SMART INVENTORY MANAGEMENT

Leveraging Big Data - AWS S3, Athena, Sagemaker and QuickSight

TEAM 12

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01 OUR MOTIVATION

The inability to handle big data leads to the following problems in inventory management:

- Poor service quality,
- Unsatisfied customers,
- Excess/inadequate amount of stock

Hence, deploying a robust analytical framework is extremely important for smart inventory management.

02 TARGET AUDIENCE

Big-data related inventory management has wide applications across industries.

Examples:

Physical Retail stores involving:

- Food and beverage
- Apparel ...

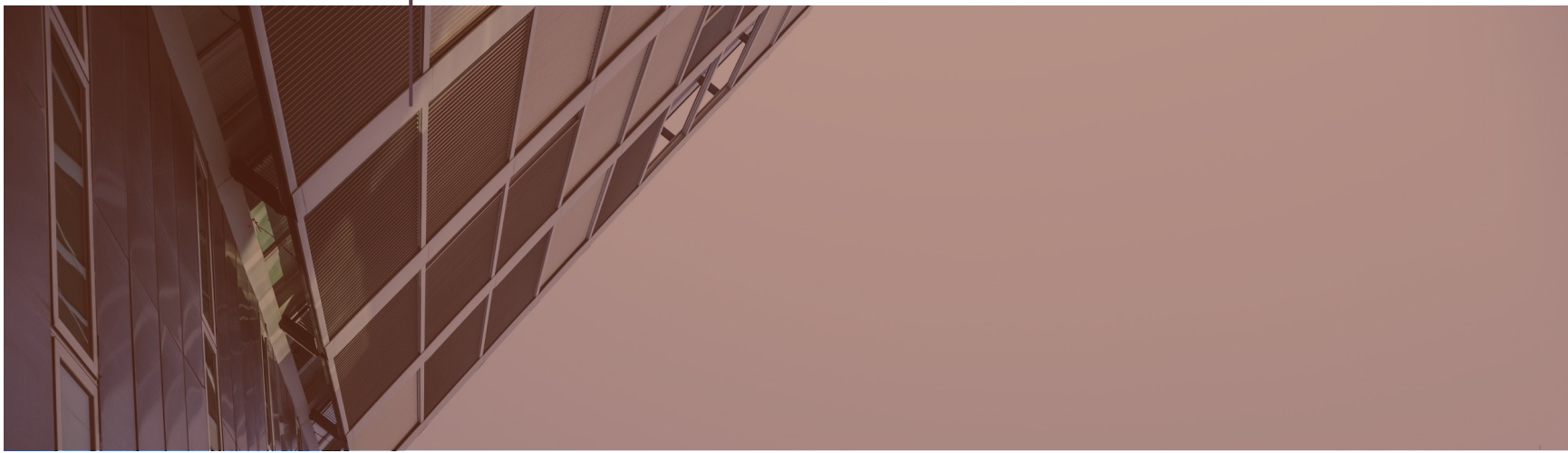
E-Commerce platforms:

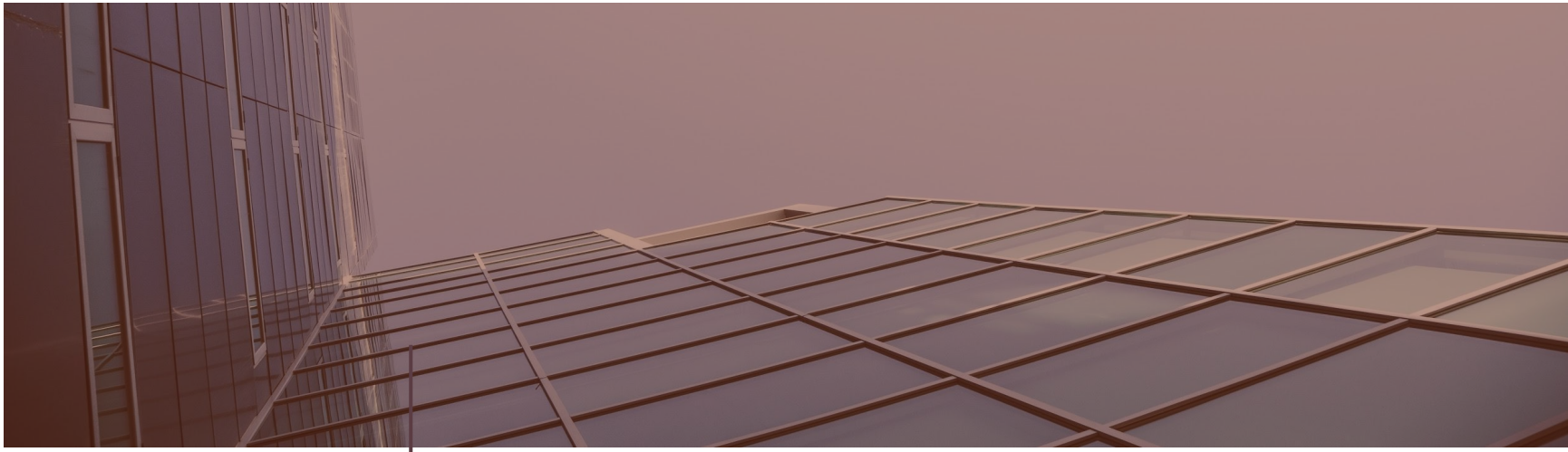
- Amazon
- Best Buy ...

PAST

Challenges faced by traditional systems

- Inability to handle high data volumes
- Costly storage
- High Latency due to low computational power
- Poor Integrability with various systems/data sources





NOW

How Big Data solves the challenges?

The value of big data is how quickly patterns and trends can be identified

- Rapid analysis of vast amounts of information at substantially faster speeds.
- Reduced Costs By Migrating to the Cloud
- Seamlessly integrated into existing systems at low costs.

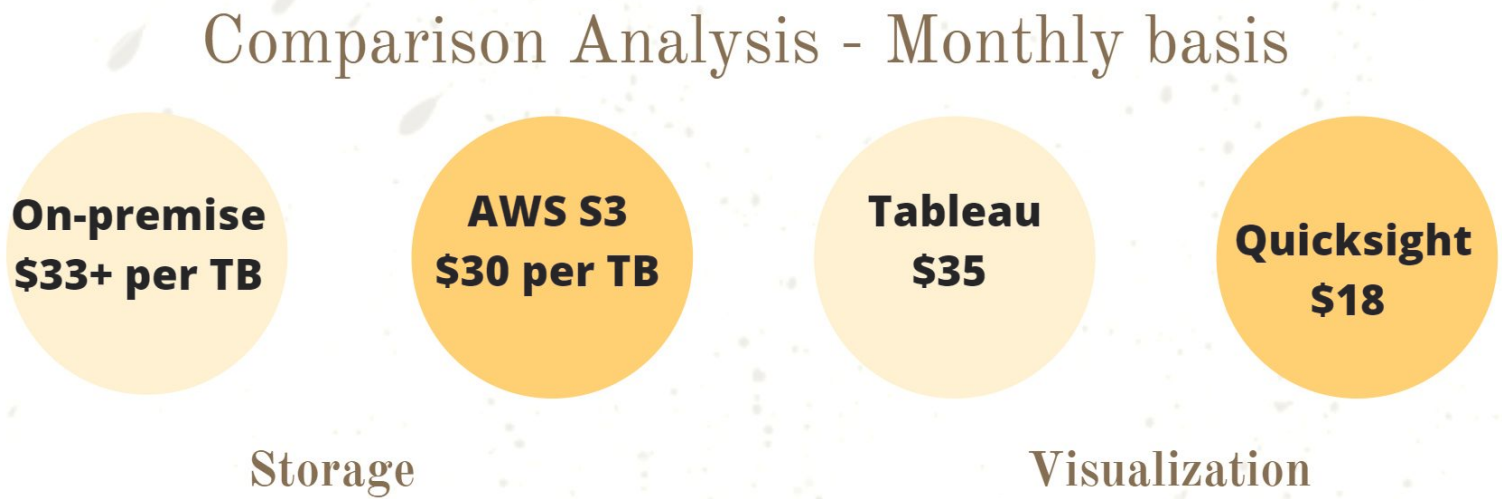
03 BUSINESS IMPACT

- *Improved operational efficiency*
- *Improved customer satisfaction*
- *Optimized storage costs*
- *Avoid over or under stocking*

WHY AWS ?
Advantages of AWS

WHY AWS ?

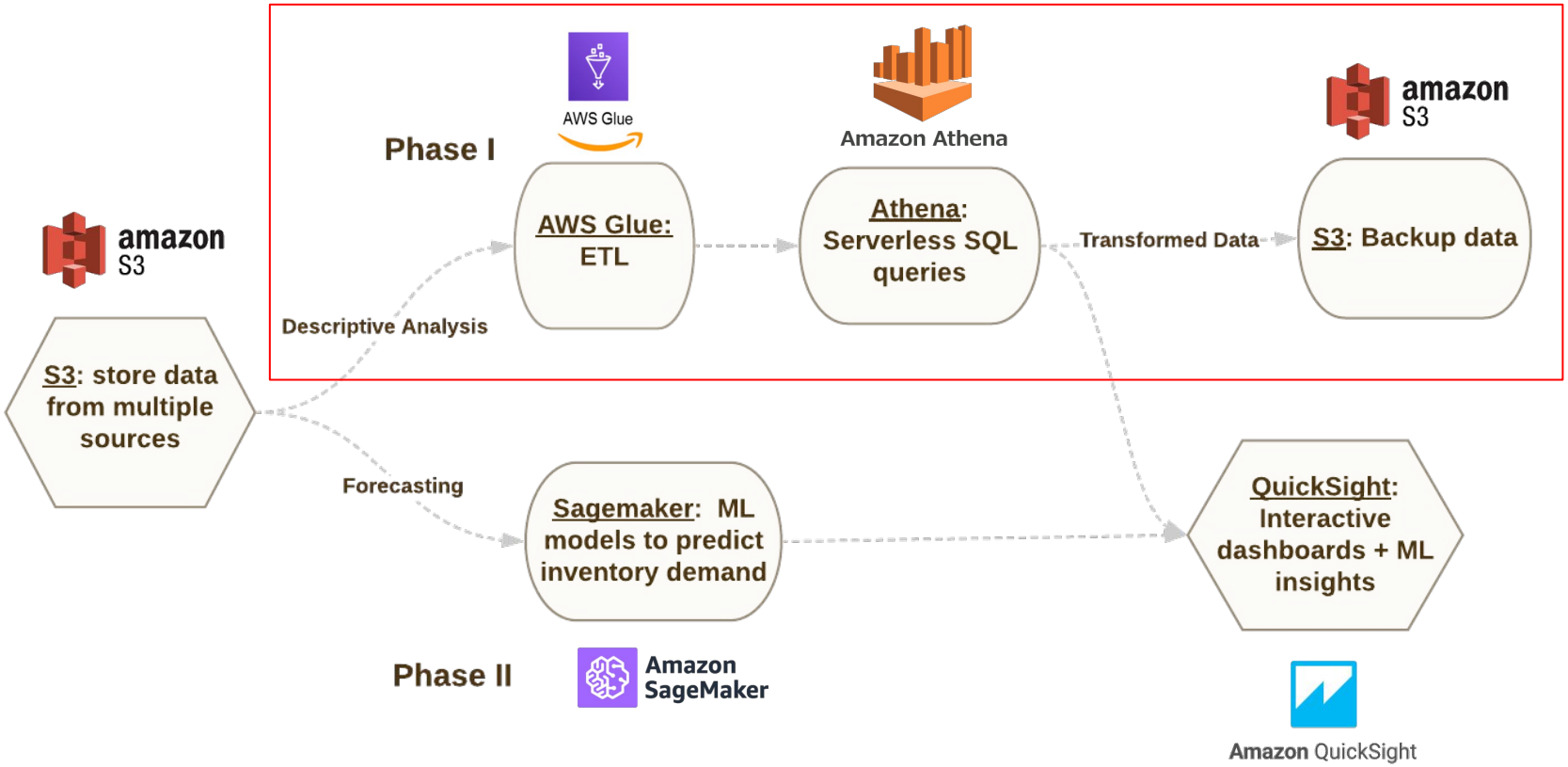
AWS *vs* Other Technologies



04 TECHNOLOGIES

05 PROCESS FLOW

05 PROCESS FLOW



05 PROCESS FLOW

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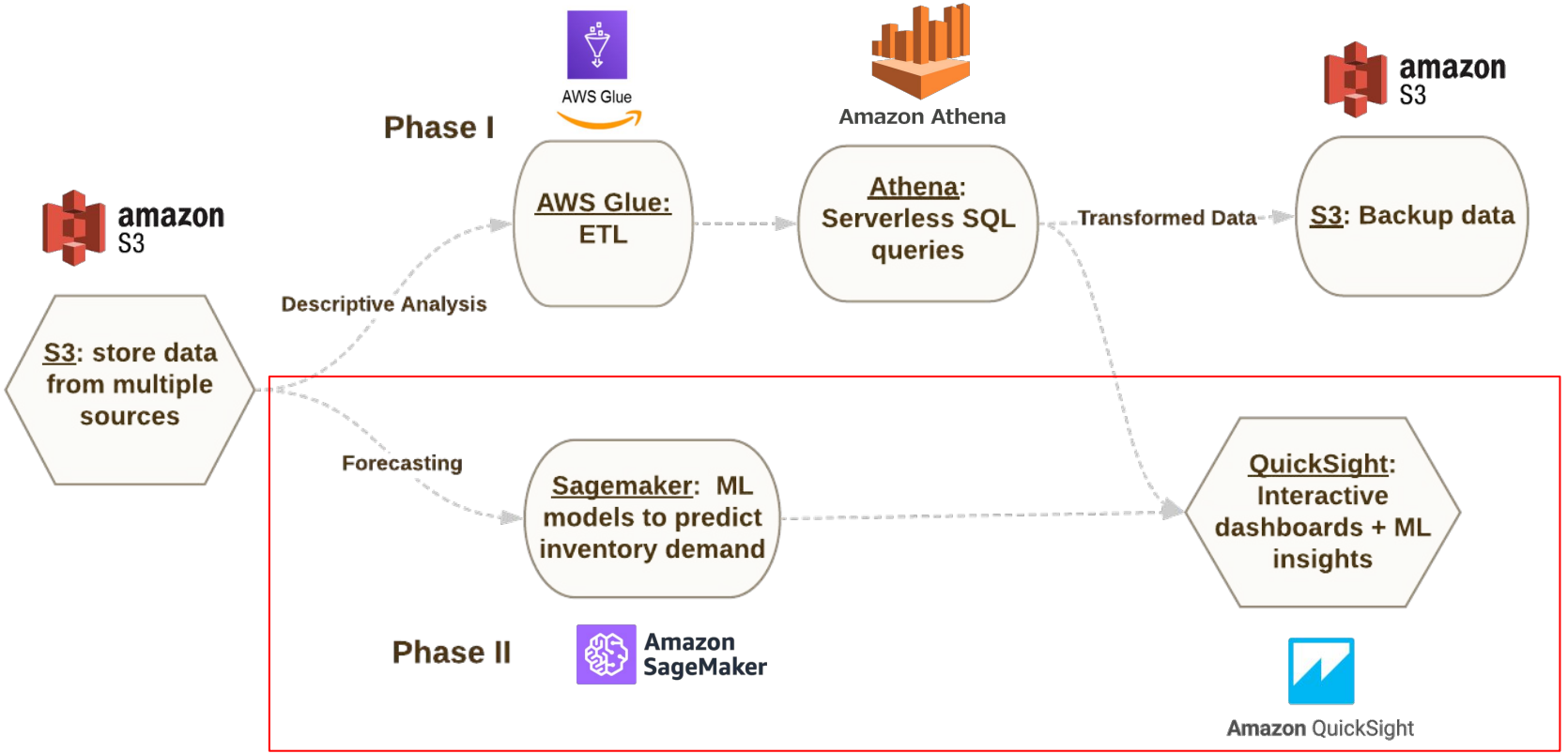
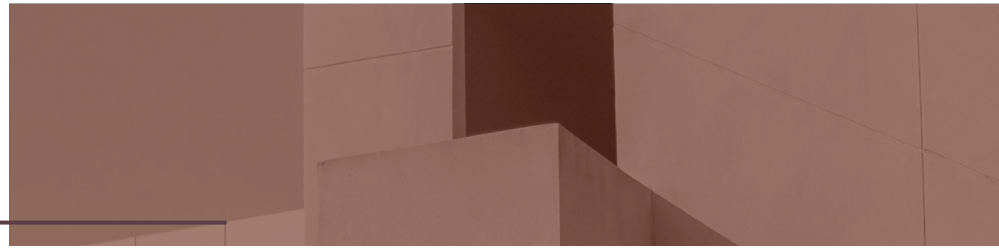


06 OUR USE CASE

Stage 1 - Dataset

Stage 2 - Feature Engineering & Modeling



Stage 3 - Visualization

DATASET

- Historical sales transactions for bakery goods (BIMBO) in Mexico
- Training data : 7 weeks
- Testing data : 2 weeks
- Data fields:
  - week number
  - sales channel
  - sales depot (id, location - town, state)
  - client (id, client name)
  - product (id, product name)

FEATURE ENGINEERING & MODELLING

- Feature processing with Scikit-Learn on Sagemaker notebook
- Prediction using estimators in Sagemaker
- End to end deployment using Amazon Sagemaker Inference pipelines- model computations done in minutes

VISUALIZATIONS

Business Performance Overview

Avg.Units Sold Per Week

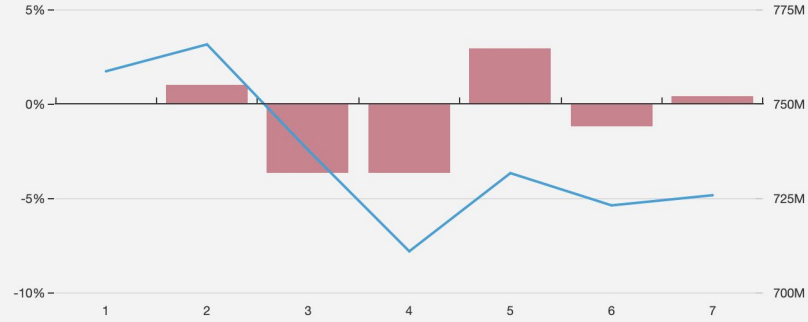
78.4M

Units Sold by Week

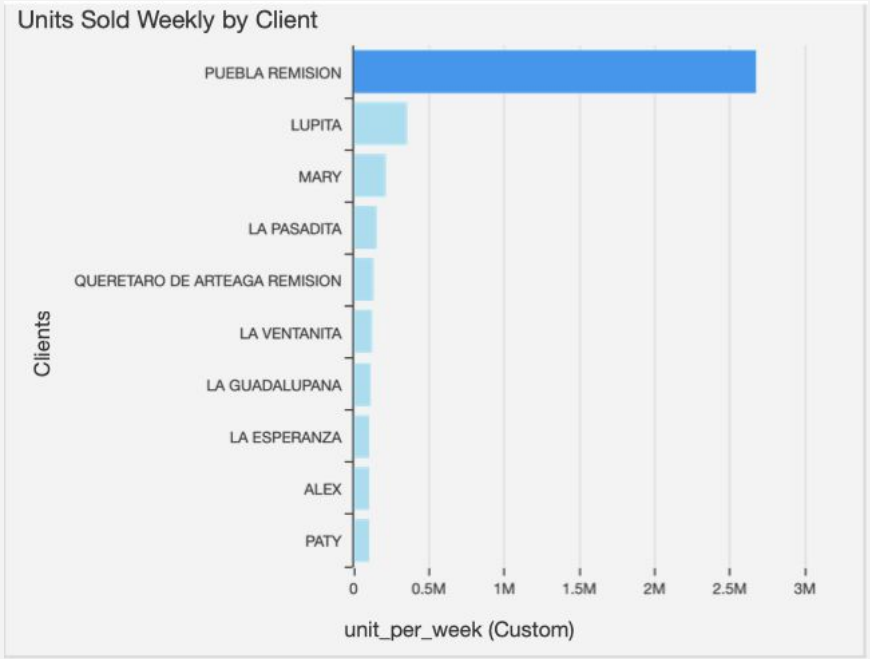
Avg.Sales Per Week

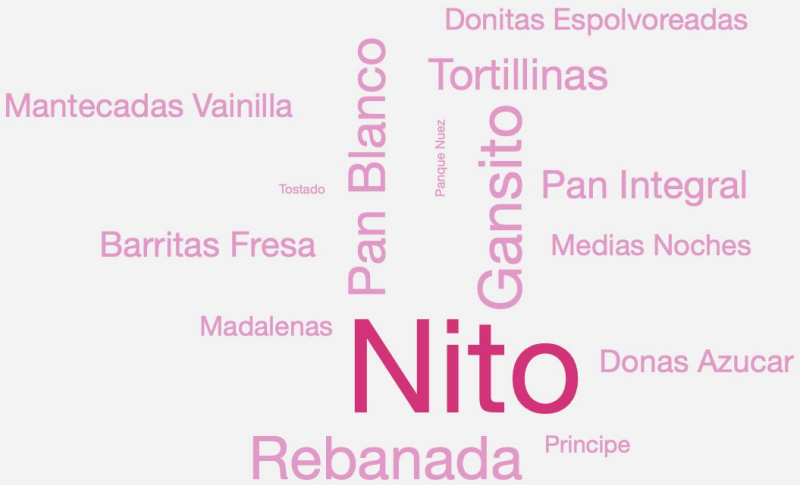
548.9M

Sales by Week

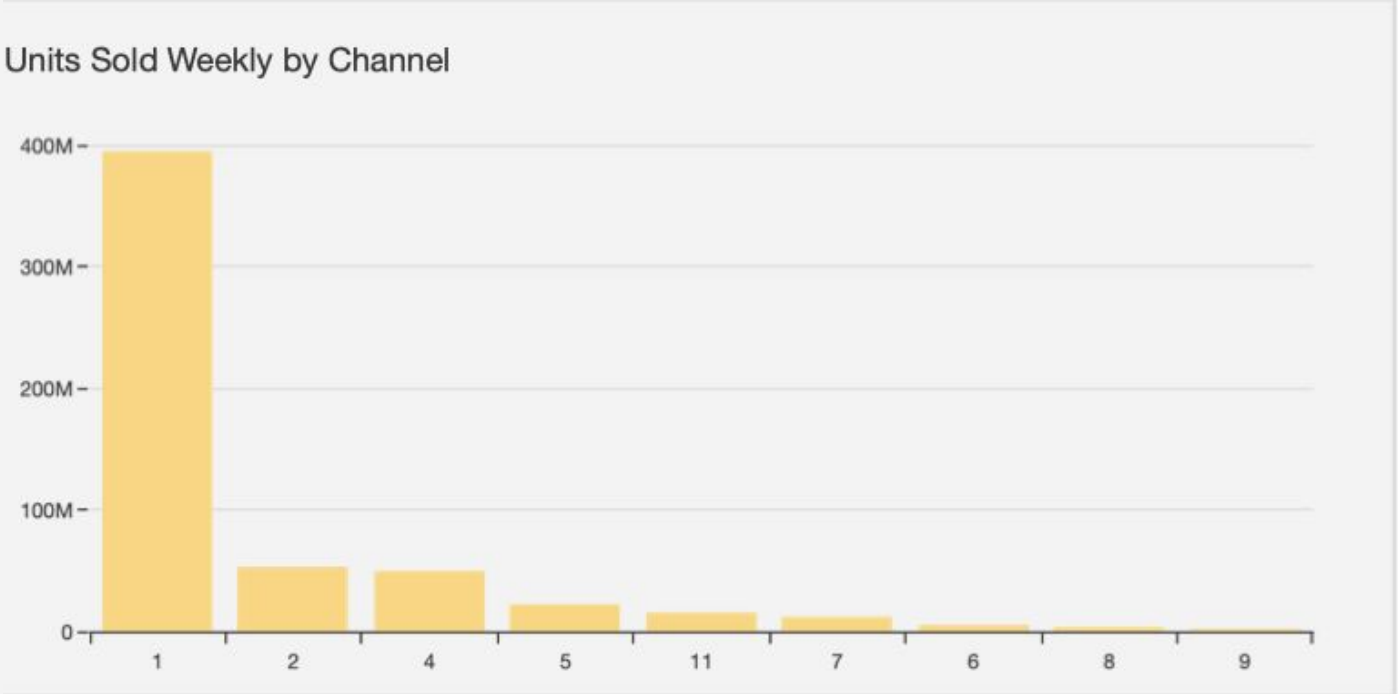


Key Accounts & Top Selling Products





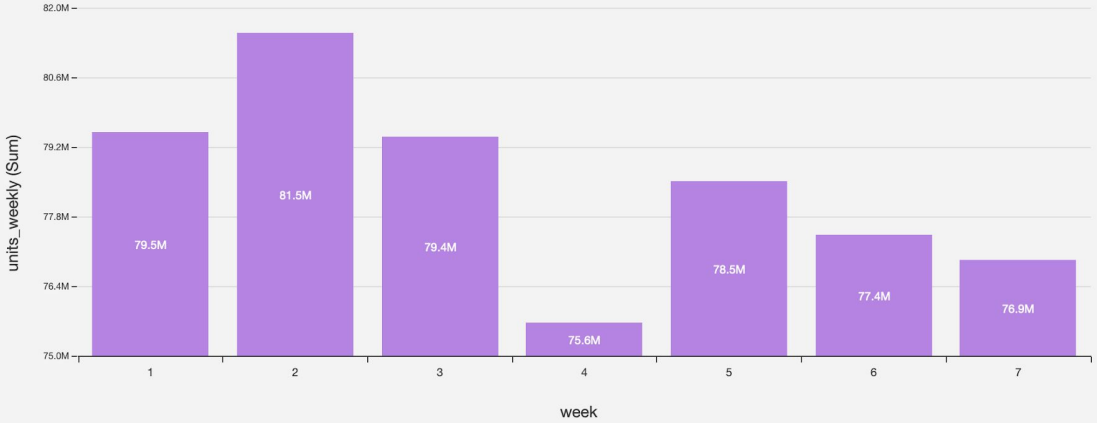
Distribution Highlights



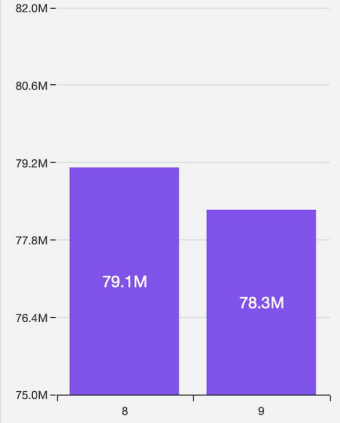
Sales Forecasting for the Upcoming Weeks

Avg.Units Sold Per Week	Week 8 Sales Forecast	Week 9 Sales Forecast	Sales Forecast Weekly Change
78.4M	79.1M	78.3M	9: 78.33M; 8: 79.09M; -0.76M↓

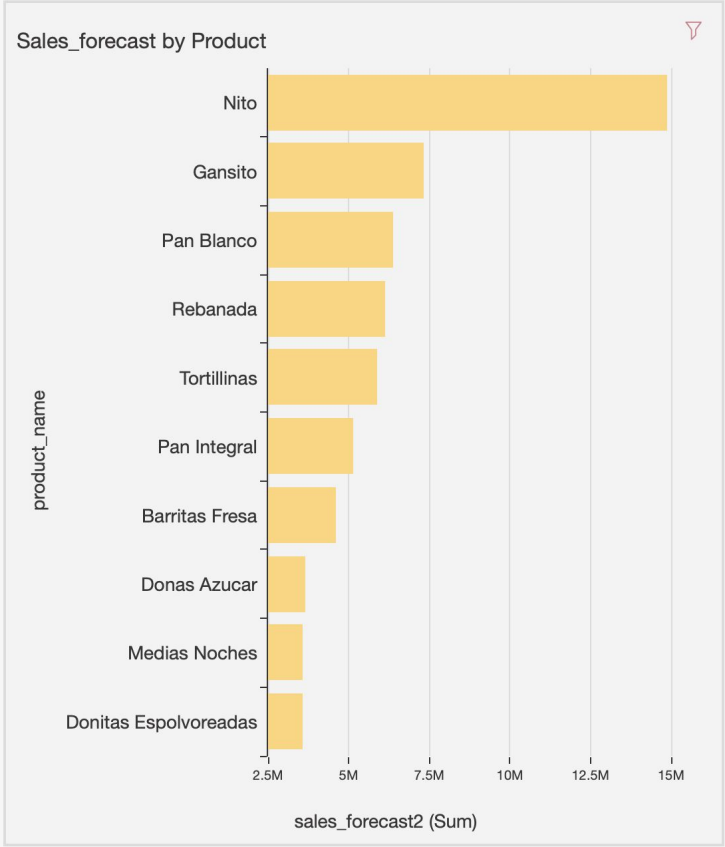
Sum of Units_weekly by Week



Sales Volumes Forecast



Better Arrange Products Based on Forecast



FUTURE SCOPE

Amazon Redshift

- Redshift for data-warehousing
- PetaByte scale capacity

amazon Kinesis

- Kinesis for real time inventory management
- Captures gigabytes of data per second from hundreds of sources

THANKS

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