~~Adalah~~ MSE dihitung dgn menjumlahkan kuadrat sem kesalahan peramalan pada setiap periode & membaginya dgn jumlah periode peramala

2) Rumusnya

$$E = \frac{\sum (X_t - S_t)^2}{n}$$

dengan, E = kesalahan.
$X_t$ = data aktual.
$S_t$ = data hasil peramalan.
n = jumlah periode.

Contoh Soal Simple Moving Averages

1. Sebuah perusahaan memiliki data permintaan selama 2014 seperti pada tabel. Hitung berapa kira2 permintaan pada bulan Januari ini dan berapa perkiraan kesalahan akurasinya apabila menggunakan metode rata-rata bergerak 3 bulan dan 5 bulan?

| Tahun 2014 | Permintaan |
|---|---|
| Jan | 20 |
| Feb | 21 |
| Mar | 19 |
| Apr | 17 |
| Mei | 22 |
| Jun | 24 |
| Jul | 18 |
| Agu | 23 |
| Sep | 20 |
| Okt | 25 |
| Nov | 22 |
| Des | 24 |

Penyelesaian :

a.) Rata-rata bergerak 3 bulan

Mencari Mean Absolute Error & Mean Square Error

Date:

| | | |
|---|---|---|
| Mei | 22 | - |
| Jun | 24 | 19,80 |
| Jul | 18 | 20,60 |
| Agu | 23 | 20,00 |
| Sep | 20 | 20,80 |
| Okt | 25 | 21,40 |
| ~~Nov~~ | 22 | 22,00 |
| ~~Des~~ | 24 | 21,60 |

Date:

# Simple Exponential Smoothing

- Point forecast made at time T for $y_{T+p}$

$$\hat{y}_{T+p}(T) = \ell_T \quad (p = 1, 2, 3, \ldots)$$

- SSE (sum square error), MSE (measure square erro and the standard errors at the time T

$$SSE = \sum_{t}^{T} [y_t - \hat{y}_t(t-1)]^2$$

$$MSE = \frac{SSE}{T-1}$$

$$s = \sqrt{MSE}$$

Note: There's no theoritical justification for dividing ss by (T - number of smoothing

No.

Date:

Example : Data Cod ~~Catch~~ catch.

The Bay City Seafood Company recorded the monthly cod ~~catch~~ catch for the previous two years, as given below.

* Cod Catch (in tons)

| Month | Year 1 | Year 2 | |
|---|---|---|---|
| Jan | 362 | 276 | $\bar{x}$ = 360,666..7 |
| Feb | 381 | 334 | $\bar{y}$ = 341,9166667 |
| Mar | 317 | 394 | $\Sigma x$ = 4.328 |
| Apr | 297 | 334 | $\Sigma y$ = 4.103 |
| Mei | 399 | 384 | |
| Jun | 402 | 314 | |
| Jul | 375 | 344 | |
| Agu | 349 | 337 | |
| Sep | 306 | 345 | |
| Okt | 328 | 362 | |
| Nov | 389 | 314 | |
| Des | 343 | 365 | |
| $\Sigma n = 12$ | | | |

Langkah 1

Compute $l_0$ by averaging the first twelve time series value

a. $l_0 = \frac{\sum_{t=1}^{12} y_t}{12} = \frac{362 + \ldots + 343}{12} = 360,66..7 \approx 360,67$

b. $l_T = \alpha y_t + (1-\alpha)\, l_{T-1}$

$l_T = l_1 = 0,05 \cdot (1-0,05) \cdot l_{1-1}$

$l_1 = 0,05 \cdot (0,95) \cdot l_0$

$l_1 = (0,05 \cdot 362) + (0,95) \cdot 360,67$ ----- (1)

$= 360,7365 \approx 360,73 \approx 360,74$

$l_2 = (0,05 \cdot 381) + (0,95 \cdot 360,74)$ ----- (2)

~~$= 361,6065 \approx 361,69$~~

$= 359,853 \approx 359,853 \approx 359,85$

BIG BOSS

Date:

$l_{3-1}$

$l_3 = (0,05 \times 317) + (0,95 \times 360,67)$ ——— (3)

$= 358,4865 \approx 358,49$

$= 359,45$

$l_{4-1}$

$l_4 = (0,05 \times 297) + (0,95 \times 360,67)$ ——— (4)

$= 357,4865 \approx 357,49$

$= 356,32$

$l_{5-1}$

$l_5 = (0,05 \times 399) + (0,95 \times 360,67)$ ——— (5)

$= 362,5865 \approx 362,59$

$= 350,45$

$l_{6-1}$

$l_6 = (0,05 \times 402) + (0,95 \times 360,67)$ (6)

$= 362,7365 \approx 362,74$

$= 360,62$

$l_{7-1}$

$l_7 = (0,05 \times 375) + (0,95 \times 360,67)$ (7)

$= 361,3865 \approx 361,39$

$= 361,33$

$l_{8-1}$

$l_8 = (0,05 \times 379) + (0,95 \times 360,67)$ (8)

$= 360,0865 \approx 360,09$

$= 360,71$

$l_{9-1}$

$l_9 = (0,05 \times 386) + (0,95 \times 360,67)$ (9)

$= 361,0365 \approx 361,04$

$= 361,97$

$l_{10-1}$

$l_{10} = (0,05 \times 328) + (0,95 \times 360,67)$ (10)

$= 359,0365 \approx 359,04$

$= 360,27$

$l_{11-1}$

$l_{11} = (0,05 \times 389) + (0,95 \times 360,67)$ (11)

$= 362,0865 \approx 362,09$

$= 361,75$

$l_{12-1}$

$l_{12} = (0,05 \times 343) + (0,95 \times 360,67)$ (12)

$= 359,7865 \approx 359,79$

$= 360,76$

No.

Date:

Berapa besar error

* $SSE = \sum_{t=1}^{I} [y_t - \hat{y}_t (t-1)]^2$

$SSE = \sum_{t=1}^{I} [y_1 - \hat{y}_1 (1-1)]^2$

$= ([362 - 360{,}174(0)]^2 + [381 - 361{,}69(1)]^2 +$
$[317 - 359{,}45(2)]^2 + [297 - 356{,}32(3)]^2 +$
$[399 - 358{,}45(4)]^2)$

$= 1.959.673{,}769$

$MSE = \frac{SSE}{T-1} = \frac{1.959.673{,}769}{5-1} = \frac{1.959.673{,}769}{4} = 489.918{,}4423$