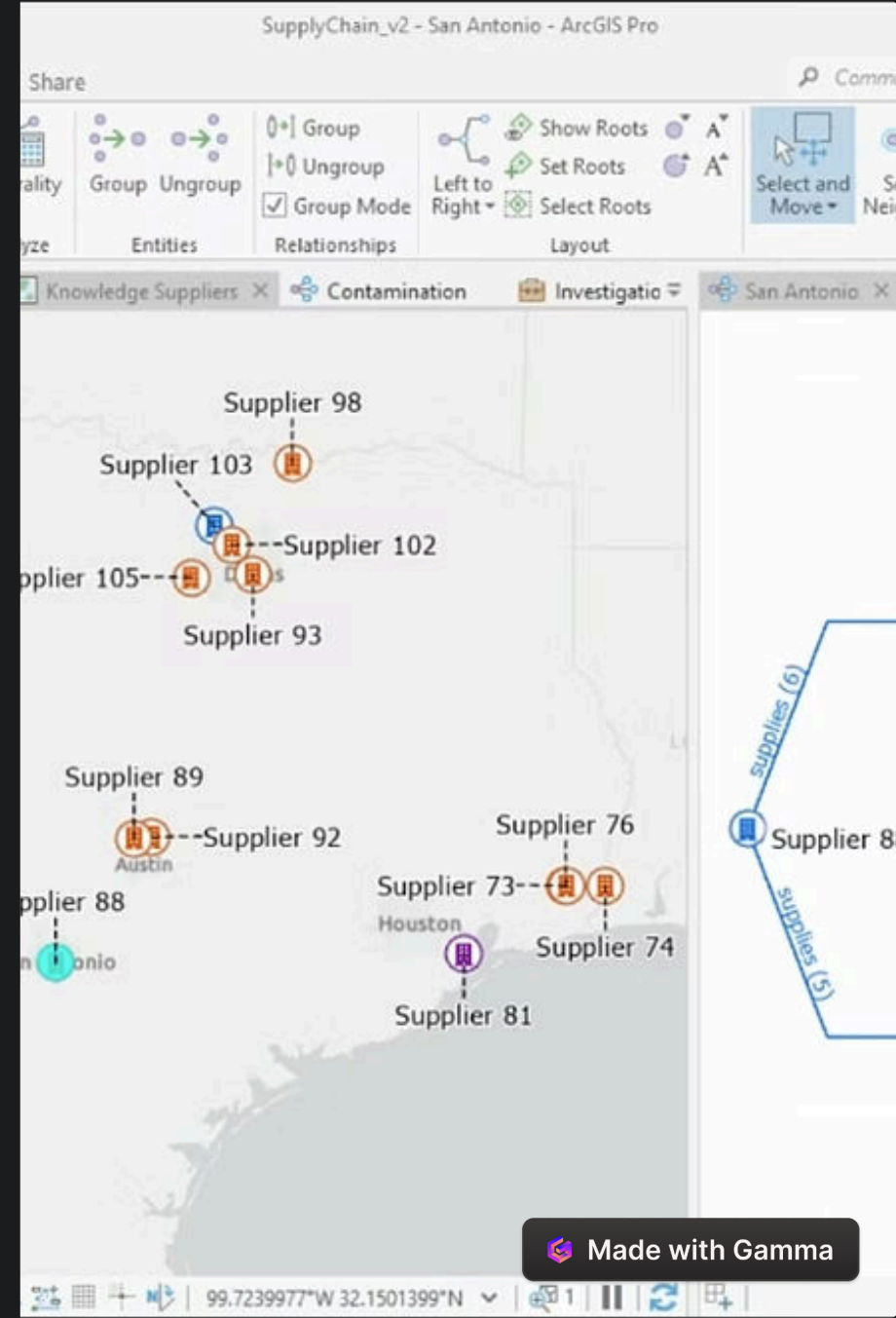# Supply Chain Analytics

Analyzing supply chain's inefficiencies

Supply Chain

A supply chain is a network of all the individuals, organizations, activities, information, and resources involved in ***moving a product or service from suppliers to customers***. It involves sourcing raw materials, manufacturing, warehousing, transportation, and delivery to ensure efficient and cost-effective distribution.

Supply chain analytics is a powerful tool that allows businesses to gain a competitive edge by making informed decisions based on data.

Analytics is the process of gathering, analyzing, and interpreting data to identify patterns and insights that can optimize the performance of a supply chain. By using advanced analytical techniques, organizations can make data-driven decisions to **reduce costs, improve efficiency, and enhance customer satisfaction**. Some common supply chain analytics include demand forecasting, inventory optimization, transportation routing, and supplier performance analysis.

Main Contents of Project Report

- Home Page
- Business Performance
- Inventory Management
- Shipment Management

Agenda

Briefing Recap

Recap the key points from the previous briefing.

Business Intelligence Analysis

Analyze the business intelligence data, including the business downturn, overstock and understock, and delay in shipment.

Briefing Recap

Summary

Key Milestones

Jan	Feb	Mar	Apr	May

Lorem ipsum

Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Maecenas porttitor congue massa. Fusce posuere,

Lorem ipsum

Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Maecenas porttitor congue massa. Fusce posuere,

Lorem ipsum

221
Lorem ipsum dolor sit amet, consectetuer

~3,000
Lorem ipsum dolor sit amet, consectetuer

...met, consectetuer ... porttitor congue ...gna sed pulvinar ...ada libero, sit amet ...na.

...ends

...ategory Analysis

Category 1

Key Initiatives

Lorem ipsum dolor sit amet, consectetuer adip...

Lorem Ipsum

Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Maecenas porttitor congue massa. Fusce posuere,

Lorem Ipsum

Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Maecenas porttitor congue massa. Fusce posuere,

Lorem Ipsum

Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Maecenas porttitor con... massa. Fusce posuere,

Lorem Ipsum

Lorem ipsum dolor sit amet, consectetuer adipiscing elit. ...

Made with Gamma

Business performance

30%

Net sales

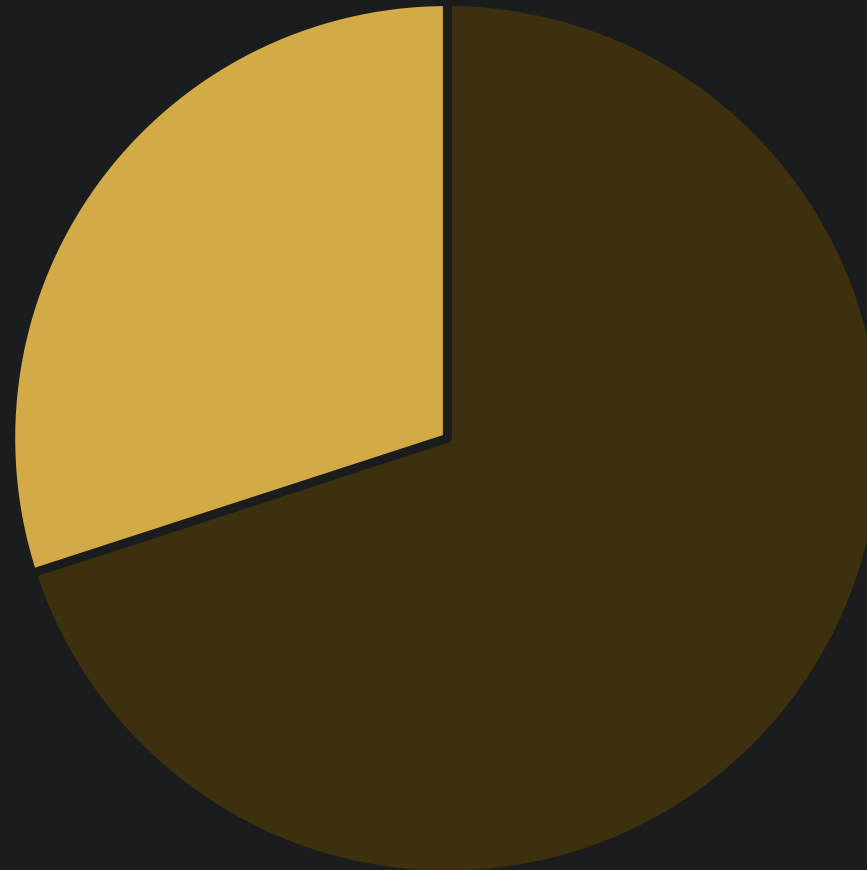Dropped sharply in Q4/2017

25%

Profit

Dropped sharply in Q4/2017

Data Scope

2015-2017

Product

■ Top 5 Departments   ■ Other Departments

These five departments which are Fan shop,Apparel,Golf,Footwear,Outdoors alone account for more than **70%** of orders. There are no product names out of the top 9 could reach 1000 orders.

Inventory

Most of the orders are shipped from the US.

Shipping Origin	Percentage of Orders
United States	Majority

Business Intelligence Analysis

Insights from Business Performance

1. Net Sales and Profit have increased year-over-year from 2015 to 2017.

2. The net profit margin fluctuated between 60% and 70%.

3. The top 5 product departments by number of orders are Fan Shop, Apparel, Golf, Footwear, and Outdoors.

4. The majority of orders are shipped via Standard Class (It is by far the most common shipment mode), followed by Second Class, First Class and Same Day.

5. The USA has the highest number of orders by country, followed by Mexico, France, Germany, Australia and others.

6. The Fan Shop and Apparel product categories have the highest number of orders. Number of orders and order quantity both increased from 2015 to 2016.

Insights from Inventory Management

1. Warehousing inventory and storage costs have increased each year from 2015-2017,Inventory levels and storage costs vary across different product departments, with Apparel and Fan Shop showing higher values followed by Book Shop, Discs Shop, Fan Shop and Fitness.

2. The top 3 products by inventory cost per unit are Hirzl Men's Hybrid Golf Glove, Nike Women's Legend V-Neck T-Shirt, and Merrell Women's Grassbow Sport Waterproof Hik.

3. Apparel, Fan Shop, and Golf have the highest storage costs, while Fitness has the lowest.

4. The total warehouse inventory is 67,554 units with an average order fulfillment time of 4 days.Total inventory cost per unit is 4.95K, and storage cost is 81.75K.

Insights from Shipment Management

1. Delays are visible across various departments, with the Fan Shop, Fitness, and Discs Shop showing the highest on-time delivery rates. While Technology, Apparel, Footwear, Golf and Outdoors have more late than on-time

2. Most countries have more on-time than late shipments, but some like USA, Mexico, France, Germany, and Brazil show significant late shipments, indicating potential issues in the logistics chain in these regions.

3. Certain products like TaylorMade Women's RBZ SL Rescue have very high late shipment rates near 100%. Followed by products like Men's gala suite, and Stiga Master Series have higher late shipment rates.

4. The late shipment rate shows an increasing trend over the years, peaking around 0.53 in 2015 Quarter 1 January and around 0.51 in 2017 Quarter 3 September and gradually decreased to 0.40 in 2017 Quarter 4 December.

5. The report covers orders from 01/01/2015 to shipments on 03/01/2015 and beyond. First Class is the first shipment mode listed. Puerto Rico is the first warehouse country listed. Total shipment schedule days is 74,869.

Business Downturn/Deficiencies

Variability in Net Sales and Profit Margins:

- While net sales and profits are increasing, the variability in profit margins suggests there could be underlying cost management issues that need to be stabilized to ensure consistent profitability.

Dependency on a Few Key Departments:

- The report highlights a significant dependency on departments like Fan Shop and Apparel for orders and sales. Over-reliance on a few departments can be risky if demand shifts or supply chain issues arise in those specific areas.

Inventory management Deficiencies

High Inventory Cost per Unit for Certain Products:

- Products such as Hirzl Men's Hybrid Golf Glove, Nike Women's Legend V-Neck T-Shirt, and Merrell Women's Grassbow Sport Waterproof Hiking Shoe have high inventory costs per unit. This points to potential overstocking or inefficiencies in inventory turnover for these items.

High Storage Costs for Specific Departments:

- The Apparel and Fan Shop departments have significantly higher storage costs. This indicates that these departments might be maintaining higher inventory levels than necessary, leading to increased holding costs.

Inventory Management Gaps:

- There are items in stock but not recorded in customer orders, leading to (Blank) values in inventory reports. This suggests gaps in inventory tracking and order recording systems, which can result in stock discrepancies and inefficiencies.

Shipment Management Deficiencies

High Late Shipment Rate:

- There is an increasing trend in the late shipment rate from 2015 to 2017,peaking around 0.53 in 2015 and around 0.51 in 2017.This indicates a deterioration in the ability to deliver orders on time.
- Specific products, such as TaylorMade Women's RBZ SL Rescue, Men's Gala Suite, and Stiga Master Series, have higher late shipment rates, suggesting inefficiencies in handling these items.

Geographical Late Shipment Issues:

- Countries like the USA, Mexico, France, Germany, and Brazil show significant late shipments. This indicates potential logistical challenges or inefficiencies in these regions that need addressing.

Variability in On-time Delivery by Product Department:

- Departments like Technology, Apparel, Footwear, Golf and Outdoors have higher delay rates compared to others like Fan Shop, Fitness, and Discs Shop . This suggests that specific product departments face more significant challenges in meeting delivery deadlines.

Recommendations for Improvement

Enhance Shipment Tracking and Management:

- Implement more robust tracking systems to monitor shipment processes closely and address delays promptly.
- Analyze and optimize logistics in regions with high late shipment rates to improve delivery performance.

Optimize Inventory Levels and Storage Costs:

- Regularly review and adjust inventory levels, especially for high-cost items, to avoid overstocking and reduce holding costs.
- Improve inventory tracking systems to ensure accurate stock records and reduce (Blank) values.

Diversify Product Department Strategies:

- Develop strategies to diversify and strengthen other departments to reduce dependency on Fan Shop and Apparel.
- Invest in marketing and sales efforts for underperforming departments to balance the sales distribution.

Improve Cost Management:

- Conduct a detailed analysis of cost structures to identify and mitigate any areas causing profit margin variability.
- Implement cost-saving measures and efficiency improvements in production, procurement, and logistics.

Real Time Examples

- Amazon Supply Chain Analytics

- Flipkart Supply Chain Analytics