Lampiran 7

Perhitungan *Simple Average* (SA), Perhitungan *Single Exponential Smoothing* (SES), Menghitung *Mean Square Error* (MSE) dengan pendekatan *Simple Average* (SA) dan Menghitung *Mean Square Error* (MSE) dengan pendekatan *Single Exponential Smoothing*

Perhitungan *Simple Average* (SA)

1. *Simple Average* (SA) Customer Toyota

$$Y't+1 = \frac{Tt-n+Tt+1+T\ldots\ldots\ldots Tt-n+Tt+1+T+\cdots\ldots\ldots}{n}$$

$$= \frac{150(150-1)+185(185+1)+210+215(215-4)+225(225+1)+160+230(230-7)+210(210+1)+290+245(245-10)+160(160+1)+230+}{24}$$

$$\frac{250(250-1)+240(240+1)+275+225(225-4)+200(200+1)+193+215(215-7)+250(250+1)+260+225(225-10)+240(240+1)+255}{24}$$

$$= \frac{22350+34410+210+45365+50850+160+51290+44310+290+57575+25760+230+62250+57840+275+49725+40200+193+44720+62750+260+48375+57840+255}{24}$$

$$= \frac{757479}{24} = 31.561{,}375 \text{ kg}$$

2. *Simple Average* (SA) Customer Honda

$$Y't+1 = \frac{Tt-n+Tt+1+T\ldots\ldots\ldots Tt-n+Tt+1+T+\cdots\ldots\ldots}{n}$$

$$= \frac{120(120-1)+150(150+1)+125+95(95-4)+115(115+1)+130+140(140-7)+160(160+1)+140+130(130-10)+180(180+1)+160+}{24}$$

$$\frac{150(150-1)+125(125+1)+115+100(100-4)+120(120+1)+145+160(160-7)+150(150+1)+125+140(140-10)+175(175+1)+200}{24}$$

$$\frac{14280+22650+125+8645+13340+130+18620+25760+140+15600+32580+160+22350+15750+115+9600+14520+145+24480+22650+125+18200+30800+200}{24}$$

$$= \frac{310965}{24} = 12.956{,}875 \text{ kg}$$

3. *Simple Average* (SA) Customer Mitsubhisi

$$Y't+1 = \frac{Tt-n+Tt+1+T\ldots\ldots\ldots Tt-n+Tt+1+T+\cdots\ldots\ldots}{n}$$

$$= \frac{160(160-1)+210(210+1)+180+145(145-4)+195(195+1)+180+240(240-7)+140(140+1)+160+190(190-10)+120(120+1)+200+}{24}$$

$$\frac{175(175-1)+150(150+1)+165+150(150-4)+145(145+1)+175+200(200-7)+125(125+1)+150+175(175-10)+100(100+1)+150}{24}$$

$$\frac{25440+44310+180+20445+38220+180+55920+19740+160+34200+14520+200+30450+22650+165+21900+21170+175+38600+15750+150+28875+10100+150}{24}$$

$$= \frac{443650}{24} = 18.485{,}416 \text{ kg}$$

4. *Simple Average* (SA) Customer Nissan

$$Y't+1 = \frac{Tt-n+Tt+1+T\ldots\ldots\ldots Tt-n+Tt+1+T+\cdots\ldots\ldots}{n}$$

$$= \frac{125(125-1)+150(150+1)+115+90(90-4)+115(115+1)+125+110(110-7)+150(150+1)+130+135(135-10)+150(150+1)+160+}{24}$$

$$\frac{135(135-1)+125(125+1)+97+95(95-4)+154(154+1)+135+150(150-7)+123(123+1)+121+134(134-10)+100(100+1)+165}{24}$$

$$= \frac{15500+22650+115+7740+13340+125+11330+22650+130+16875+22650+160+18090+15750+97+8645+23870+135+21450+15252+121+16616+10100+165}{24}$$

$$= \frac{263556}{24} = 10.981,5 \text{ kg}$$

5. *Simple Average* (SA) Customer Astrindo

$$Y't+1 = \frac{Tt-n+Tt+1+T\ldots\ldots\ldots Tt-n+Tt+1+T+\cdots\ldots\ldots}{n}$$

$$= \frac{120(120-1)+140(140+1)+110+110(110-4)+150(150+1)+145+125(125-7)+130(130+1)+175+190(190-10)+150(150+1)+160+}{24}$$

$$\frac{125(125-1)+180(180+1)+155+170(170-4)+115(115+1)+225+215(215-7)+230(230+1)+120+100(100-10)+115(115+1)+175}{24}$$

$$\frac{15500+19740+110+11660+22650+145+14750+17030+175+34200+22650+160+15500+32580+155+28220+13340+225+44720+53130+120+9000+13340+175}{24}$$

$$= \frac{369275}{24} = 15.386,458 \text{ kg}$$

Perhitungan *Single Exponential Smoothing* (SES)

1. *Single Exponential Smoothing customer* Toyota

   Y't+1 = α. T1+ (1- α).Y'……

   = (0,5.24) + (0,5. 5328)

   = 12 + 2664

   = 2676 kg

2. *Single Exponential Smoothing customer* Honda

   Y't+1 = α. T1+ (1- α).Y'……

   = (0,5.24) + (0,5. 3350)

   = 12 + 1675

   = 1687 kg

3. *Single Exponential Smoothing customer* Mitsubhisi

   Y't+1 = α. T1+ (1- α).Y'……

   = (0,5.24) + (0,5. 3980)

   = 12 + 1990

   = 2002 kg

4. *Single Exponential Smoothing customer* Nissan

   Y't+1 = α. T1+ (1- α).Y'……

   = (0,5 . 24) + (0,5. 3089)

   = 12 + 1544,5

   = 1556,5 kg

5. *Single Exponential Smoothing customer* Astrindo

   Y't+1 = α. T1+ (1- α).Y'……

   = (0,5 . 24) + (0,5. 3630)

   = 12 + 1815

   = 1827 kg

Menghitung *Mean Square Error* (MSE) dengan pendekatan *Simple Average* (SA)

1. Menghitung *Mean Square Error customer* Toyota

MSE $= \frac{\sum_{t-1}^{n}(Tt-Y't)2}{n}$

$= \frac{\sum_{t-1}^{n}(5328-31.561,375)2}{24} = \frac{\sum_{t-1}^{n}(-26.233,375)2}{24} = \frac{\sum_{t-1}^{n}(688.189.964)}{24}$

= 28.674.581

2. Menghitung *Mean Square Error customer* Honda

MSE $= \frac{\sum_{t-1}^{n}(Tt-Y't)2}{n}$

$= \frac{\sum_{t-1}^{n}(3350-12.956,875\ )2}{24} = \frac{\sum_{t-1}^{n}(-9606,875)2}{24} = \frac{\sum_{t-1}^{n}(92.292.047,27\ )}{24}$

= 3.845.501

3. Menghitung *Mean Square Error customer* Mitsubhisi

MSE $= \frac{\sum_{t-1}^{n}(Tt-Y't)2}{n}$

$= \frac{\sum_{t-1}^{n}(3980-18.485,416)2}{24} = \frac{\sum_{t-1}^{n}(-14.505,416)2}{24} = \frac{\sum_{t-1}^{n}(210.407.093)}{24}$

= 8.766.962

4. Menghitung *Mean Square Error customer* Nissan

MSE $= \frac{\sum_{t-1}^{n}(Tt-Y't)2}{n}$

$= \frac{\sum_{t-1}^{n}(3089-10.981,5)2}{24} = \frac{\sum_{t-1}^{n}(-7.892,2)2}{24} = \frac{\sum_{t-1}^{n}(62.291.556,25)}{24}$

= 2.595.481

5. Menghitung *Mean Square Error customer* Astrindo

MSE $= \frac{\sum_{t-1}^{n}(Tt-Y't)2}{n}$

$= \frac{\sum_{t-1}^{n}(3630-15.386,458)2}{24} = \frac{\sum_{t-1}^{n}(-11.756.458)2}{24} = \frac{\sum_{t-1}^{n}(138.214.304,7)}{24}$

= 5.758.929

Menghitung *Mean Square Error* (MSE) dengan pendekatan *Single Exponential Smoothing*

1. Menghitung *Mean Square Error customer* Toyota

MSE $= \frac{\sum_{t-1}^{n}(Tt-Y't)2}{n}$

$= \frac{\sum_{t-1}^{n}(5328-2676)2}{24} = \frac{\sum_{t-1}^{n}(2652)2}{24} = \frac{\sum_{t-1}^{n}(7.033.104)}{24}$

= 293.046

2. Menghitung *Mean Square Error customer* Honda

MSE $= \frac{\sum_{t-1}^{n}(Tt-Y't)2}{n}$

$= \frac{\sum_{t-1}^{n}(3350-1687)2}{24} = \frac{\sum_{t-1}^{n}(1663)2}{24} = \frac{\sum_{t-1}^{n}(2.765.569)}{24}$

= 115.232

3. Menghitung *Mean Square Error customer* Mitsubhisi

MSE $= \frac{\sum_{t-1}^{n}(Tt-Y't)2}{n}$

$= \frac{\sum_{t-1}^{n}(3980-2002)2}{24} = \frac{\sum_{t-1}^{n}(1978)2}{24} = \frac{\sum_{t-1}^{n}(3.912.484)}{24}$

= 163.020

4. Menghitung *Mean Square Error customer* Nissan

MSE $= \frac{\sum_{t-1}^{n}(Tt-Y't)2}{n}$

$= \frac{\sum_{t-1}^{n}(3089-1556,5)2}{24} = \frac{\sum_{t-1}^{n}(1532,5)2}{24} = \frac{\sum_{t-1}^{n}(2.348.556,25)}{24}$

= 97.856

5. Menghitung *Mean Square Error customer* Astrindo

MSE $= \frac{\sum_{t-1}^{n}(Tt-Y't)2}{n}$

$= \frac{\sum_{t-1}^{n}(3630-1827)2}{24} = \frac{\sum_{t-1}^{n}(1803)2}{24} = \frac{\sum_{t-1}^{n}(3.250.809)}{24}$

= 135.450