

## PRODUCT SALES ANALYSIS

### DATA ANALYTICS WITH COGNOS GROUP 2

#### Introduction:

In order to optimize inventory management and marketing strategies, our organization is faced with the challenge of effectively analyzing sales data. We need to identify top-selling products, discern peak sales periods, and understand customer preferences. This analysis is critical for making data-driven decisions that will ultimately lead to increased revenue, reduced costs, and improved customer satisfaction.

**Dataset link:** <https://www.kaggle.com/datasets/anuvagoval/sales-store-product-details>

To this problem this dataset is given to us so by using this dataset we are going to solve our problem.

#### Objectives:

The objectives of conducting a product sales analysis are to gain valuable insights into your business's sales performance, customer behavior, and market trends. By setting clear objectives, you can focus your analysis efforts effectively.

Identify the goods or product groups that produce the highest sales revenue, volume, and profit margins. Prioritizing resources and marketing initiatives is aided by this knowledge.

Examine customer information to determine preferences, including preferred items, shopping habits, demographics, and geography. Marketing and product recommendations might be targeted with the help of this information.

Utilize sales data to better control inventory levels to optimize inventory management. As part of this, slow-moving items must be identified, reorder points must be optimized, and carrying costs must be decreased without stockouts.

Recognize seasonality, daily or weekly swings, and market dynamics in sales data. This facilitates preparing promotions and adjusting inventories as necessary.

#### Clearly define the problem

In order to optimize inventory management and marketing strategies, our organization is faced with the challenge of effectively analyzing sales data. We need to identify top-selling products, discern peak sales periods, and understand customer preferences. This analysis is critical for making data-driven decisions that will ultimately lead to increased revenue.

## **Data collection**

<https://www.kaggle.com/dfsets/anuvagoyal/sales-store-product-details>

Using appropriate data as per the problem defined in the problem statement.

## **Preparing of the data**

Data is gathered, and then the data should be cleaned and pre-processed to deal with missing values, outliers, and inconsistencies. To provide the model useful information, add new features or change current ones. For the purposes of training and assessing your model, divide the dataset into training, validation, and test sets. Process the data by using suitable techniques like dropping the null values, data types, remove the duplicate values, visualize the missing values drop the duplicates, by using the suitable functions like drop, is null etc....

## **Define Objectives:**

Clearly define the objectives and goals of your sales analysis. What specific insights are you seeking to gain from the analysis?

## **Exploratory Data Analysis (EDA):**

Perform initial data exploration to understand the basic characteristics of the sales data. Create visualizations like histograms, scatter plots, and time series graphs to identify trends, patterns, and outliers.

## **Model selection:**

We are going to solve the problem by using various algorithms like K-means, SVM, random forest, linear regression and the decision tree classifier, we can solve by using any of this model and choose the accurate model.

## **Top-Selling Products Analysis:**

Calculate and rank products based on sales revenue, units sold, or profit margins to identify top-selling products. Analyze which products consistently perform well and whether there are seasonal variations.

## **Peak Sales Periods Analysis:**

Examine sales data over time to identify peak sales periods, such as daily, weekly, or seasonally. Consider factors like holidays, promotions, and special events that influence sales peaks.

## **Customer Preferences Analysis:**

Segment your customer base based on demographics, purchase history, and behavior. Analyze which products are preferred by different customer segments. Use clustering and association analysis to discover customer preferences and buying patterns.

## **Reporting and Visualization:**

Develop dashboards and reports to track key metrics and insights. Use data visualization tools to communicate findings to stakeholders effectively. Tools like Tableau, Power BI or custom-built dashboards can be used for this project.