout friction.
 7. Introduce loyalty points or cashback offers for Credit Card payments to encourage higher-value transactions.