**Project Abstract: Product Sales Analysis Using IBM Cognos Analytics**

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**Objective:**

The objective of the project is to analyze product sales data, employing a comprehensive approach that involves the design thinking process and distinct development phases. The focus is on gaining valuable insights into the most selling products, top-selling categories, profitable products, and customer segments. The analysis aims to provide actionable information for website owners to enhance the overall user experience.

**Design Thinking Process:**

The project follows a structured design thinking process, starting with data collection and exploration. The initial phase involves importing the sales data from the '[**https://www.kaggle.com/datasets/ksabishek/product-sales-data**](https://www.kaggle.com/datasets/ksabishek/product-sales-data)' link using Python's pandas library. Subsequently, the dataset's shape is examined, and missing values are identified and quantified.

**Development Phases:**

The development phases of the project encompass several key aspects of sales analysis. The Python code utilizes libraries such as pandas, matplotlib, seaborn, and datetime for data manipulation, visualization, and date handling.

**1. Most Selling Products:**

The analysis identifies the top-selling products based on the quantity sold. A bar chart is generated to visualize the results, providing a clear representation of the top products.

**2. Top 10 Products by Sales:**

The project determines the top 10 products by sales, presenting the information in a tabular format for easy reference.

**3. Most Profitable Products:**

The profitability of products is analyzed, and a bar chart is created to highlight the top 10 most profitable products.

**4.** **Sales Analysis by Category:**

The project explores the sales data by category, providing insights into the most selling and profitable categories. Visualizations, including bar charts, are employed to enhance understanding.

**5. Subcategory Analysis:**

Subcategories are examined to identify the most selling products within each subcategory.

**6. Profitable Customer Segments:**

The profitability of different customer segments is assessed, and a bar chart is generated to illustrate the findings.

**7. Shipping Modes and Markets:**

The analysis delves into shipping modes, presenting a bar chart depicting the sales associated with each mode. Additionally, market-wise sales are visualized through a count plot.

**8. Top 10 Countries by Sales:**

The project identifies the top 10 countries by sales, presenting the information both in tabular form and through a pie chart.

**9. Average Shipping Cost:**

The average shipping cost for the top 10 countries is computed and displayed.

**10. Top 10 Profitable Customers:**

The top 10 most profitable customers are identified and presented in a table.

**11. Temporal Analysis:**

The project introduces a temporal dimension by adding a 'month' column to the dataset. Total sales values are analyzed over different years and months, visualized through bar charts.

**Insights for User Experience Improvement**:

The insights derived from this analysis can significantly contribute to enhancing user experience on the website. For instance, identifying top-selling products and categories allows website owners to optimize product placements and marketing strategies. Understanding customer segments and their profitability enables targeted marketing efforts. Insights into shipping modes, markets, and geographical sales patterns empower better logistics and marketing decisions.

In conclusion, the product sales analysis project provides a comprehensive view of various facets of sales data, offering actionable insights to improve the overall user experience and drive business success.