

**MGMT 524
CAPSTONE PROBLEM SET**

CP-1 This problem demonstrates knowledge from PmBok for 5.1 ‘Collect Requirements’. When planning a project historical data is typically available and will be used to 6.3 ‘Estimate Activity Resources’.

The operator of a flight school desires to predict the number of students for the coming year so that he can contract for fuel, instructors, A/C, etc. The school has been in operation for one year. The enrollment data for that year, starting in January is presented below.

- a.) From among a three month moving average, four month moving average, trend, and seasonally adjusted trend, chose a method that appears to best predict the monthly enrollments for the next year, assuming that flight school may grow unbounded.**
- b.) Explain and justify the method used for the forecast.**

Enrollment Data:

Month	No Students
Jan	40
Feb	42
Mar	48
Apr	52

Month	No Students
May	56
Jun	60
Jul	61
Aug	61

Month	No Students
Sep	56
Oct	56
Nov	55
Dec	54

Response:

a.) Based on Mean Absolute Deviation (MAD) and Mean Absolute Percent Error (MAPE) I would choose the 'Seasonally Adjusted

b.) Trend Projection' as it would appear to be the most accurate based on those numbers. By inspection it is readily apparent that the summer months are at a higher demand and logically so, (weather, college student population, many students in summer break). None of the methods requested seem to address this adequately, not even the Seasonally Adjusted Trend, albeit the data only represents a single cycle.

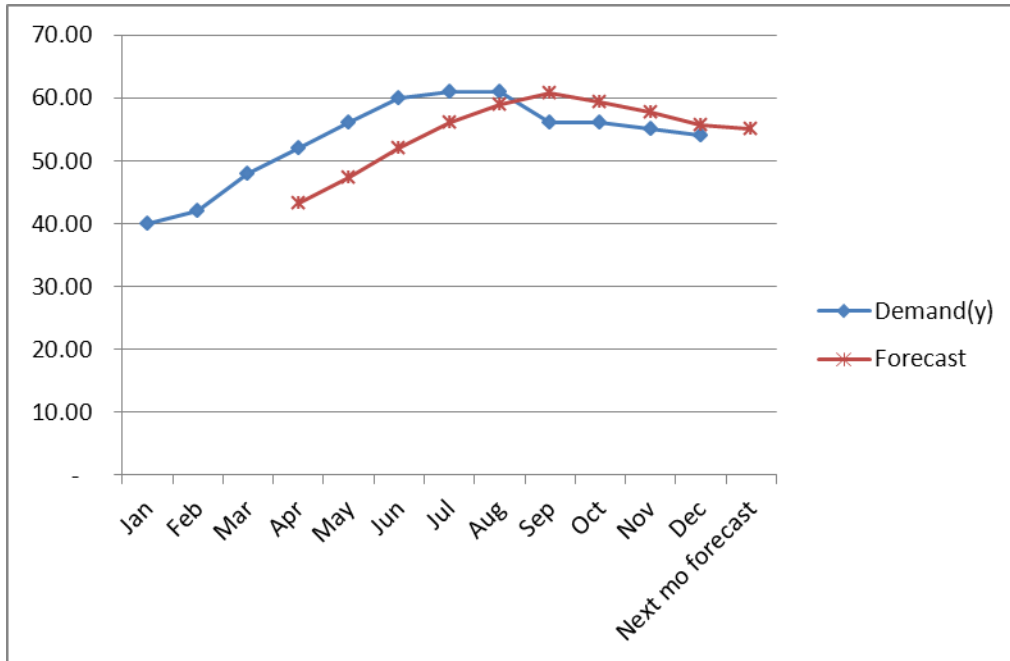
As an additional metric I investigated 'Exponential Smoothing' and found it seem to follow the seasonal trend the best, therefore best predicting the demand. Re. extra Exponential Smoothing chart below with a smoothing constant of 0.8, accepting the higher the constant the closer the forecast tracks the actuals.

See next page for supporting documentation.

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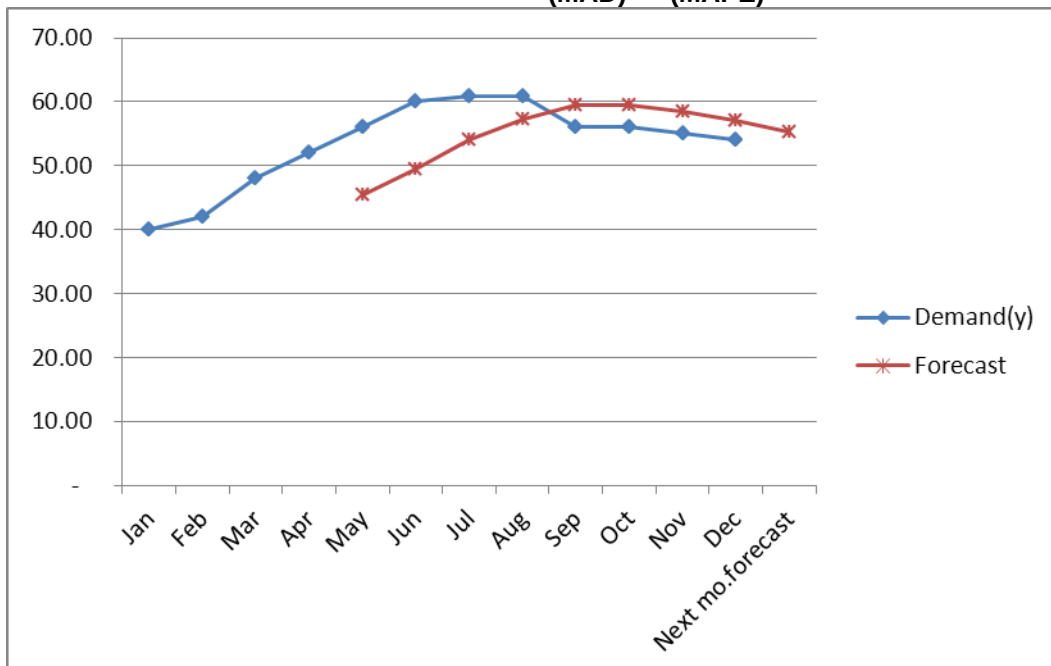
3 Month Moving Average

4.963 0.088
(MAD) (MAPE)



4 Month Moving Average

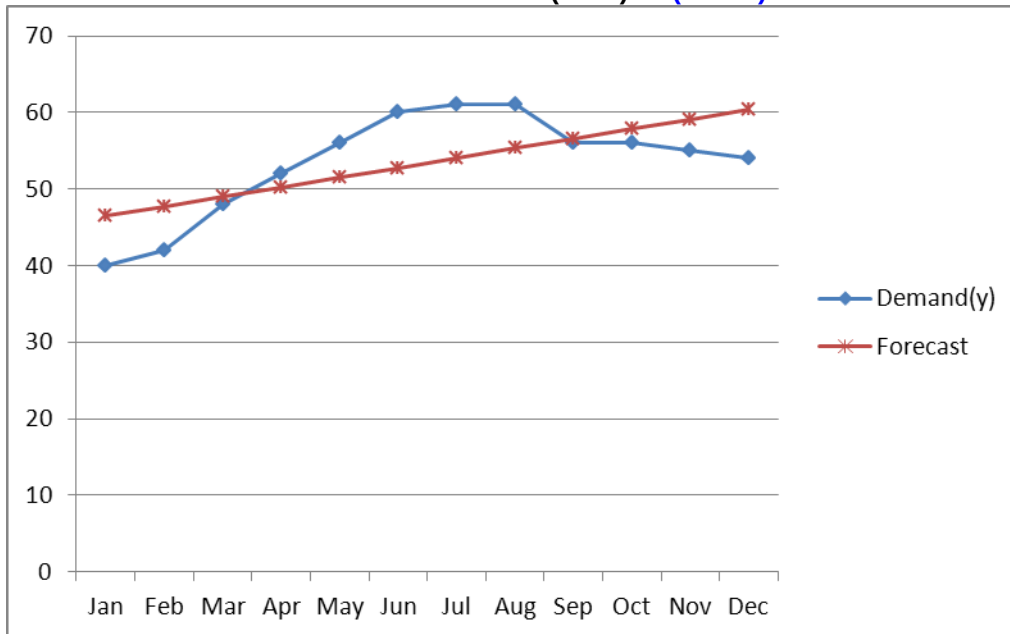
5.656 0.098
(MAD) (MAPE)



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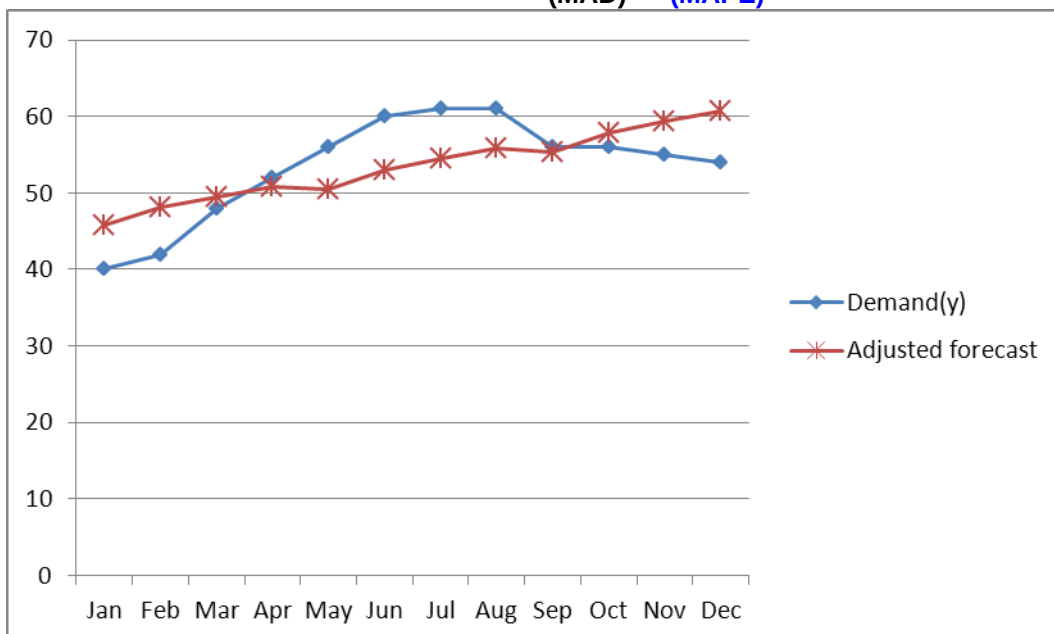
Trend Projection

4.348 **0.083**
(MAD) **(MAPE)**



Seasonally Adjusted Trend

4.372 **0.083**
(MAD) **(MAPE)**



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Exponential Smoothing
Smoothing Constant 0.8

3.135 0.059
(MAD) (MAPE)

