Motorcycle Part Sales Analysis Using SQL

Unlocking valuable insights from motorcycle part sales data through strategic SQL analysis. Uncover trends, identify top-selling products, and optimize inventory and supply chain for increased profitability.

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Introduction to the Motorcycle Parts Industry

1 Diverse Product Offerings

The motorcycle parts industry encompasses a wide range of components, from engines and tires to accessories and customization parts.

2 Competitive Landscape

The industry is highly competitive, with both major manufacturers and aftermarket suppliers vying for a share of the market.

3 Evolving Customer Demands

Motorcycle enthusiasts are constantly seeking new and innovative parts to enhance the performance and appearance of their bikes.

Case :

We're working for a company that sells motorcycle parts, and they've asked with some help in analyzing their sales data! They operate three warehouses in the area, selling both retail and wholesale. They offer a variety of parts and accept credit card, cash, and bank transfer as payment methods. However, each payment type incurs a different fee.

The board of directors want to gain a better understanding of wholesale revenue by product line and how this varies month-to-month and across warehouses.

We have been tasked with calculating net revenue for each product line, grouping results by month and warehouse. The results should be filtered so that only "Wholesale" orders are included.

They have provided you with access to their database, which contains the following table called sales:

Column	Data type	Description
order_number	VARCHAR	Unique order number.
date	DATE	Date of the order, from June to August 2021.
warehouse	VARCHAR	The warehouse that the order was made from— North, Central, or West.
client_type	VARCHAR	Whether the order was Retail or Wholesale.
product_line	VARCHAR	Type of product ordered.
quantity	INT	Number of products ordered.
unit_price	FLOAT	Price per product (dollars).
total	FLOAT	Total price of the order (dollars).
payment	VARCHAR	Payment method—Credit card, Transfer, or Cash.
payment_fee	FLOAT	Percentage of total charged as a result of the payment method.

Main Data

QUERY : SELECT * FROM SALES ;

OUTPUT : Sample data

order_number	date	warehouse	client_type	product_line	quantity	unit_price	total	payment	payment_fee
N1	2021-06-01T00:00:00.000Z	North	Retail	Breaking system	9	19.29	173.61	Cash	0
N2	2021-06-01T00:00:00.000Z	North	Retail	Suspension & traction	8	32.93	263.45	Credit card	0.03
N3	2021-06-01T00:00:00.000Z	North	Wholesale	Frame & body	16	37.84	605.44	Transfer	0.01
N4	2021-06-01T00:00:00.000Z	North	Wholesale	Suspension & traction	40	37.37	1494.8	Transfer	0.01
N5	2021-06-01T00:00:00.000Z	North	Retail	Frame & body	6	45.44	272.61	Credit card	0.03
N6	2021-06-02T00:00:00.000Z	North	Retail	Frame & body	1	40.41	40.41	Credit card	0.03
N7	2021-06-02T00:00:00.000Z	North	Retail	Miscellaneous	6	20.28	121.66	Credit card	0.03
N8	2021-06-03T00:00:00.000Z	North	Retail	Electrical system	9	20.5	184.54	Credit card	0.03
N9	2021-06-03T00:00:00.000Z	North	Retail	Suspension & traction	5	36.18	180.91	Credit card	0.03
N10	2021-06-03T00:00:00.000Z	North	Retail	Electrical system	5	28.33	141.67	Credit card	0.03
N11	2021-06-04T00:00:00.000Z	North	Retail	Suspension & traction	10	30.92	309.23	Credit card	0.03
N12	2021-06-04T00:00:00.000Z	North	Retail	Electrical system	5	20.16	100.81	Credit card	0.03

Solution

Calculating net revenue for each product line, grouping results by month and warehouse. Filtering in such a way that only "Wholesale" orders are included :

Query :

```
SELECT
        product_line,
    CASE WHEN EXTRACT(MONTH FROM date) = 6 THEN 'June'
        WHEN EXTRACT(MONTH FROM date) = 7 THEN 'July'
        WHEN EXTRACT(MONTH FROM date) = 8 THEN 'August'
    END as month,
    warehouse,
    ROUND(SUM(total * (1 - payment_fee)), 2) AS net_revenue
FROM sales
WHERE client_type = 'Wholesale'
GROUP BY product_line, warehouse, month
ORDER BY product_line, month, net_revenue DESC;
```

Output

Sample

product_line	month	warehouse	net_revenue
Breaking system	August	Central	3009.1
Breaking system	August	West	2475.71
Breaking system	August	North	1753.19
Breaking system	July	Central	3740.94
Breaking system	July	West	3030.39
Breaking system	July	North	2568.55
Breaking system	June	Central	3648.14
Breaking system	June	North	1472.93
Breaking system	June	West	1200.64
Electrical system	August	North	4673.99
Electrical system	August	Central	3095.22
Electrical system	August	West	1229.45

Observations

Monthly Sales Performance by Product Line and Warehouse:

- The output indicates the net revenue for each product line, broken down by month and warehouse. It's clear that the sales pattern varies over the months and across different warehouses.

Variation in Sales across Product Lines:

- We can observe that the "Suspension & Traction" and "Electrical System" product lines have consistently higher net revenues across all three months and different warehouses. This could indicate a strong demand for these products.

Regional Differences:

- There seems to be a variation in sales performance across different warehouses. For example, the "Frame & Body" product line has significantly higher net revenues in North and Central warehouses compared to the West warehouse.

Trend Analysis:

- Comparing the sales performance across the months, it seems that the net revenue for various product lines fluctuates over time. This could be due to seasonal trends, changes in customer demand, or other external factors.

Recommendations

Marketing and Sales Strategy

- The sales data can provide insights into which product lines and warehouses are performing well, which can help in refining marketing and sales strategies. For example, focusing on promoting high-demand product lines and exploring opportunities to enhance sales in warehouses that are underperforming.

Inventory and Supply Chain Management

- Based on the sales performance, it's important to optimize inventory and supply chain management to ensure adequate stock levels for high-demand product lines while minimizing excess inventory for slower-moving products.

Customer Segmentation

- Understanding the sales performance by warehouse and product line can help in segmenting customers based on their preferences and buying behavior. This can enable targeted marketing efforts and personalized customer engagement.

Conclusion and Key Takeaways

Data-Driven Strategies

1. **Demand Forecasting**
2. **Safety Stock Considerations**
3. **Lead Time Optimization**
4. **Product Mix Customization**
5. **Collaborative Planning**
6. **Supply Chain Flexibility**
7. **Technology Integration**
8. **Vendor Collaboration**
9. **Continuous Monitoring and Adjustment**

By implementing these strategies, businesses can effectively optimize inventory based on regional analysis, reducing carrying costs, improving customer service levels, and maximizing sales potential in each region. Data-driven insights from regional sales analysis play a crucial role in driving these inventory optimization efforts.