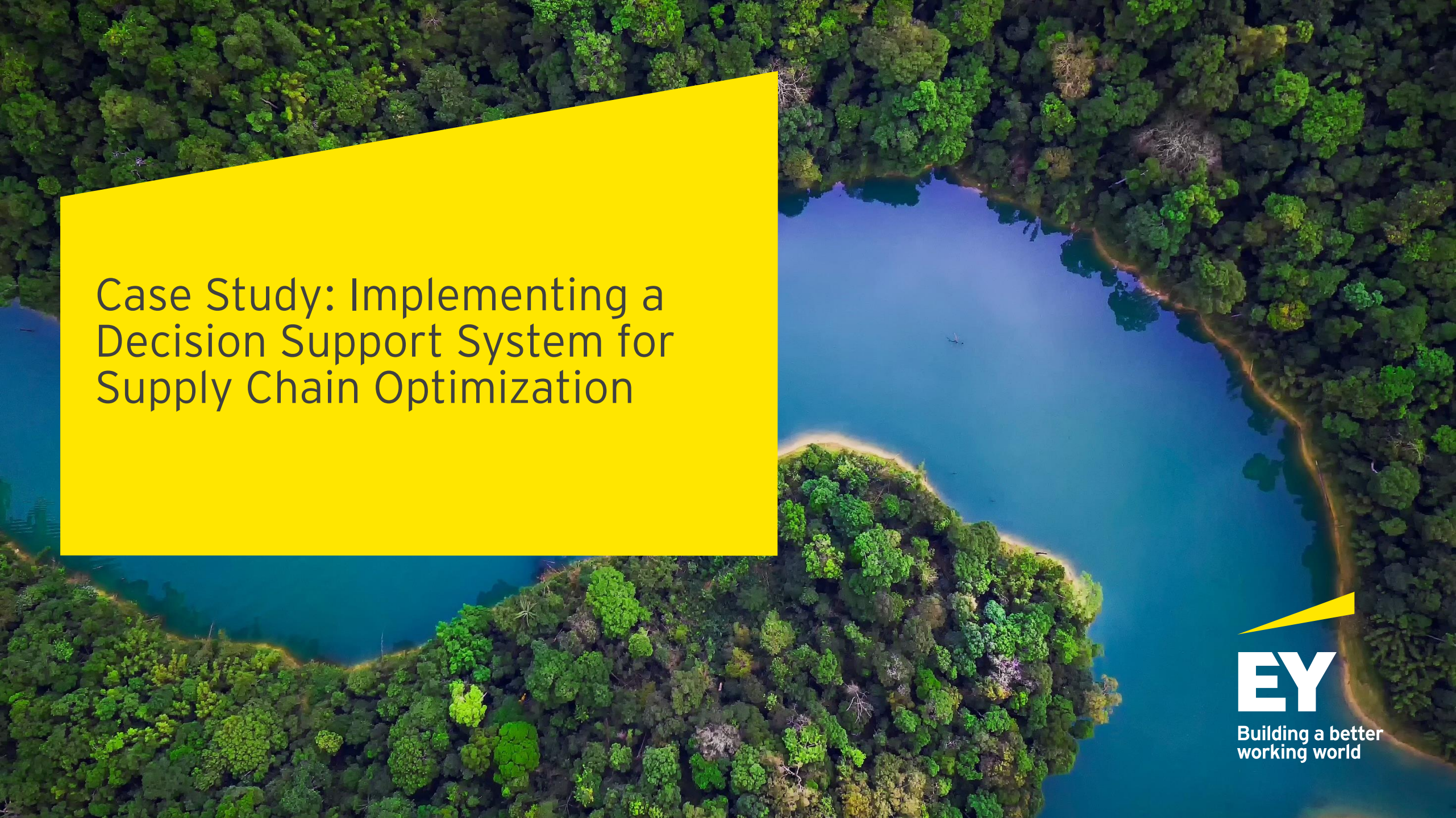

Case Study: Implementing a Decision Support System for Supply Chain Optimization

Building a better working world

Introduction to the Case Study

Background

FastX, a mid-sized manufacturer of electronic components, was facing significant supply chain challenges that impacted its operations. Problems such as high inventory costs, delayed shipments, and increasing expenses were affecting both the company's competitiveness and its customer satisfaction. To address these issues, the management decided to implement a Decision Support System (DSS).

The goal of the DSS was to improve supply chain operations by using advanced data analytics and real-time insights. By combining internal data, like sales figures, inventory levels, and order processing times, with external data, such as supplier lead times and market demand trends, the system would provide actionable recommendations. Some key features of the system included inventory optimization, demand forecasting, and scenario analysis to handle potential disruptions.

Problem Statements and Objectives

Problem Statement

1. High costs associated with holding inventory.
2. Delayed order fulfilment, resulting in dissatisfied customers.
3. Lack of visibility into supply chain processes.

Case Study Objectives

1. Reduce inventory holding costs.
2. Increase on-time delivery rates.
3. Provide real-time insights into supply chain operations.

Problem Statements and Objectives

Implementation Process Key Questions

1. How can the raw, unnormalized dataset be transformed and normalized for consistency and usability?
2. What steps are needed to create a database on MS SQL Server using the normalized data?
3. How can we connect the MS SQL Server database to reporting tools like Excel, Power BI, or Tableau for effective data analysis and visualization?
4. What processes are involved in cleaning the data through an Extract, Transform, and Load (ETL) process?
5. How can we visualize the key supply chain metrics for better understanding and decision-making?
6. How can Python be used to conduct statistical analysis to answer important supply chain-related questions?
7. What key observations can be made regarding inventory holding, improvements in on-time delivery, and the provision of real-time insights through the implemented Decision Support System?

Dataset Description

Column	Description
Product type	The category or classification of the product (e.g., electronic component, accessory) for organizational purposes.
SKU (Stock Keeping Unit)	A unique identifier for each product, used for tracking and inventory management.
Price	The cost of the product for sale, either retail or wholesale.
Availability	Indicates whether the product is currently in stock or out of stock.
Number of products sold	The total quantity of units sold during a specific time period.
Revenue generated	The total income from sales of the product, calculated by multiplying price and quantity sold.
Customer demographics	Information about the customers purchasing the product, such as age, gender, or location.
Stock levels	The quantity of product units available in inventory.
Lead times	The time taken from ordering a product to receiving it, including supplier and internal processing times.
Order quantities	The number of units ordered by customers per transaction.
Shipping times	The time taken from shipment of the order to its delivery to the customer.
Shipping carriers	The logistics companies responsible for delivering products to customers (e.g., FedEx, UPS).
Shipping costs	The expenses associated with shipping the product to customers.
Supplier name	The name of the company providing the product to FastX.

Thank you

Written by