**SQL INTERNSHIP PROJECT FOR MAY / JUNE COHORT**

**Title:** AdventureWorks 2022 Data Analysis

**Date:** October, 2024

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**Executive Summary**

**Adventure Works** sales data was provided and from analysis, we were able to identify how customers have bought the company products over the years and the geographical region the sales have come from. Products without sales were also identified by the company to investigate the reasons why the products have recorded no sales over time. The company should direct their efforts to products and regions with sales while working on strategies to improve sales of other products and sales from other regions.

**Introduction**

This analysis focuses on sales performance, product information, customer behavior, and employee data at **AdventureWorks,** a leading manufacturer and distributor of bicycles and cycling accessories. The insights provided will aid in strategic decision-making to enhance business performance.

**Findings and Analysis**

**SECTION 1: BEGINNER LEVEL TASKS**

* **Task 1: List All Employees and Their Job Titles**

**Objective:** To retrieve basic employee information

**Methodology:** Using HumanResources.Employee and Person.Person tables; the 2 tables were joined using INNER JOIN to get the employees' first and last names along with their job titles.

**Findings:** Only the employees’ first and last names along with their job titles was displayed.

**Interpretations:** The query only allows the columns for the first name, last name and the job titles of the employees from both tables to be displayed.

* **Task 2: Display All Products and Their List Prices**

**Objective:** To extract product details.

**Methodology:** Query the Production.Product table to list all products with their respective list prices.

**Findings:** The columns for both the ProductName and ListPrice was shown.

**Interpretations:** The query was meant to display only Product Name and List Price of each product.

* **Task 3: Retrieve Customers Who Placed Orders in 2021**

**Objective:** To identify active customers within a specific timeframe.

**Methodology:** Using the Sales.SalesOrderHeader, Sales.Customer, and Person.Person tables; the 3 tables were joined using INNER JOIN and filter orders placed in the year 2021.

**Findings:** The result return an empty table with only the headers.

**Interpretations:** The data collated are only from 2011 – 2014. There is no record of 2021 data in the AdventureWorks database. However, to validate our query we identify active customers for the year 2013.

* **Task 4: List the Top 10 Most Expensive Products**

**Objective:** To identify high-value products.

**Methodology:** Query the Production.Product table and sorted the products by ListPrice in descending order. The results were limited to the top 10.

**Findings:** The result shows the columns for both the ProductName and ListPrice but only for the top 10.

**Interpretations:** The ListPrice was shown from the highest to the lowest of the top 10 most expensive products in correspondence with their ProductName.

* **Task 5: Show the Total Number of Orders Placed in 2021**

**Objective:** To aggregate order data for a specific year.

**Methodology:** Used the Sales.SalesOrderHeader table and Count the number of orders where the OrderDate falls in 2021.

**Findings:** There is no record of 2021 data in the AdventureWorks database, hence the TotalOrder for 2021 is 0.

**Interpretations:** The TotalOrder for 2021 is 0 because the database only have record for 2011 – 2014. However, to validate our query we calculated the TotalOrder for the year 2014.

* **Task 6: List Sales Orders with TotalDue Greater Than $1,500**

**Objective:** To highlight high-value transactions.

**Methodology:** Query the Sales.SalesOrderHeader table and then filter orders where TotalDue exceeds $1,500.

**Findings:** The query returned SalesOrder ID that have TotalDue exceeding $1,500.

**Interpretations:** The SalesOrder ID with TotalDue exceeding $1,500 have high potential for increasing sales in the future. In total we have 12,542 transactions exceeding $1,500.

* **Task 7: Retrieve Products with ListPrice Between $100 and $500**

**Objective:** To filter products within a specific price range.

**Methodology:** Used the Production.Product table and applied a WHERE clause to select products priced between $100 and $500.

**Findings:** The result shows products that have ListPrices exceeding $100 but less than $500.

**Interpretations:** The query is used to call for products within a specific range. In total we identified 78 products with ListPrice within the required price range.

* **Task 8: Retrieve Customers from a Specific Region (e.g., "United States")**

**Objective:** To segment customers based on geographical location using “Bothell” as a case study.

**Methodology:** Utilizing the Sales.Customer, Person.Person, and Person.Address tables, filter the customers where Country / RegionName is "Bothell".

**Findings:** There are 9 customers from “Bothell” under the City column in the AdventureWorks database.

**Interpretations:** The query is used to call for specific region under the City column.

**SECTION 2: INTERMEDIATE LEVEL TASKS**

* **Task 9: Calculate Total Sales Amount for Each Year from 2020 to 2022**

**Objective:** To analyze sales trends over multiple years.

**Methodology:** Using the Sales.SalesOrderHeader table, group sales by year and sum the TotalDue for each year between 2020 and 2022.

**Findings:** There is no record of data for 2020 and 2022 in the AdventureWorks database, hence the empty table displayed with only the table header.

**Interpretations:** The query is used to show the Total Sales amount for each year in order to determine sales pattern of the products for future planning.

* **Task 10: Display Number of Orders Placed by Each Customer**

**Objective:** To understand customer ordering behavior.

**Methodology:** Join Sales.SalesOrderHeader, Sales.Customer, and Person.Person tables. Group by CustomerID and count the number of orders per customer.

**Findings:** The table shows the CustomerID and CustomerName with their corresponding number of orders, starting with the customer that had the highest number of orders placed to the customer with the least order placed (in descending order).

**Interpretations:** The query shows important customers that place order repeatedly, in order to maintain good relationship with them to sustain the business.

* **Task 11: List Products That Have Never Been Sold**

**Objective:** To identify unsold inventory.

**Methodology**: Use the Production.Product and Sales.SalesOrderDetail tables, find products in Production.Product that do not have corresponding entries in SalesOrderDetail.

**Findings:** The table shows 238 products that have no sales record.

**Interpretations:** This show products that have never been purchased by customers, hence resulting in no sales record.

* **Task 12: Find Total Number of Employees with the Title "Sales Representative"**

**Objective:** To assess the size of the sales team.

**Methodology:** Query the HumanResources.Employee table. Count employees where JobTitle is "Sales Representative".

**Findings:** There are 14 Employees with the Title "Sales Representative".

**Interpretations:** This query helps to find Employee with specific titles.

* **Task 13: Retrieve Average ListPrice for All Products in the "Bikes" Category**

**Objective:** To determine pricing strategy for the Bikes category.

**Methodology:** Join Production.Product, Production.ProductSubcategory, and Production.ProductCategory tables. Filter products belong to the "Bikes" category and calculate the average ListPrice.

**Findings:** The Average ListPrice for all products belonging to the “Bikes” category is 1586.737.

**Interpretations:** This query helps to find Average ListPrice of products belonging to specific category.

* **Task 14: List of Top 5 Customers Based on Total Order Amount**

**Objective:** To identify top-performing customers

**Methodology:** Join Sales.SalesOrderHeader, Sales.Customer, and Person.Person tables. Sum TotalDue per customer and select the top 5 customers with the highest total order amounts.

**Findings:** This shows the top 5 customers that have the highest Total Order Amount in descending order.

|  |  |  |
| --- | --- | --- |
| **CustomerID** | **CustomerName** | **TotalOrderAmount** |
| 29818 | Roger Harui | 989184.082 |
| 29715 | Andrew Dixon | 961675.8596 |
| 29722 | Reuben D'sa | 954021.9235 |
| 30117 | Robert Vessa | 919801.8188 |
| 29614 | Ryan Calafato | 901346.856 |

**Interpretations:** The query shows the highest purchasing customers.

* **Task 15: Display All Products Sold More Than 50 Times in 2023**

**Objective:** To highlight high-demand products.

**Methodology:** Join Production.Product and Sales.SalesOrderDetail tables. Filter sales from 2023 and group by ProductID to count sales exceeding 50.

**Findings:** There is no record of data for 2023 in the AdventureWorks database, hence the empty table with only the header displayed.

**Interpretations:** The table was empty because the database only have record for 2011 – 2014. However, we analyzed all products sold more than 50 times for the year 2014 and we identify 136 products.

**Conclusions**

Conclusively, the analysis has helped to identify products with highest sales and highest purchasing customers. Customer behavior has also been determined by the average number of orders placed by a customer; this will help the company determine the products to focus their efforts on and the quantity to produce.

**Recommendations**

The following are our recommendations:

* Highest purchasing customers should be motivated/compensated.
* Strategies should be developed for improved sales in regions with low sales.
* A survey should be carried out to find out why customers are not purchasing some products which will determine the discontinuation of their production or not.
* Average number of products bought by a customer should be used to determine the quantity of the product a company produces.

**Appendices**









