

Project Title

Bike Sales Data Analysis Project

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Introduction

Overview:

In today's presentation, we'll delve into the insights derived from the analysis of bike sales data.

Importance of Analysis:

Analyzing bike sales data is crucial for understanding market trends, optimizing inventory, and maximizing revenue.

Objectives:

Our primary objectives were to identify revenue trends, anomalies, and optimization opportunities.



Summary of Project

Key Skills Demonstrated:

- **Proficiency in SQL for data analysis.**
- **Ability to derive actionable insights from complex datasets.**
- **Experience in trend analysis and anomaly detection.**

Project Details:

- **Analyzed bike sales data using SQL.**
- **Extracted insights on revenue trends and anomalies.**
- **Implemented advanced SQL queries for trend analysis.**



SQL Query and Result

```
1  -- Calculate the total revenue generated from bike sales.
2  ● use sales_project;
3  ● SELECT
4      SUM(revenue) AS Total_Revenue
5  FROM
6      bike_sales;
```

Result Grid	
	Total_Revenue
▶	1678500

SQL Query and Result

```
-- Identify the top 2 selling products by total quantity sold.
• SELECT
    Product, SUM(Order_Quantity) AS Total_Quantity
FROM
    bike_sales
GROUP BY Product
ORDER BY Total_Quantity DESC
LIMIT 2;
```

	Product	Total_Quantity
▶	Water Bottle - 30 oz.	93384
	Mountain Bottle Cage	27222

SQL Query and Result

```
-- Analyze monthly sales trends to see if there are any seasonal patterns.
SELECT
    month, year, SUM(Profit) AS monthly_profit
FROM
    bike_sales
GROUP BY month , year
ORDER BY year;
```

	month	year	monthly_profit
►	November	2013	40835
	July	2013	14167
	August	2013	38732
	September	2013	39140
	December	2013	47442
	October	2013	36334
	March	2014	39650
	May	2014	55222
	February	2014	35133

SQL Query and Result

```
/* Calculate the top 5 customers age by total revenue generated from
bike sales for customers aged between 25 and 40 */
SELECT
    Customer_Age, SUM(Revenue) AS total_revenue
FROM bike_sales
WHERE
    Customer_Age BETWEEN 25 AND 40
GROUP BY Customer_Age
ORDER BY total_revenue DESC
LIMIT 5;
```

	Customer_Age	total_revenue
▶	31	69716
	40	65563
	35	64642
	34	61206
	29	58228

SQL Query and Result

```
-- Explore customer demographics by age group and gender.
SELECT
    age_group, Customer_Gender, COUNT(*) AS customer_count
FROM
    bike_sales
GROUP BY Age_Group , Customer_Gender;
```

	age_group	Customer_Gender	customer_count
►	Youth (<25)	M	858
	Adults (35-64)	M	2790
	Adults (35-64)	F	2378
	Young Adults (25-34)	F	1756
	Young Adults (25-34)	M	1520
	Youth (<25)	F	810
	Seniors (64+)	F	18
	Seniors (64+)	M	34

SQL Query and Result

```
/* Retrieve top 5 sales data of 2014 where \
the revenue is greater than the average revenue.*/
SELECT * FROM
    bike_sales
WHERE
    (Revenue > (SELECT AVG(revenue)
                FROM bike_sales)
    AND year = 2014)
ORDER BY revenue DESC
LIMIT 5;
```

Date	Day	Month	Year	Customer_Age	Age_Group	C
17-01-2014	17	January	2014	53	Adults (35-64)	F
12-02-2014	12	February	2014	46	Adults (35-64)	M
07-01-2014	7	January	2014	31	Young Adults (25-34)	M
11-06-2014	11	June	2014	45	Adults (35-64)	F
11-05-2014	11	May	2014	32	Young Adults (25-34)	M

SQL Query and Result

```
/* Show the total revenue generated for each
product category over the years in a pivoted format.*/
SELECT Product,
       SUM(CASE
           WHEN Year = 2013 THEN Revenue ELSE 0 END) AS Revenue_2013,
       SUM(CASE
           WHEN Year = 2014 THEN Revenue ELSE 0 END) AS Revenue_2014,
       SUM(CASE
           WHEN Year = 2015 THEN Revenue ELSE 0 END) AS Revenue_2015,
       SUM(CASE
           WHEN Year = 2016 THEN Revenue ELSE 0 END) AS Revenue_2016
FROM bike_sales GROUP BY Product;
```

	Product	Revenue_2013	Revenue_2014	Revenue_2015	Revenue_2016
►	Hitch Rack - 4-Bike	113428	152966	108401	144416
	All-Purpose Bike Stand	94573	83148	88234	76709
	Mountain Bottle Cage	49516	76639	48062	74169
	Water Bottle - 30 oz.	89076	126602	86794	123110
	Road Bottle Cage	27802	44463	27167	43225

SQL Query and Result

```
/* Identify periods where there's a significant increase
or decrease in revenue compared to the previous period.*/
SELECT Year,Month,Revenue,
       LAG(Revenue, 1) OVER (ORDER BY Year,Month) AS Previous_Month_Revenue,
       CASE
           WHEN Revenue > LAG(Revenue, 1) OVER (ORDER BY Year,Month) THEN 'Increase'
           WHEN Revenue < LAG(Revenue, 1) OVER (ORDER BY Year,Month) THEN 'Decrease'
           ELSE 'No Change'
       END AS Revenue_Trend,
       CONCAT(ROUND(((Revenue - LAG(Revenue, 1) OVER
(OORDER BY Year,Month)) / LAG(Revenue, 1)
OVER (ORDER BY Year, Month)) * 100, 2), '%') AS Revenue_Change_Percentage
FROM bike_sales;
```

	Year	Month	Revenue	Previous_Month_Revenue	Revenue_Trend	Revenue_Change_Percentage
	2013	August	125	NULL	No Change	NULL
	2013	August	88	125	Decrease	-29.60%
	2013	August	176	88	Increase	100.00%
	2013	August	25	176	Decrease	-85.80%
	2013	August	55	25	Increase	120.00%
	2013	August	74	55	Increase	34.55%
	2013	August	51	74	Decrease	-31.08%
	2013	August	33	51	Decrease	-35.29%
	2013	August	123	33	Increase	272.73%
	2013	August	163	123	Increase	32.52%
	2013	August	64	163	Decrease	-60.74%

SQL Query and Result

```
/* Evaluate top 5 and bottom 5 sales performance
across different states.*/

(SELECT
    'Top 5 States' AS indicator,
    state, SUM(profit) AS total_profit FROM bike_sales
GROUP BY state ORDER BY total_profit DESC LIMIT 5)
UNION ALL
(SELECT 'Bottom 5 States' AS indicator,state, SUM(profit)
AS total_profit
FROM bike_sales GROUP BY state ORDER BY total_profit LIMIT 5);
```

	indicator	state	total_profit
▶	Top 5 States	California	241954
	Top 5 States	British Columbia	163261
	Top 5 States	England	116782
	Top 5 States	Washington	71838
	Top 5 States	New South Wales	69857
	Bottom 5 States	Virginia	46
	Bottom 5 States	New York	71
	Bottom 5 States	Kentucky	126
	Bottom 5 States	North Carolina	141
	Bottom 5 States	Texas	145

SQL Query and Result

```
3) /* Find the products whose total profit is  
greater than 2,00,000.*/  
SELECT  
    product, SUM(profit) AS Total_profit  
FROM  
    bike_sales  
GROUP BY product  
HAVING SUM(profit) > 200000  
ORDER BY Total_profit DESC;
```

	product	Total_profit
▶	Hitch Rack - 4-Bike	305326
	Water Bottle - 30 oz.	238814
	All-Purpose Bike Stand	201064

SQL Query and Result

```
-- Calculate the profit margin for each product.  
SELECT  
    product, (SUM(Profit) / SUM(Revenue)) * 100 AS profit_margin  
FROM  
    bike_sales  
GROUP BY product;
```

product	profit_margin
Hitch Rack - 4-Bike	58.8058
All-Purpose Bike Stand	58.6767
Mountain Bottle Cage	56.1618
Water Bottle - 30 oz.	56.1147
Road Bottle Cage	63.0197

SQL Query and Result

```
-- Find the average number of bikes sold per order.  
SELECT  
    AVG(Order_Quantity) AS avgerage_Quantity  
FROM  
    bike_sales;
```

	avgerage_Quantity
▶	14.2999

SQL Query and Result

```
-- Determine which countries have the highest sales volume.
SELECT
    country, SUM(profit) AS Total_profit
FROM
    bike_sales
GROUP BY country
ORDER BY Total_profit DESC;
```

country	Total_profit
United States	359684
Canada	165127
Australia	160324
United Kingdom	116782
Germany	91175
France	81512

SQL Query and Result

```
-- Identify the best-selling sub-category of products.  
SELECT  
    sub_category, SUM(Order_Quantity) AS Total_Quantity  
FROM  
    bike_sales  
GROUP BY Sub_Category  
ORDER BY Total_Quantity DESC  
LIMIT 1;
```

sub_category	Total_Quantity
Bottles and Cages	138191

Conclusion

Key Takeaways:

- Analyzing bike sales data yields valuable insights for business decision-making.
- Proficiency in SQL and data analysis techniques is essential for deriving actionable insights.



**Thank
you for
your
attention**

