A photograph of a person's hands working at a wooden desk. One hand is on a laptop keyboard, and the other is writing in a spiral-bound notebook with a yellow pen. A smartphone lies next to the laptop, and a white coffee cup is on the desk. The background is blurred.

PRODUCT DEMAND PREDICTION

USING MACHINE LEARNING

PRESENTED BY GAYATHRI.J



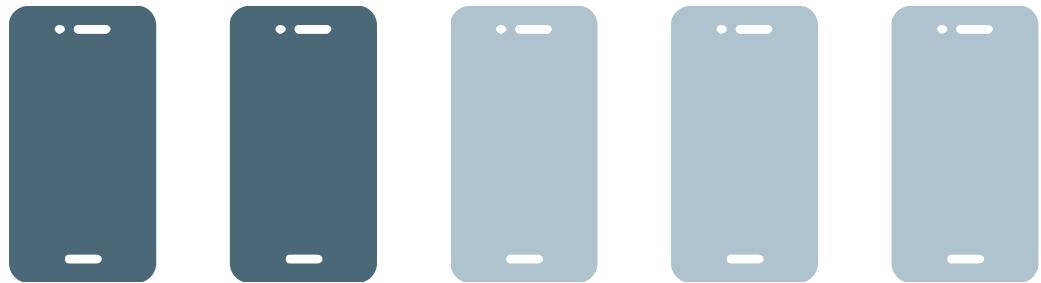
Machine learning

Forecasting

Machine learning forecasting is a process that uses algorithms to learn from data and make predictions about future events. Whether you want to understand your audience's needs or predict the next big trend, machine learning can help.



The Problem



65%

One of the biggest challenges of machine learning prediction models is their inability to generalize beyond the data they were trained on. In other words, they may struggle to make accurate predictions when presented with data that is significantly different from the training data.

Our Solutions



Provide a wide range of audio equipment options

Professional Audio Equipment Market by Product (Mixers, Interfaces, Network Switches, Processors, Power Amplifiers, Speakers, PA Systems, DAW Systems, Headphones, Microphones), by Type (Wired, Wireless), by End User (Commercial, Automotive, Home Entertainment, Sound Technicians, Corporate Event Production, Others): Global Opportunity Analysis and Industry Forecast, 2022-2031



Our Business Model

The critical aspect that new product demand forecasting models drive is it lets your business know which product your customer base is looking out for and when they are looking to acquire it. Thus, helping your inventory operations complete the order fulfilment targets by having better inventory & warehousing control.



Our mission is to be the top marketplace for audio tech and equipment

Demand forecasting is the process of using predictive analysis of historical data to estimate and predict customers' future demand for a product or service.



Our Value Proposition

We are a customer-centric business.



FEATURES

- Top quality products
- Customer factor
- Budget-friendly
- Data Pattern
- Stability
- Level of Detail

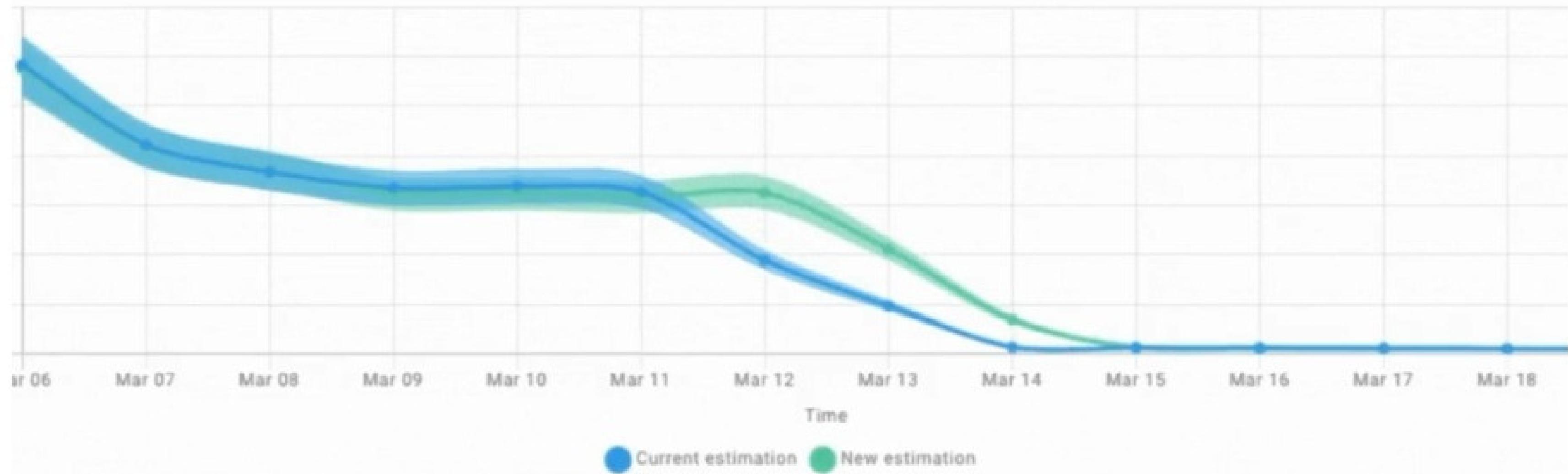
Customer
Centric

BENEFITS

- Value for money
- Varied options
- provides essential information about future customer demand.
- Great customer service

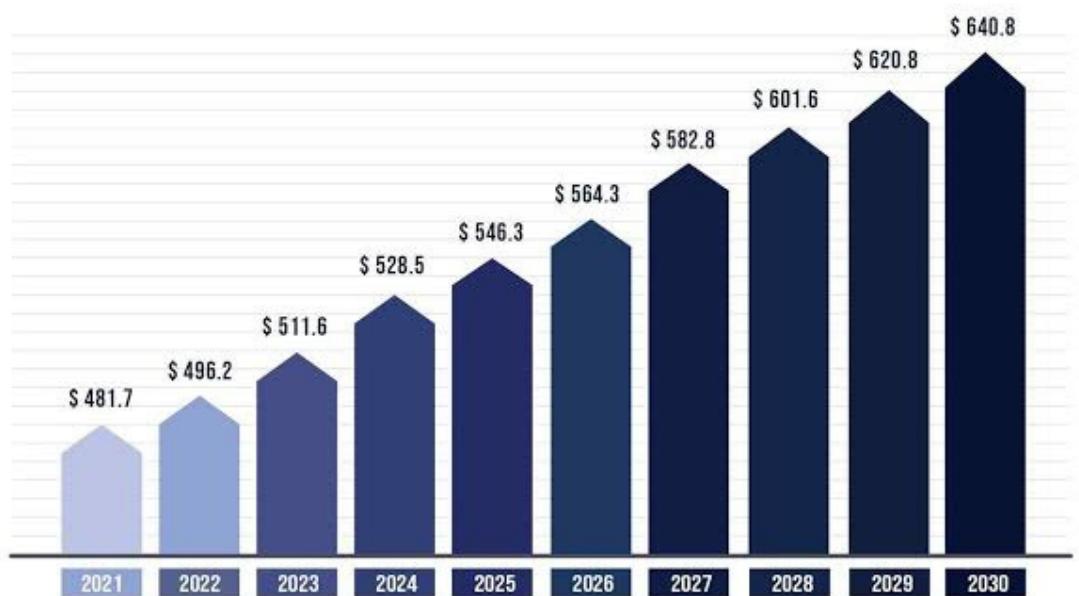
Graph for model

sted profit



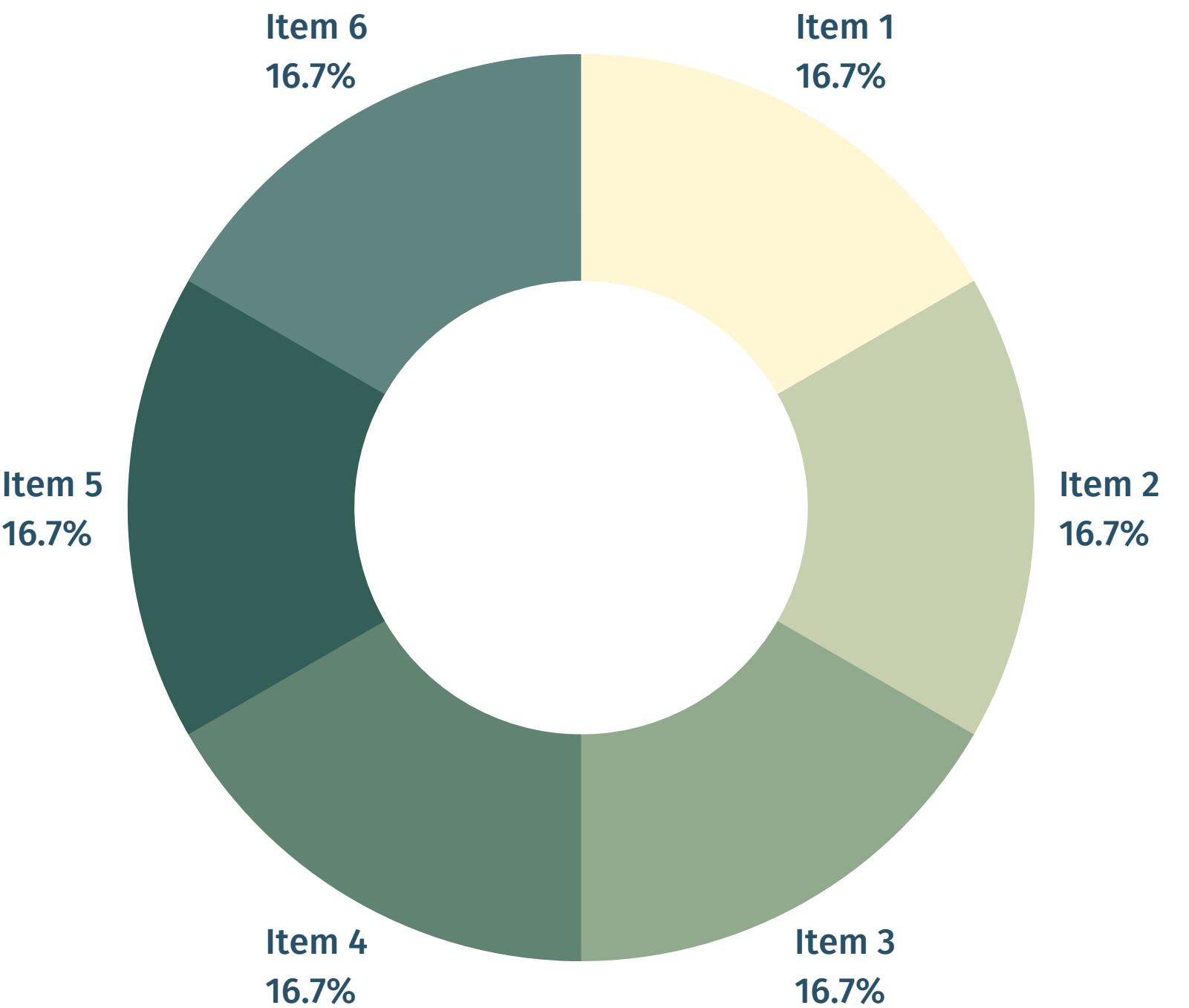


Market Share



Market share is the percent of total sales in an industry generated by a particular company.

Market share is calculated by taking the company's sales over the period and dividing it by the total sales of the industry over the same period.



Strengths



Data Availability: You have access to a wealth of historical sales and market data, which can be used for accurate predictions.

Technological Tools: You may have access to advanced software and machine learning algorithms that can improve the accuracy of your predictions.

Internal Expertise: Your team may have expertise in data analysis and demand forecasting.



Weaknesses



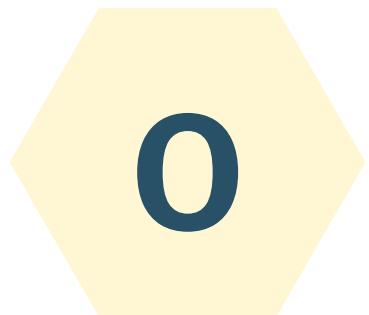
Data Quality: Poor data quality, incomplete data, or data gaps can lead to inaccurate predictions.

Complexity: Advanced prediction models can be complex, making it challenging to implement and maintain.

Resource Intensive: Building and maintaining accurate prediction models can require significant time, money, and manpower.



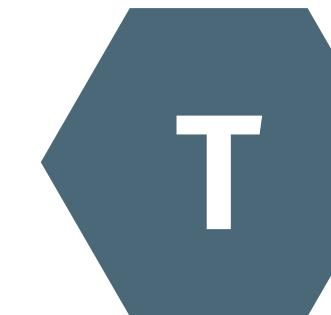
Opportunities



Big Data: The increasing availability of data from various sources provides opportunities to enhance demand prediction.

Real-time Data: Utilizing real-time data can improve the agility of your demand prediction.

Market Expansion: Improved demand prediction can support expansion into new markets or product lines.



Threats

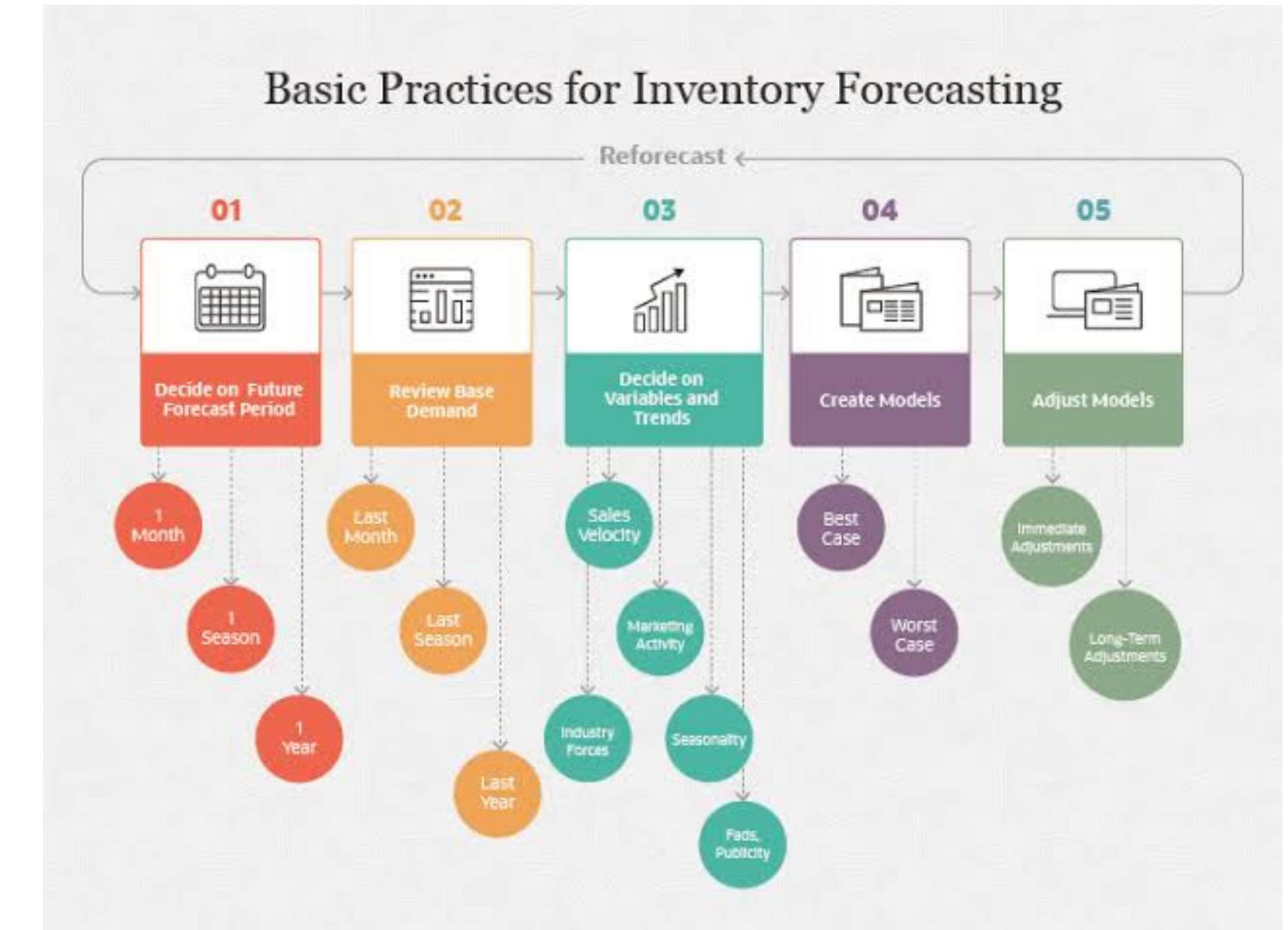
Competition: Competitors may also invest in advanced prediction models, making it challenging to gain a competitive edge.

Economic Uncertainty: External economic factors can significantly affect demand and make accurate predictions more difficult.

Data Security and Privacy: Handling sensitive customer data requires strong security and compliance measures.

Marketing Strategy

- Trend projection.
- Market research.
- Sales force composite.
- Delphi method.
- The econometric method.



Dataset: PRODUCT DEMAND PREDICTION

A	B	C	D	E	F	G
1	ID	Store ID	Total Price	Base Price	Units Sold	
2	1	8091	99.0375	111.8625	20	
3	2	8091	99.0375	99.0375	28	
4	3	8091	133.95	133.95	19	
5	4	8091	133.95	133.95	44	
6	5	8091	141.075	141.075	52	
7	9	8091	227.2875	227.2875	18	
8	10	8091	327.0375	327.0375	47	
9	13	8091	210.9	210.9	50	
10	14	8091	190.2375	234.4125	82	
11	17	8095	99.0375	99.0375	99	
12	18	8095	97.6125	97.6125	120	
13	19	8095	98.325	98.325	40	
14	22	8095	133.2375	133.2375	68	
15	23	8095	133.95	133.95	87	
16	24	8095	139.65	139.65	186	

Program:

```
# Import necessary libraries
import numpy as np
import pandas as pd
from sklearn.model_selection import train_test_split
from sklearn.linear_model import LinearRegression
from sklearn.metrics import mean_absolute_error

# Load your dataset
data = pd.read_csv('product_demand_data.csv') # Replace 'product_demand_data.csv' with your dataset file

# Data preprocessing
# You might need to handle missing data, convert categorical features, and create new features here.

# Split data into features and target variable
X = data[['Feature1', 'Feature2', ...]] # Replace with your relevant features
y = data['Demand'] # Assuming 'Demand' is the target variable

# Split the data into training and testing sets
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2, random_state=42)

# Create a Linear Regression model
model = LinearRegression()

# Train the model
model.fit(X_train, y_train)

# Make predictions
y_pred = model.predict(X_test)

# Evaluate the model
mae = mean_absolute_error(y_test, y_pred)
print(f'Mean Absolute Error: {mae}')

# Now you can use this model to make demand predictions for new data.
```

OUTPUT:

Supply and Demand

