



# SNS College of Technology

Coimbatore - 35



19BAZ782 – Analytics for Everyone

Unit V – Predictive Analytics II

# Topic...Guess...???

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**1<sup>st</sup> Indian Institution to Implement Design Thinking Curriculum**  
Redesigning Common Mind and Business Towards Excellence



# Recall

- Regression
- Multicollinearity
- Standard Error
- ANOVA, T Test – Inference
- Significance Value

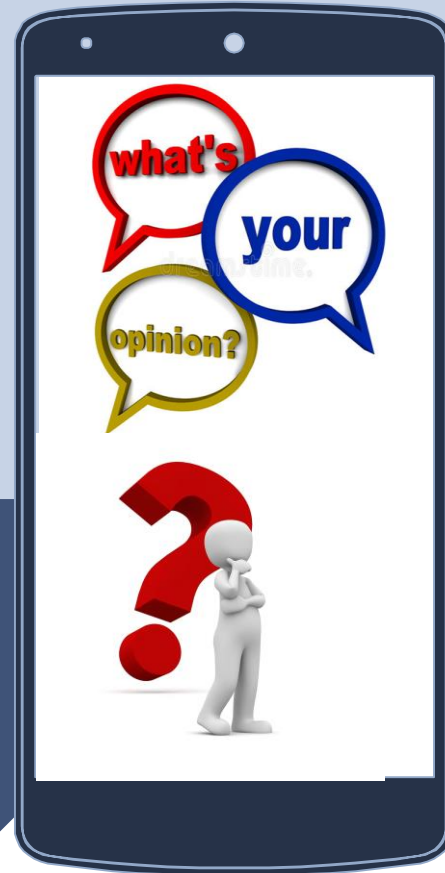


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# Guess the topic...???





# Accuracy



# Forecasting



- Predict the future
- Use historical data
- Short Term, Medium Term and Long Term

$$E_t = Y_t - F_t$$

$E_t$  = Forecast error at period  $t$

$Y_t$  = Actual value at time period  $t$

$F_t$  = Forecast for time period  $t$



# Training and test sets

- Two Portions: Training data and Test Data
- Training data: Estimate
- Test data: validate

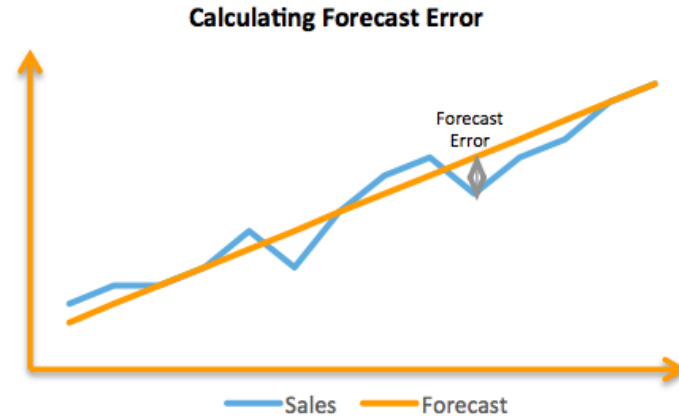


$$\text{Forecast Accuracy} = 1 - \left( \frac{\text{Actual} - \text{Forecast}}{\text{Actual}} \times 100 \right)$$



# Error

- Deviation from actual
- Not a mistake, unpredictable part of an observation
- Residuals are calculated on Training Data
- Forecast error calculated on test data





# Methods

$$\text{Percentage Error} = \frac{(\text{Actual} - \text{Forecast})}{\text{Actual}} \times 100$$

- Percentage Error
- Standard Déviation
- Corrélation Coefficient

$$\sigma = \sqrt{\frac{1}{n} \sum_{i=1}^n (x_i - \mu)^2}$$

$$r = \frac{\sum (x - \bar{x})(y - \bar{y})}{\sqrt{\sum (x - \bar{x})^2 \sum (y - \bar{y})^2}}$$





# Power of Forecasting Model

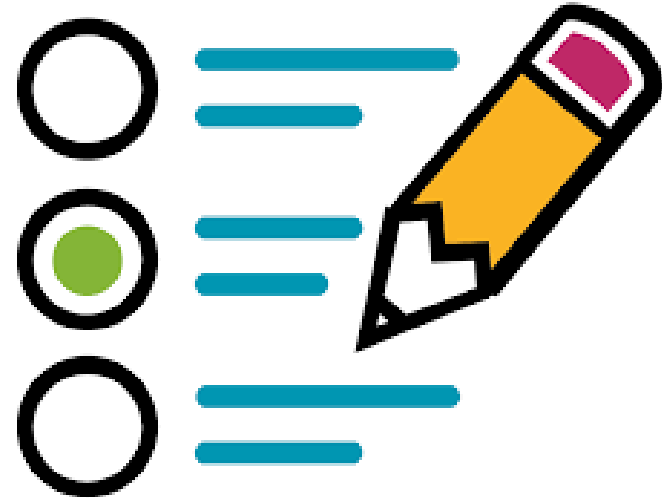
- U Statistics – Theil's Coefficient
- U: Relative forecasting power against Naive method
- $U < 1$ ; Technique is better than Naive

$$U = \frac{\sum_{t=1}^n (Y_{t+1} - F_{t+1})^2}{\sum_{t=1}^n (Y_{t+1} - Y_t)^2}$$



# Assessment

Why cant make a model 100% perfect...?





# Summary

- Accuracy
- Training and test sets
- Forecasting
- Error
- Methods
- Power of Forecasting

SUMMARY





# Reference

- <https://hbr.org/1971/07/how-to-choose-the-right-forecasting-technique>
- <https://otexts.com/fpp2/planning.html>
- <https://otexts.com/fpp2/accuracy.html>
- <https://www.eazystock.com/uk/blog-uk/how-to-calculate-forecast-accuracy-and-forecast-error/>
- <https://medium.com/analytics-vidhya/basics-of-forecast-accuracy-db704b0b001b>



# Reach Us



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*Thank  
you*