4-2 Project One

DAT 300 Valid Data: Getting Data Right

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**Analysis of Inventory Trends, Sales Performance, and Revenue Streams**

As a member of the analytics team, I have been given the important task of evaluating our organization’s overall health. This involves addressing key questions related to inventory trends, sales performance, and revenue streams. The outcomes of this analysis are crucial for strategic decision-making, optimizing operations, and enhancing profitability. By identifying inventory trends, pinpointing periods of increased sales, and recognizing top revenue-generating products, we can develop targeted strategies to improve efficiency and drive growth.

**Inventory Trends**

To identify and monitor inventory trends, I would need to analyze data on stock levels, turnover rates, and demand patterns. Key variables include inventory levels, reorders, lead times, and sales data. By visualizing these metrics over time, I can detect patterns such as seasonal fluctuations, stockouts, and overstock situations. For example, a line chart showing monthly inventory levels alongside sales figures can highlight periods of excess inventory or shortages. Understanding these trends will enable me to optimize inventory management, reduce holding costs, and ensure product availability. Based on the data available for this project through UCertify additional inventory data would be required to perform the above analysis. This is due to the current inventory of bikes and cars not aligning with sales spreadsheet (uCertify, 2024).

**Sales Performance**

Analyzing sales performance involves examining monthly sales data to identify periods of growth and decline. Key variables include total sales, units sold, and average transaction value. By creating visualizations such as bar charts or line graphs, I can easily spot trends and patterns. For instance, a line graph as shown below displaying monthly sales figures can reveal peak sales months and seasonal variations. This information is vital for planning marketing campaigns, managing inventory, and forecasting future sales.

**Revenue Streams**

To determine which products, produce the biggest revenue stream, I will analyze sales data by product category and individual products. Key variables include revenue, units sold, and profit margins. Visualizations such as pie charts or bar graphs can help illustrate the contribution of each product to total revenue. For example, a bar chart as shown below showing revenue by product category can highlight top-performing categories and products. Identifying these key revenue drivers will allow us to focus on high-margin products and develop strategies to boost sales of underperforming items.

**Data Set Assessment**

* **Missing or Unusable Data**

After reviewing the data set, there are no missing or unusable data values. Each entry includes all necessary fields such as Order ID, Order Date, Ship Date, Shipping Method, Category, Sub-Category, Country, Region, State, Postal Code, Product Name, Customer Name, Quantity, Sales, Profit, and Shipping Cost. This completeness is essential for accurate analysis.

* **Importance of Accurate Data**

Accurate data is crucial for solving the organizational problems we are tackling. Inaccurate or incomplete data can lead to incorrect conclusions, negatively impacting strategic decision-making, inventory management, sales forecasting, and revenue optimization. For example, if sales data is inaccurate, it could result in overstocking or stockouts, leading to increased holding costs or lost sales opportunities. Similarly, inaccurate revenue data can mislead us about the profitability of certain products, affecting our focus on high-margin items.

**Potential Sources of Errors and Prevention**

Errors in data can be introduced in various ways, especially after a merger. Some potential sources of errors include:

1. **Data Integration Issues**: Combining data from different systems can lead to inconsistencies and errors. To prevent this, it is important to establish a standardized data format and conduct thorough data validation checks during the integration process.
2. **Human Error**: Manual data entry can result in mistakes. Implementing automated data entry systems and regular training for staff can help minimize these errors.
3. **System Errors**: Technical issues such as software bugs or hardware failures can corrupt data. Regular system maintenance, updates, and backups can help prevent these issues.
4. **Inconsistent Data Standards**: Different departments or systems may use varying data standards. Establishing organization-wide data standards and ensuring compliance can prevent inconsistencies.

By addressing these potential sources of errors and implementing preventive measures, we can ensure the accuracy and reliability of our data, which is essential for making informed decisions and achieving our organizational goals.

**Analysis of Sales Data**

* **Which Months Have Sales Increased?**

A graph of blue bars

Description automatically generated

Based on the bar chart above titled “Sum of Sales by Month,” I can draw some valuable insights. The bar chart illustrates the sum of sales for each month from January to December. The tallest bars are in November and December, indicating that sales significantly increased during these months. This trend is likely due to seasonal shopping trends such as holiday purchases.

A graph on a white background

Description automatically generated

Based on the line graph above titled “Sum of Sales by Year and Month,” I can draw some valuable insights. The graph illustrates the sum of sales for each month from 2015 to 2019, showing fluctuations in sales figures over time. Notably, the highest sales peaks occur in November and December, indicating significant increases during these months. This trend is likely due to seasonal shopping patterns, such as holiday purchases.

* **Which products produce the biggest revenue stream?**

A colorful circle with numbers and numbers

Description automatically generated

Based on the donut chart titled “Sum of Profit by Region,” I can draw some valuable insights. The chart breaks down the profit contributions from four regions: East, West, Central, and South. Each segment’s size reflects the proportion of profit that each region contributes to the total.

The West region stands out with a significant share of the total profit, indicating strong performance. The East region also contributes a substantial portion, highlighting its importance. The Central region has a moderate share, suggesting steady performance. However, the South region contributes the least to the total profit, indicating potential areas for improvement.

By analyzing these regional profit contributions, I can make informed decisions about resource allocation and strategic focus. For instance, we might consider investing more in the South region to boost its performance or leveraging the strengths of the East and West regions to drive further growth.

A screen shot of a graph

Description automatically generated

Based on the scatter plot above titled “Sum of Profit by Sales,” I can analyze which products produce the biggest revenue stream. The scatter plot displays data points representing various products, with the horizontal axis labeled “Sum of Profit” and the vertical axis labeled “Sum of Profit by Sales.”

To determine which products, generate the most revenue, I should focus on the data points that are positioned highest on both axes. These points represent products with the highest sales and profit values. Unfortunately, the specific product names or categories are not visible in this image, so I cannot identify them precisely.

However, the general approach to identifying top revenue-generating products involves looking for products that have high values on both the sales and profit axes, identifying products that consistently perform well across different time periods, and grouping products by category to see which categories contribute the most to overall revenue. By focusing on these high-performing products, I can develop strategies to further boost their sales and profitability, while also identifying areas for improvement for lower-performing items.

**Data to Retain or Analyze**

To tackle the organizational challenge, I need to focus on retaining and analyzing specific data. This includes Order ID to uniquely identify transactions, Order Date to track sales trends, Ship Date to understand shipping timelines, and Shipping Method to evaluate efficiency. I also need Category and Sub-Category to analyze sales and profit by product categories, Region, and State to assess regional performance, Product Name to identify top-performing products, and Quantity, Sales, Profit, and Shipping Cost to calculate key performance metrics.

From the provided data set, I have order details (Order ID, Order Date, Ship Date, Shipping Method), product details (Category, Sub-Category, Product Name), customer details (Country, Region, State, Postal Code, Customer Name), and sales details (Quantity, Sales, Profit, Shipping Cost). However, I need additional data such as customer demographics (age, gender, income level) to understand customer segments better, marketing campaign data to gauge the impact on sales, and inventory levels to optimize inventory management.

To prepare the data set properly, I need to follow these steps (Ahlemeyer-Stubbe, 2014):

1. Data Cleaning: Remove irrelevant data that does not contribute to the analysis. For instance, postal codes are unnecessary if I already have state and region information.
2. Data Validation: Ensure all data entries are accurate and consistent. Check for any missing or incorrect values and correct them as needed.
3. Data Integration: Combine data from different sources. For example, integrate marketing campaign data with sales data to analyze the impact of marketing efforts.
4. Data Transformation: Converting to format required for analysis based on system used. For instance, aggregate sales data by month to identify sales trends.
5. Data Visualization: Create visualizations such as bar charts, line graphs, and pie charts to represent the data and draw meaningful insights.

By following these steps, I can ensure the data set is properly prepared to address the organizational questions and provide valuable insights for strategic decision-making.

**Limitations for Data Usage: Regulatory, Ethical, and Legal Considerations**

When dealing with data, it is crucial to be aware of various limitations regarding regulatory, ethical, and legal considerations. First, data accessibility. It is essential to ensure that the data required for analysis is accessible. Some data may be restricted due to company policies or regulatory requirements. For example, customer demographics or sensitive financial information might be protected and not readily available for analysis.

Next, we have ethical considerations. There are ethical reasons that may prohibit the collection and storage of certain data. For instance, collecting personal information without consent or storing data that could lead to privacy breaches is unethical. It is important to follow ethical guidelines and obtain necessary permissions before collecting and storing data. Additionally, we should practice data minimization by only collecting data that is necessary for the analysis. Avoid collecting excessive or irrelevant data that could lead to privacy concerns.

Now, legal considerations. It is essential to comply with legal regulations regarding data sharing. Some data may be illegal to share in certain situations, such as personal identifiable information (PII) or health records protected under laws like GDPR or HIPAA as general examples (Bougie & Sekaran, 2020). Ensure that data sharing practices comply with relevant laws and regulations. Companies may also have policies against sharing data across departments or with external parties. It is important to adhere to these policies to avoid legal and ethical issues. Lastly, be mindful of the audience when sharing data. Ensure that sensitive data is not shared with unauthorized or potentially varied audiences. Implement data anonymization techniques if necessary to protect privacy.

By considering these limitations and adhering to regulatory, ethical, and legal guidelines, I can ensure responsible and compliant data usage while addressing the organizational challenge.

Resources

uCertify. (2024). *Ucertify*. UCertify. <https://snhu.ucertify.com/login.php?&auto=1&cont=https%3A%2F%2Fsnhu.ucertify.com%2Fapp%2F%3Ffunc%3Dget_course_list%26show%3Dcourses>

Ahlemeyer-Stubbe, A., & Coleman, S. (2014). *A practical guide to data mining for business and industry*. Wiley.

Sekaran, U., & Bougie, R. (2020). *Research Methods For Business*. Wiley Global Education.