**PRODUCT SALES ANALYSIS**

**(PHASE-1 SUBMISSION)**

**PROJECT DEFINITION:**

The project involves using IBM Cognos to analyse sales data and extract insights about top selling products, peak sales periods, and customer preferences. The objective is to help businesses improve inventory management and marketing strategies by understanding sales trends and customer behaviour.

This project includes defining analysis objectives, collecting sales data, designing relevant visualizations in IBM Cognos, and deriving actionable insights.

**PROBLEM DEFINITION:**

To analyze and gain valuable insights from historical product sales data in order to make data-driven decisions that optimize inventory management, marketing strategies, and overall business performance.

**DESIGN THINKING:**

1. **Analysis Objectives**

When conducting a product sales analysis, the specific objectives focus on gaining insights related to the performance of individual products or product categories. Here are some key analysis objectives for product sales.

* **Identify Top-Selling Products:**

Determine which products or product categories generate the highest revenue or have the highest sales volume.

* **Analyze Sales Trends:**

Examine how sales of specific products have evolved over time, including identifying any seasonal or cyclical patterns.

* **Customer Preferences:**

Understand customer preferences by analyzing which products are favored by different customer segments.

1. **Data Collection:**

To collect sales data for your analysis, you will need to identify the sources and methods for obtaining various types of data, including transaction records, product information, and customer demographics. Here's a breakdown of sources and methods for collecting each type of data:

* **Transaction Records:**
* **Point-of-Sale (POS) System**:

If you have a physical store, your POS system will be a primary source of transaction data. It captures information about each sale, including the date, time, product sold, price, and payment method.

* **E-commerce Platforms:**

If you sell products online, your e-commerce platform (e.g., Shopify, WooCommerce, Magento) will generate transaction records. You can export this data or access it through the platform's reporting tools.

* **Accounting Software:**

Accounting software like QuickBooks or Xero can provide detailed transaction records and financial data. You can export reports or integrate accounting software with your analysis tools.

* **Third-party Payment Processors:**

If you use services like PayPal or Stripe, you can access transaction data through their dashboards or APIs.

* **Product Information:**
* **Product Management System:**

Maintain a database or system that stores detailed information about each product. Include attributes such as product name, SKU, description, category, cost, and selling price.

* **Supplier Records:**

If applicable, gather information about your suppliers, including contact details, lead times, and pricing.

* **Product Catalogs:**

You may find product information in digital catalogs, manufacturer's websites, or industry databases.

* **Customer Demographics:**
* **Customer Relationship Management (CRM) System:**

If you have a CRM system, it likely contains valuable customer demographic data. This can include names, contact information, purchase history, and any demographic details collected during customer interactions.

* **Online Registrations and Forms:**

If you collect customer data through online registrations, surveys, or contact forms, this information can be used to enrich your customer demographics.

* **Email Marketing Tools:**

Email marketing platforms often provide demographic data on your subscribers, such as age, location, and interests.

* **Third-party Data Sources:**

Consider purchasing or accessing external data sources that provide demographic insights about your target audience.

* **Methods for Collecting Data:**
* **Automated Data Integration:**

Set up automated data integration pipelines to regularly fetch transaction data from POS systems, e-commerce platforms, and other sources. Use APIs or data connectors when available.

* **Manual Data Entry:**

In cases where automated integration is not feasible, employ manual data entry methods to input transaction and product data into your database.

* **Surveys and Forms:**

Use surveys, questionnaires, and online forms to collect customer demographic data. Encourage customers to provide information during checkout or account registration.

1. **Visualization Strategy:**

Creating interactive dashboards and reports using IBM Cognos is a powerful way to visualize and share insights from your sales data analysis. Here's a step-by-step plan for your visualization strategy:

* **Data Preparation:**

Ensure your sales data is clean, well-organized, and stored in a format that Cognos can access. You may need to integrate data from multiple sources if applicable.

Use Cognos Data Modules or data connectors to connect to your data sources and create data sets for analysis.

* **Dashboard Pages:**

Create separate pages for different aspects of your analysis, such as sales overview, product performance, and customer insights.

* **Visualization Widgets:**

Add charts, graphs, and tables to display your data visually.

* **Filters and Prompts:**

Implement interactive filters and prompts to allow users to customize their view of the data.

* **Drill-Down Capabilities:**

Enable users to drill down into specific data points for deeper analysis.

* **Interactive Controls:**

Add buttons, sliders, and drop-down menus for user interaction.

1. **Actionable Insights:**

Deriving actionable insights from your sales data analysis can significantly impact both inventory management and marketing strategies. Here's how you can use these insights in these two key areas:

* **Inventory Management:**
* **Demand Forecasting:**

By analyzing sales trends and historical data, you can develop more accurate demand forecasts. This allows you to stock inventory based on anticipated demand, reducing the risk of overstocking or understocking.

* **Seasonal Inventory Planning:**

Recognize seasonal sales patterns from your analysis and adjust your inventory levels accordingly. Prepare for peak seasons by increasing stock for popular products and reducing it for less popular ones during off-seasons.

* **Marketing Strategies:**
* **Customer Segmentation:**

Use insights to segment your customer base. Tailor marketing messages, promotions, and product recommendations to different customer segments based on their preferences and purchase history.

* **Cross-Selling and Upselling:**

Identify products that are frequently purchased together and use this information to create cross-selling opportunities. Promote related products to customers during the checkout process or through targeted marketing campaigns.

* **Personalized Marketing:**

Leverage customer data to create personalized marketing campaigns. Send customized email offers or product recommendations based on individual preferences and purchase history.

**Conclusion:**

The product sales analysis has provided valuable insights that can significantly influence our business strategies and decision-making processes. Here are the key takeaways and actions based on our analysis.