AHSANULLAH UNIVERSITY OF SCIENCE AND TECHNOLOGY

Department: Computer Science and Engineering (CSE)

Program: B.Sc. in Computer Science and Engineering

ASSIGNMENT

Course No : IPE 4111

Course Title : Industrial Management

Year / Semester : 4 / 1

Session : Fall 2021

Date of Submission : 18-09-2022

ID : 18.02.04.142

18.02.01.112

Assignment 1

Given,

$\alpha = 0.4$

$\beta = 0.8$

Initial forecast = 985 units

Trend over period = 256 units

We know,

$$F_t = \alpha (A_{t-1}) + (1-\alpha)(F_{t-1} + T_{t-1})$$

$$T_t = \beta (F_t - F_{t-1}) + (1-\beta) T_{t-1}$$

$$FIT_1 = F_t + T_t$$

Here,

A_{t-1} = Last periods actual demand

F_t = This periods forecast

F_{t-1} = Last periods forecast

T_{t-1} = Last periods estimated trend

18.02.04.112

Month	Actual Demand (A_t)	Forecast (F_t)	Trend (T_t)	Forecast in Trend FIT_t
1	1200	985	256	1241
2	1285	1224.6	242.88	1467.48
3	1350	1394.488	184.4864	1578.9744
4	1575	1487.39	111.22	1598.61
5	1660	1589.17	103.67	1692.84
6	1700	1679.70	93.16	1772.86
7	1825	1743.72	69.85	1813.57
8	1920	1818.14	73.51	1891.65
9	2180	1902.99	82.59	1985.58
10	—	2063.35	144.81	2208.16

① For month 2,

$$F_t = 0.4 \times (1200) + (1-0.4)(985+256)$$

$$= 1224.6$$

$$T_t = 0.8\ (1224.6 - 985) + (0.2) \times 256$$

$$= 242.88$$

② For month 3,

$$F_t = 0.4 \times (1285) + (1-0.4)(1224.6 + 242.88)$$

$$= 1394.488$$

$$T_t = 0.8\ (1394.488 - 1224.6) + (0.2) \times 242.88$$

$$= 184.4864$$

③ For month 4,

$$F_t = 0.4 \times (1350) + (1-0.4)(1394.488 + 184.4864)$$

$$= 1487.39$$

$$T_t = 0.8\ (1487.39 - 1394.488) + (0.2) \times 184.4864$$

$$= 111.22$$

④ For month 5,

$$F_t = 0.4 \times (1575) + (1-0.4)(1487.39 + 111.22)$$

$$= 1589.17$$

$$T_t = 0.8 \ (1589.17 - 1487.39) + (0.2) \times 111.22$$

$$= 103.67$$

⑤ For month 6,

$$F_t = 0.4 \times (1660) + (1-0.4)(1589.17 + 103.67)$$

$$= 1679.70$$

$$T_t = 0.8 \ (1679.70 - 1589.17) + (0.2) \times 103.67$$

$$= 93.16$$

⑥ For month 7,

$$F_t = 0.4 \times (1700) + (1-0.4)(1679.70 + 93.16)$$

$$= 1743.72$$

$$T_t = 0.8 \ (1743.72 - 1679.70) + (0.2) \times 93.16$$

$$= 69.85$$

⑦ For month 8,

$$F_t = 0.4 \times (1825) + (1-0.4)(1743.72 + 69.85)$$

$$= 1818.14$$

$$T_t = 0.8 (1818.14 - 1743.72) + (0.2) \times 69.85$$

$$= 73.51$$

⑧ For month 9,

$$F_t = 0.4 \times (1920) + (1-0.4)(1818.14 + 73.51)$$

$$= 1902.99$$

$$T_t = 0.8 (1902.99 - 1818.14) + (0.2) \times 73.51$$

$$= 82.59$$

⑨ For month 10,

$$F_t = 0.4 \times (2180) + (1-0.4)(1902.99 + 82.59)$$

$$= 2063.35$$

$$T_t = 0.8 (2063.35 - 1902.99) + (0.2) \times 82.59$$

$$= 144.81$$