**Business Overview/Problem**

At Streamline Logistics Solutions, we encounter several pressing challenges within our order fulfillment process:

* Mounting Order Backlogs: Our current routing and resource allocation processes have resulted in a growing backlog of orders, compromising delivery timelines and, in turn, customer satisfaction.
* Visibility Gap: Customers often find themselves lacking real-time updates on their order progress, leading to communication gaps and rising dissatisfaction.
* Customer Frustration: The increasing frequency of customer complaints regarding delayed deliveries and suboptimal communication channels is beginning to cast a shadow on our reputation for reliability.
* Escalating Costs: Operational expenses are on the rise due to overtime payments and the necessity for expedited shipping to clear order backlogs.

**Rationale for the Project**

Order Fulfillment is the process of receiving, processing, and delivering customer orders. It involves activities such as inventory management, order processing, picking and packing products, and shipping them to customers. While Backlogs in the context of order fulfillment refer to a situation where there is a delay or accumulation of unprocessed orders.

Backlogs can result from various factors, including high demand, operational inefficiencies, or unforeseen disruptions, and they can negatively impact customer satisfaction, as customers may experience delays in receiving their orders. Eliminating backlogs is crucial to ensuring timely and reliable order fulfillment.

Order fulfillment is the linchpin of our operations in the Logistics and Supply Chain industry, where efficiency is not merely a goal but a necessity. Let's delve into why this project is absolutely vital for Streamline Logistics Solutions:

* + - Customer Satisfaction: Enhancing our order fulfillment processes directly translates into heightened customer satisfaction, thereby nurturing loyalty and long-term relationships.
    - Operational Efficiency: Improved efficiency leads to cost savings and heightened profitability, bolstering our competitive position within the industry.
    - Data-Driven Insights: Harnessing data-driven insights empowers us to optimize resource allocation and routing, ensuring timely deliveries and improved resource management.
    - Reputation Management: Addressing these operational challenges is paramount to preserving Streamline Logistics Solutions' sterling reputation for delivering excellence consistently.

**Aim of the Project**

This project's primary objectives are to develop an Excel interactive dashboard that provides unparalleled visibility into our order fulfillment processes. Through this, we aim to:

* Efficiently allocate delivery resources based on order volume and location.
* Monitor order progress and proactively identify potential delays.
* Enhance customer communication with timely delivery status updates.
* Reduce order backlogs and operational costs.
* Elevate overall customer satisfaction and safeguard our reputation as an industry leader.

**Data Description**

This case study contains a single dataset and it comprises of;

* + Order ID: A unique identifier for each customer order.
  + Delivery Address: The address to which the order is to be delivered.
  + Order Timestamp: The date and time when the order was placed (e.g., "2023-09-01 08:00").
  + Order Status: The current status of the order (e.g., "In Progress" or "Completed").
  + Driver ID: A unique identifier for each driver assigned to deliver orders.
  + Vehicle Info: Information about the delivery vehicle used for the order.
  + Current Location: The current location of the delivery driver during order delivery.
  + Delivery Time: The total time taken for delivery, measured in minutes (e.g., "120 min").
  + Delays: Any delays that occurred during the delivery, measured in minutes (e.g., "15 min").

**Tech Stack**

Tool– Microsoft Excel

USE;

Utilized for creating the interactive dashboard, data visualization, and reporting.

Data Processing Tools: Leveraging Excel's data manipulation and analysis functions.

Visualization Tools: Employing Excel's charts, graphs, and pivot tables for order and delivery data visualization.

**Project Scope**

* Data Preprocessing: Rigorous data formatting, and preparation for analysis, addressing any data anomalies.
* Exploratory Data Analysis: This involves statistical analysis, data visualization, and other exploratory techniques to identify patterns, correlations, anomalies, and potential issues in the data.
* Dashboard Design: Crafting an interactive Excel dashboard with intuitive data visualization components.
* Documentation and Recommendations: Develop comprehensive documentation of the project.
* Exploratory Data Analysis: Explore the data to understand its characteristics and discover patterns.
* Data Transformation: Prepare the data for analysis by transforming, encoding, or normalizing it.
* Data Analysis: Analyze data to understand pattern in order to generate insights that will be visualized.
* Data Visualization: Create visual representations to communicate insights effectively.
* Interpretation and Insight Generation: Extract meaningful insights and interpret the results.

Insights

1. Order Backlog Issue: There's a significant backlog with 767 out of 1500 orders not completed. This is a pressing concern as a high backlog can lead to customer dissatisfaction and operational challenges.

2. Delivery Delays: is approximately 14.51 minutes. While this might seem modest, it can accumulate and contribute to the mounting backlog.

3. Feedback and Delays: Interestingly, orders with positive feedback have a slightly higher average delay than those with negative feedback. This suggests that while delays are a concern, other factors such as customer service, product quality, or communication could be influencing feedback.

4. Driver Performance: Certain drivers, notably D86, D44, and D29, have significantly higher average delays than others. This suggests potential areas for training, route optimization, or vehicle maintenance.

5. Route Delays: Some routes, especially Route3, Route, and Route, consistently show higher delays. Investigating these routes for common obstacles, traffic patterns, or longer distances can provide actionable insights.

6. Vehicle Delays: Deliveries made using "Bike C" experience slightly higher delays compared to those made with "Van A". This might be due to the limitations in speed, cargo capacity, or the range of "Bike C".

7. Allocation Rule Inefficiencies: Despite the intention to expedite deliveries, orders allocated using 'Expedited Rules' have a slightly higher average delay compared to those allocated using both 'Custom Rules and 'Standard Rules'. This might indicate inefficiencies in the 'Expedited Rules" allocation system.

Recommendations

1. Driver Training and Evaluation: Drivers with consistently high delays might benefit from additional training, better route planning tools, or vehicle maintenance checks.

2. Route Optimization: Consider re-evaluating high-delay routes. Traffic analysis, time of delivery, and other factors could be assessed to optimize these routes.

3. Vehicle Allocation: Reassess the use of "Bike C" for deliveries, especially if they're being used for longer routes or bulkier deliveries.

4. Review Allocation Rules: The 'Expedited Rules' may need a review to ensure they're effectively reducing delays. It might be more efficient to focus on improving 'Custom Rules' since they seem to perform better.

5. Enhanced Customer Communication: Given the feedback, enhancing the communication channel with customers regarding the status of their order, expected delays, or any other concerns can go a long way in improving customer satisfaction.