**Case Study: E-commerce Order Fulfillment & Delivery Analytics**

**1️. Background**

FastCart, an online retailer specializing in consumer goods and electronics, implemented Oracle NetSuite ERP to manage sales, inventory, and logistics. However, the company faced significant challenges due to:

* Delayed deliveries, leading to customer dissatisfaction.
* Inefficient tracking, making it difficult to monitor order fulfillment performance.
* Lack of real-time analytics, preventing data-driven decision-making.

To address these issues, FastCart decided to integrate its ERP system with a cloud-based data warehouse (Amazon Redshift) and use Power BI for advanced analytics. The goal was to optimize:

* **Order processing times**
* **Delivery performance**
* **Logistics tracking**
* **Customer satisfaction**

**2️. Case Study Scope**

The project focused on building a **scalable analytics solution** by integrating order, shipment, and delivery data from **NetSuite ERP** into **Amazon Redshift**, with key reporting features in **Power BI**.

**Key Components**

🔹 **Order Management System (OMS)** – Tracks orders from placement to delivery.  
🔹 **Shipping & Delivery Analytics** – Monitors logistics performance and carrier efficiency.  
🔹 **Customer Satisfaction Analysis** – Uses feedback to assess delivery experience.

The **primary objective** was to **optimize operational efficiency** and **improve the customer experience** by leveraging **data-driven insights**.

**3️. Key Activities**

**1️ . Data Integration & ETL Process**

* **Extract order, shipment, and customer feedback data directly from Oracle NetSuite ERP using API or ODBC/JDBC connections.**
* **Transform and clean data using Python (Pandas) or SQL scripts.S**
* **Store structured data in Amazon Redshift for efficient querying and reporting.**

**2️. Data Model Design**

The solution included key tables for structured analytics:

| **Table Name** | **Description** |
| --- | --- |
| **Customers** | Stores customer details & purchase history. |
| **Orders** | Tracks order details from NetSuite ERP. |
| **Shipments** | Stores shipping details from logistics partners. |
| **Carriers** | Information about third-party delivery providers. |
| **Delivery\_Status** | Tracks real-time shipment updates. |
| **Customer\_Feedback** | Stores satisfaction ratings & complaints. |

**Table Definitions: (Attached in excel sheet)**

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**3. Data Analysis Using Python Pandas**

* **Load Data** into Pandas for preprocessing.
* **Calculate Order Processing Time** (order placement to shipment dispatch).
* **Measure On-Time Delivery Rate** by analyzing late vs. on-time shipments.
* **Evaluate Carrier Performance** based on average delivery times.
* **Analyze Customer Feedback** to identify key service improvement areas.

**4️. Analytics & Reporting (Power BI Dashboards)**

* **Order Processing Time** – Measures efficiency of order fulfillment.
* **On-Time Delivery Rate** – Tracks percentage of timely shipments.
* **Carrier Performance Dashboard** – Evaluates logistics partners' efficiency.
* **Delivery Delay Analysis** – Identifies common causes of shipment delays.
* **Customer Satisfaction Score (CSAT)** – Assesses customer experience.

**4️. Results & Business Impact**

* **20% reduction in order processing time** due to improved warehouse workflows
* **15% improvement in on-time deliveries** by optimizing carrier selection.
* **Lower return rates** as shipping accuracy improved.
* **Increased customer satisfaction** through real-time tracking and automated alerts.

**5️. Conclusion**

By integrating **Oracle NetSuite ERP with Amazon Inventory**, Fast Cart **transformed its order fulfilment process** and optimized **delivery efficiency**.