

The background features abstract, overlapping green geometric shapes, primarily triangles and polygons, in various shades of green, creating a modern and dynamic visual effect.

# Retail Giant Sales

## Forecasting Assignment

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# Agenda

- ▶ Problem Statement
- ▶ About attributes
- ▶ Coefficient Of Variance (COV)
- ▶ Choosing the right technique
- ▶ Comparing models with MAPE and Result

# Problem Statement

- Global Mart is an online supergiant store that has worldwide operations
- We need to forecast the sales of the products for the next 6 months, so that you have a proper estimate and can plan your inventory and business processes accordingly

# About attributes

Attributes	Description
Order-Date	The date on which the order was placed
Segment	The segment to which the product belongs
Market	The market to which the customer belongs
Sales	Total sales value of the transaction
Profit	Profit made on the transaction

Note: Dataset has 21 combinations of 'Market-Segment' variables.

# Coefficient of Variance (COV)

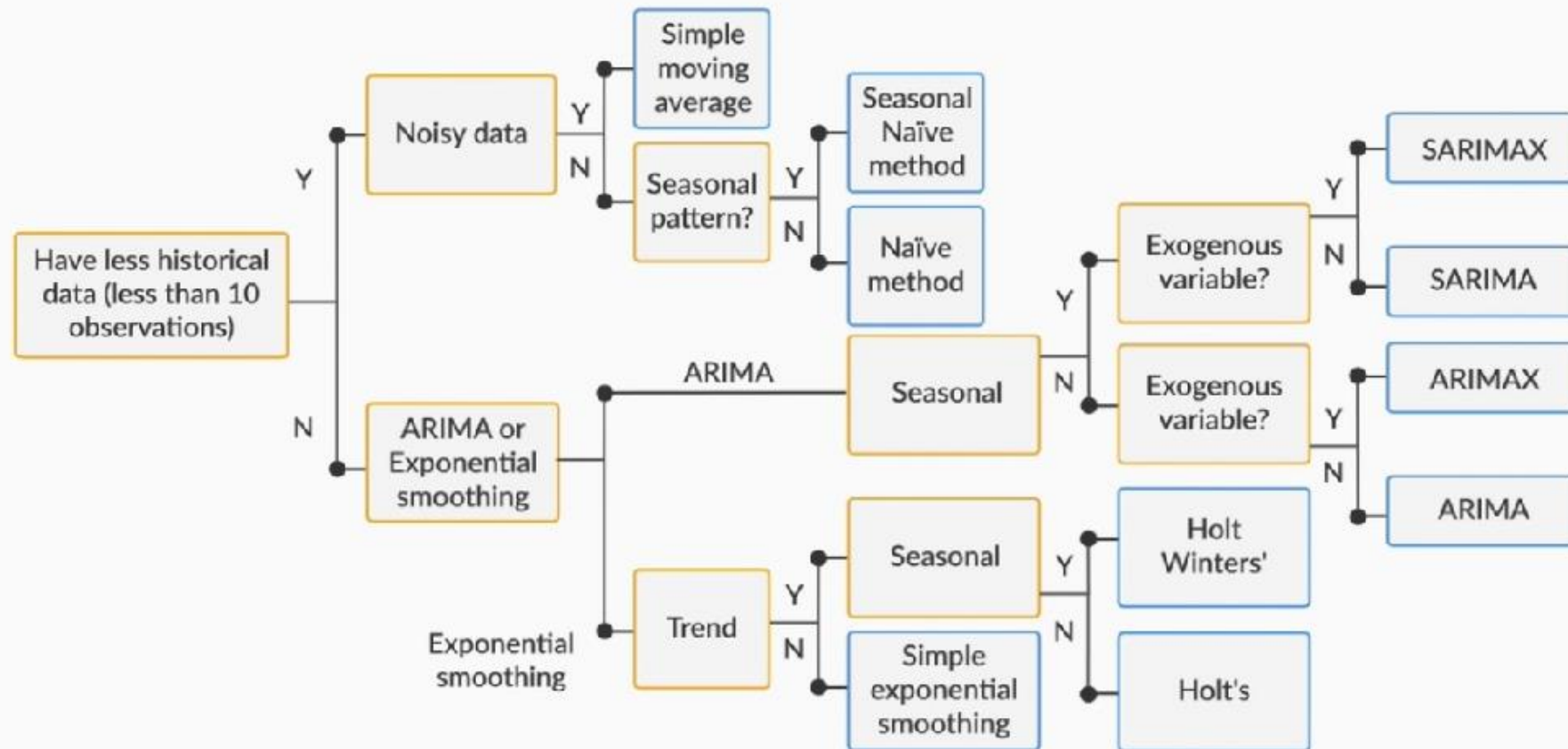
Sr. no.	MarketSegment	COV
1	APAC-Consumer	0.596404
2	EU-Consumer	0.647485
3	LATAM-Consumer	0.680684
4	EU-Corporate	0.689346
5	APAC-Corporate	0.731926
6	LATAM-Corporate	0.88026
7	US-Corporate	1.027209
8	APAC-Home Office	1.048817
9	US-Consumer	1.095295
10	EU-Home Office	1.114681
11	Canada-Corporate	1.19722
12	US-Home Office	1.217133
13	LATAM-Home Office	1.343696
14	Africa-Consumer	1.429335
15	Canada-Consumer	1.476093
16	Africa-Corporate	1.664827
17	Africa-Home Office	1.989866
18	Canada-Home Office	2.1883
19	EMEA-Consumer	2.716992
20	EMEA-Home Office	6.066684
21	EMEA-Corporate	6.779639

Market segment  
“APAC-Consumer” is  
more consistent  
profitable

Note: Market-Segment ‘APAC-Consumer’ has low value of COV based on Profit data amongst all Market Segments which concludes that it is more consistent profitable. Hence further analysis and modelling will be based on ‘APAC-Consumer’ data.

# Choosing the right technique

To forecast the data using time series modelling



Note: Our dataset has more than 10 observations, hence we used 'Exponential Smoothing' and 'Auto Regression' techniques of time series forecasting.

# Comparing Models with MAPE and Result

Type	Sr No	Time Series Techniques	MAPE
Exponential Smoothing	1	Simple exponential smoothing Method	27.82
	2	Holt's exponential smoothing Method	42.57
	3	Holt Winters's additive Method	17.61
	4	Holt Winters's Multiplicative Method	19.62
Auto Regressive	5	(AR) Auto regression Method	27.27
	6	(MA) Moving Average Method	81.64
	7	(ARMA) Autoregressive Moving Average Method	77.66
	8	(ARIMA) Autoregressive Integrated Moving Average Method	77.66
	9	(SARIMA) Seasonal Autoregressive Integrated Moving Average Method	18.38

## Result :

- We are done with performing all the time series forecasting methods/models on the Retail store data
- If we just look at the smoothing techniques, then **“Holt Winters's additive”** forecast performs better with MAPE value of **17.61**
- And if we look at the Auto Regressive methods, then **“(SARIMA) Seasonal Autoregressive Integrated”** method performs better with a MAPE value of **18.38**
- So, at an overall, looking at the above table of MAPE values for all the forecasting methods, we can clearly see that **“Holt Winters's additive”** forecast is clear winner with MAPE value of **17.61**
- So, we can conclude that, **Holt Winters's additive forecast** is more accurate amongst all other forecasting methods on this retail store data due to low MAPE value.

Thank You