**E-Commerce Shipping Delay Analysis Project**

**Project Background**

In e-commerce, on-time delivery is crucial for customer satisfaction and sustained sales. Our data analysis reveals a significant percentage of orders experience shipping delays, which negatively impact on customer satisfaction and ultimately reduce sales and profits. This project aims to:

1. Analyze shipping/delivery data to identify root causes of delays
2. Determine high-risk categories, regions, or product types
3. Develop actionable solutions to minimize delays and improve operational efficiency

**Key Analysis Areas**

**1. Profitability Analysis**

**Metrics:**

* Benefit per order
* Order profit per order
* Sales
* Order item profit ratio

**2. Market Performance**

**Focus Areas:**

* Regional Comparison (Order Region, Market, Customer Country)
* Sales per customer

**3. Discount Impact**

**Analysis Goals:**

* Evaluate how discounts affect net profits
* Identify if excessive discounts negatively impact revenue
* **Key Columns:**
  + Order item discount
  + Order item discount rate
  + Order item profit ratio

**Data Analysis Approach**

**Shipping Delay Analysis**

* Compare Days for shipping (real) vs Days for shipment (scheduled)
* Analyze late delivery risk and Delivery Status

**Analyze the relationship between delays and the following:**

* **Customer City, Customer State, Order Region:**  
  Are there specific regions or locations where delays are more frequent?
* **Shipping Mode:**  
  Is there a correlation between the type of shipping and the occurrence of delays?
* **Category Name and Department Name:**  
  Are there certain product categories or departments where delays are more common?

**Root Cause Analysis:**

Investigate the fundamental reasons behind the delays. For example:

* Are the delays associated with specific geographical regions?
* Are there certain types of products that require a longer processing/preparation time?
* Does the Standard Shipping method experience more delays compared to Express Shipping?

**Dashboard Structure**

**1. Overview Page**

**Page Concept**:  
Presents general statistics about orders and shipments.

**Contents**:

* **Total number of orders**
* **Percentage of on-time vs. late deliveries**  
  (based on *Delivery Status* and *Late\_delivery\_risk*)
* **Average actual shipping days**  
  (*Days for shipping (real)*)
* **Total sales**
* **Average profit per order** (*Benefit per order*)
* **Simple map showing distribution of orders by country**  
  (based on *Customer Country* or *Order Country*)

**2. Orders Analysis**

**Page Concept**:  
Focuses on detailed insights related to orders and shipping.

**Contents**:

* **Number of orders by delivery status** (*Delivery Status*)
* **Comparison between scheduled and actual shipping days**  
  (*Days for shipment (scheduled)* vs. *Days for shipping (real)*)
* **Top cities or states with the most delays**  
  (*Customer City*, *Customer State*)
* **Number of orders per shipping mode** (*Shipping Mode*)
* **Most delayed products by name** (*Product Name*)

**3. Customer Analysis**

**Page Concept:**  
Focuses on customer behavior and segmentation.

**Contents**:

* **Total number of customers**  
  (by *Customer City* and *Customer Country*)
* **Customer distribution by segment**  
  (*Customer Segment*)
* **Average sales per customer**
* **Top active states**  
  (*Customer State*)
* **Customer distribution by market**  
  (*Market*)

**4. Profit Analysis**

**Page Concept:**  
Focuses on profitability metrics and insights.

**Contents:**

* **Total profit per order**  
  (*Order Profit Per Order*)
* **Profit by category or department**  
  (*Category Name* and/or *Department Name*)
* **Most profitable products**  
  (*Product Name* along with *Order Profit Per Order*)
* **Relationship between profit and discount**  
  (*Order Item Discount* vs. *Order Profit Per Order*)

**5. Discounts Analysis**

**Page Concept:**  
Aims to understand the impact of discounts on performance.

**Contents:**

* **Average discount rate**  
  (*Order Item Discount Rate*)
* **Number of orders with high discounts**
* **Relationship between discount and profit**  
  (e.g., a visual showing how high discounts affect *Order Profit Per Order*)
* **Categories or products with the highest discounts**  
  (*Category Name*, *Product Name*)