

## LAMPIRAN

### Lampiran 1 Data Penelitian

| Tanggal    | ADHI | PTPP | WIKA |
|------------|------|------|------|
| 01/11/2022 | 550  | 890  | 920  |
| 02/11/2022 | 560  | 895  | 910  |
| 03/11/2022 | 555  | 890  | 905  |
| 04/11/2022 | 550  | 870  | 905  |
| 07/11/2022 | 560  | 915  | 945  |
| 08/11/2022 | 555  | 910  | 940  |
| 09/11/2022 | 540  | 915  | 940  |
| 10/11/2022 | 520  | 905  | 925  |
| 11/11/2022 | 535  | 910  | 935  |
| 14/11/2022 | 535  | 920  | 930  |
| 15/11/2022 | 525  | 915  | 925  |
| 16/11/2022 | 520  | 910  | 910  |
| 17/11/2022 | 540  | 935  | 935  |
| 18/11/2022 | 535  | 920  | 930  |
| 21/11/2022 | 535  | 915  | 920  |
| 22/11/2022 | 535  | 905  | 915  |
| 23/11/2022 | 535  | 920  | 920  |
| 24/11/2022 | 545  | 925  | 925  |
| 25/11/2022 | 540  | 925  | 925  |

|            |     |     |     |
|------------|-----|-----|-----|
| 28/11/2022 | 530 | 910 | 900 |
| 29/11/2022 | 525 | 900 | 905 |
| 30/11/2022 | 520 | 890 | 930 |
| 01/12/2022 | 525 | 890 | 905 |
| 02/12/2022 | 520 | 895 | 905 |
| 05/12/2022 | 515 | 890 | 890 |
| 06/12/2022 | 482 | 855 | 865 |
| 07/12/2022 | 486 | 805 | 825 |
| 08/12/2022 | 505 | 850 | 855 |
| 09/12/2022 | 505 | 820 | 820 |
| 12/12/2022 | 500 | 805 | 815 |
| 13/12/2022 | 500 | 780 | 810 |
| 14/12/2022 | 496 | 745 | 795 |
| 15/12/2022 | 500 | 755 | 820 |
| 16/12/2022 | 500 | 740 | 810 |
| 19/12/2022 | 498 | 730 | 805 |
| 20/12/2022 | 492 | 705 | 805 |
| 21/12/2022 | 500 | 715 | 825 |
| 22/12/2022 | 520 | 725 | 835 |
| 23/12/2022 | 520 | 725 | 830 |
| 26/12/2022 | 510 | 720 | 815 |
| 27/12/2022 | 494 | 720 | 810 |

|            |     |     |     |
|------------|-----|-----|-----|
| 28/12/2022 | 484 | 715 | 810 |
| 29/12/2022 | 486 | 735 | 810 |
| 30/12/2022 | 484 | 715 | 800 |
| 02/01/2023 | 484 | 720 | 805 |
| 03/01/2023 | 488 | 730 | 805 |
| 04/01/2023 | 484 | 725 | 800 |
| 05/01/2023 | 454 | 705 | 770 |
| 06/01/2023 | 452 | 695 | 765 |
| 09/01/2023 | 438 | 665 | 730 |
| 10/01/2023 | 416 | 625 | 680 |
| 11/01/2023 | 418 | 605 | 670 |
| 12/01/2023 | 424 | 620 | 680 |
| 13/01/2023 | 428 | 615 | 680 |
| 16/01/2023 | 430 | 625 | 685 |
| 17/01/2023 | 432 | 620 | 680 |
| 18/01/2023 | 422 | 615 | 660 |
| 19/01/2023 | 438 | 635 | 685 |
| 20/01/2023 | 452 | 640 | 675 |
| 24/01/2023 | 452 | 635 | 665 |
| 25/01/2023 | 466 | 650 | 685 |
| 26/01/2023 | 462 | 655 | 680 |
| 27/01/2023 | 486 | 695 | 700 |

|            |     |     |     |
|------------|-----|-----|-----|
| 30/01/2023 | 480 | 675 | 685 |
| 31/01/2023 | 480 | 695 | 690 |
| 01/02/2023 | 472 | 695 | 695 |
| 02/02/2023 | 482 | 700 | 710 |
| 03/02/2023 | 498 | 710 | 735 |
| 06/02/2023 | 500 | 725 | 735 |
| 07/02/2023 | 492 | 720 | 720 |
| 08/02/2023 | 492 | 720 | 720 |
| 09/02/2023 | 490 | 725 | 715 |
| 10/02/2023 | 478 | 710 | 700 |
| 13/02/2023 | 482 | 705 | 700 |
| 14/02/2023 | 482 | 695 | 695 |
| 15/02/2023 | 476 | 695 | 690 |
| 16/02/2023 | 460 | 660 | 670 |
| 17/02/2023 | 468 | 665 | 680 |
| 20/02/2023 | 474 | 665 | 675 |
| 21/02/2023 | 468 | 665 | 660 |
| 22/02/2023 | 458 | 645 | 640 |
| 23/02/2023 | 448 | 640 | 630 |
| 24/02/2023 | 452 | 660 | 635 |
| 27/02/2023 | 450 | 645 | 625 |
| 28/02/2023 | 442 | 640 | 630 |

|            |     |     |     |
|------------|-----|-----|-----|
| 01/03/2023 | 442 | 640 | 630 |
| 02/03/2023 | 450 | 640 | 635 |
| 03/03/2023 | 454 | 645 | 635 |
| 06/03/2023 | 438 | 615 | 605 |
| 07/03/2023 | 432 | 600 | 585 |
| 08/03/2023 | 424 | 600 | 580 |
| 09/03/2023 | 432 | 610 | 580 |
| 10/03/2023 | 424 | 600 | 560 |
| 13/03/2023 | 428 | 615 | 580 |
| 14/03/2023 | 412 | 600 | 555 |
| 15/03/2023 | 414 | 590 | 550 |
| 16/03/2023 | 402 | 560 | 515 |
| 17/03/2023 | 404 | 580 | 525 |
| 20/03/2023 | 402 | 565 | 505 |
| 21/03/2023 | 408 | 580 | 520 |
| 24/03/2023 | 406 | 565 | 515 |
| 27/03/2023 | 406 | 575 | 515 |
| 28/03/2023 | 414 | 580 | 525 |
| 29/03/2023 | 422 | 585 | 515 |
| 30/03/2023 | 424 | 585 | 515 |
| 31/03/2023 | 416 | 580 | 515 |
| 03/04/2023 | 418 | 590 | 515 |

|            |     |     |     |
|------------|-----|-----|-----|
| 04/04/2023 | 416 | 580 | 510 |
| 05/04/2023 | 408 | 575 | 488 |
| 06/04/2023 | 408 | 565 | 488 |
| 10/04/2023 | 400 | 535 | 472 |
| 11/04/2023 | 388 | 555 | 478 |
| 12/04/2023 | 404 | 585 | 510 |
| 13/04/2023 | 404 | 590 | 515 |
| 14/04/2023 | 398 | 570 | 510 |
| 17/04/2023 | 404 | 585 | 530 |
| 18/04/2023 | 404 | 585 | 545 |
| 26/04/2023 | 420 | 630 | 560 |
| 27/04/2023 | 434 | 645 | 600 |
| 28/04/2023 | 436 | 650 | 605 |
| 02/05/2023 | 414 | 630 | 585 |
| 03/05/2023 | 402 | 590 | 545 |
| 04/05/2023 | 408 | 600 | 565 |
| 05/05/2023 | 392 | 575 | 535 |
| 08/05/2023 | 388 | 550 | 520 |
| 09/05/2023 | 400 | 580 | 525 |
| 10/05/2023 | 396 | 575 | 500 |
| 11/05/2023 | 384 | 560 | 472 |
| 12/05/2023 | 384 | 565 | 462 |

|            |     |     |     |
|------------|-----|-----|-----|
| 15/05/2023 | 384 | 560 | 456 |
| 16/05/2023 | 382 | 545 | 442 |
| 17/05/2023 | 370 | 530 | 424 |
| 19/05/2023 | 346 | 505 | 396 |
| 22/05/2023 | 346 | 505 | 402 |
| 23/05/2023 | 348 | 505 | 406 |
| 24/05/2023 | 344 | 505 | 398 |
| 25/05/2023 | 342 | 510 | 394 |
| 26/05/2023 | 342 | 510 | 390 |
| 29/05/2023 | 334 | 510 | 380 |
| 30/05/2023 | 342 | 515 | 392 |
| 31/05/2023 | 338 | 510 | 366 |

## Lampiran 2 *RMSE ARIMA*

AR : 0, MA : , DF : 1

(0,1,1)

| MetodeStatistics |                      |                      |           |        |       |        |                 |    |       |                    |
|------------------|----------------------|----------------------|-----------|--------|-------|--------|-----------------|----|-------|--------------------|
| Model            | Number of Predictors | MetodeFit statistics |           |        |       |        | Ljung-Box Q(18) |    |       | Number of Outliers |
|                  |                      | Stationary R-squared | R-squared | RMSE   | MAPE  | MAE    | Statistics      | DF | Sig.  |                    |
| ADHI-Model 1     | 1                    | 0,033                | 0,972     | 9,593  | 1,609 | 7,234  | 11,697          | 17 | 0,818 | 0                  |
| PTPP-Model 2     | 1                    | 0,015                | 0,982     | 16,879 | 1,879 | 12,538 | 9,097           | 17 | 0,937 | 0                  |
| WIKI-Model 3     | 1                    | 0,006                | 0,99      | 16,209 | 1,91  | 12,023 | 14,784          | 17 | 0,611 | 0                  |

(1,1,0)

| Metode Statistics |                      |                      |           |        |       |        |                 |    |       |                    |
|-------------------|----------------------|----------------------|-----------|--------|-------|--------|-----------------|----|-------|--------------------|
| Model             | Number of Predictors | MetodeFit statistics |           |        |       |        | Ljung-Box Q(18) |    |       | Number of Outliers |
|                   |                      | Stationary R-squared | R-squared | RMSE   | MAPE  | MAE    | Statistics      | DF | Sig.  |                    |
| ADHI-Model_1      | 1                    | 0,033                | 0,972     | 9,593  | 1,608 | 7,231  | 11,7            | 17 | 0,818 | 0                  |
| PTPP-Model_2      | 1                    | 0,016                | 0,982     | 16,869 | 1,882 | 12,553 | 9,088           | 17 | 0,937 | 0                  |
| WIKI-Model_3      | 1                    | 0,006                | 0,99      | 16,208 | 1,911 | 12,025 | 14,906          | 17 | 0,602 | 0                  |

(1,1,1)

| Metode Statistics |                      |                      |           |        |       |        |                 |    |       |                    |
|-------------------|----------------------|----------------------|-----------|--------|-------|--------|-----------------|----|-------|--------------------|
| Model             | Number of Predictors | MetodeFit statistics |           |        |       |        | Ljung-Box Q(18) |    |       | Number of Outliers |
|                   |                      | Stationary R-squared | R-squared | RMSE   | MAPE  | MAE    | Statistics      | DF | Sig.  |                    |
| ADHI-Model_1      | 1                    | 0,035                | 0,972     | 9,618  | 1,61  | 7,242  | 11,639          | 16 | 0,768 | 0                  |
| PTPP-Model_2      | 1                    | 0,015                | 0,982     | 16,936 | 1,873 | 12,502 | 8,898           | 16 | 0,918 | 0                  |
| WIKI-Model_3      | 1                    | 0,01                 | 0,99      | 16,237 | 1,915 | 12,061 | 14,411          | 16 | 0,568 | 0                  |

(0,1,0)

| MetodeStatistics |                      |                      |           |        |       |        |                 |    |       |                    |
|------------------|----------------------|----------------------|-----------|--------|-------|--------|-----------------|----|-------|--------------------|
| Model            | Number of Predictors | MetodeFit statistics |           |        |       |        | Ljung-Box Q(18) |    |       | Number of Outliers |
|                  |                      | Stationary R-squared | R-squared | RMSE   | MAPE  | MAE    | Statistics      | DF | Sig.  |                    |
| ADHI-Model_1     | 1                    | 0,033                | 0,972     | 9,56   | 1,606 | 7,22   | 11,703          | 18 | 0,862 | 0                  |
| PTPP-Model_2     | 1                    | 0,008                | 0,982     | 16,875 | 1,881 | 12,556 | 9,136           | 18 | 0,957 | 0                  |
| WIKI-Model_3     | 1                    | 0,005                | 0,99      | 16,156 | 1,909 | 12,025 | 14,156          | 18 | 0,719 | 0                  |

### Lampiran 3 *RMSE ARIMA Seasonal*

(0,0,1)(0,1,0)

| MetodeStatistics |                      |                      |           |        |       |        |                    |    |      |                    |
|------------------|----------------------|----------------------|-----------|--------|-------|--------|--------------------|----|------|--------------------|
| Model            | Number of Predictors | MetodeFit statistics |           |        |       |        | Ljung-Box<br>Q(18) |    |      | Number of Outliers |
|                  |                      | Stationary R-squared | R-Squared | RMSE   | MAPE  | MAE    | Statistics         | DF | Sig. |                    |
| ADHI-Model_1     | 1                    | 0,453                | 0,92      | 15,553 | 2,747 | 12,171 | 111,333            | 17 | 0    | 0                  |
| PTPP-Model_2     | 1                    | 0,434                | 0,944     | 28,767 | 3,348 | 22,09  | 133,036            | 17 | 0    | 0                  |
| WIKI-Model_3     | 1                    | 0,452                | 0,968     | 29,054 | 3,595 | 22,368 | 163,853            | 17 | 0    | 0                  |

(0,0,1)(0,1,1)

| MetodeStatistics |                      |                      |           |        |       |        |                    |    |      |                    |
|------------------|----------------------|----------------------|-----------|--------|-------|--------|--------------------|----|------|--------------------|
| Model            | Number of Predictors | MetodeFit statistics |           |        |       |        | Ljung-Box<br>Q(18) |    |      | Number of Outliers |
|                  |                      | Stationary R-squared | R-Squared | RMSE   | MAPE  | MAE    | Statistics         | DF | Sig. |                    |
| ADHI-Model_1     | 1                    | 0,501                | 0,927     | 14,919 | 2,606 | 11,521 | 252,169            | 16 | 0    | 0                  |
| PTPP-Model_2     | 1                    | 0,438                | 0,945     | 28,771 | 3,284 | 21,771 | 151,272            | 16 | 0    | 0                  |
| WIKI-Model_3     | 1                    | 0,518                | 0,972     | 27,365 | 3,304 | 20,994 | 300,012            | 16 | 0    | 0                  |

(0,0,1)(1,1,0)

| MetodeStatistics |                      |                      |           |        |       |        |                    |    |      |                    |
|------------------|----------------------|----------------------|-----------|--------|-------|--------|--------------------|----|------|--------------------|
| Model            | Number of Predictors | MetodeFit statistics |           |        |       |        | Ljung-Box<br>Q(18) |    |      | Number of Outliers |
|                  |                      | Stationary R-squared | R-squared | RMSE   | MAPE  | MAE    | Statistics         | DF | Sig. |                    |
| ADHI-            | 1                    | 0,467                | 0,922     | 15,416 | 2,687 | 11,915 | 147,276            | 16 | 0    | 0                  |

|              |   |       |       |        |       |        |         |    |   |   |
|--------------|---|-------|-------|--------|-------|--------|---------|----|---|---|
| Model_1      |   |       |       |        |       |        |         |    |   |   |
| PTPP-Model_2 | 1 | 0,437 | 0,945 | 28,794 | 3,299 | 21,853 | 146,591 | 16 | 0 | 0 |
| WIK-Model_3  | 1 | 0,455 | 0,968 | 29,098 | 3,581 | 22,231 | 181,051 | 16 | 0 | 0 |

(0,0,1)(1,1,1)

| MetodeStatistics |                      |                      |           |        |       |        |                 |    |      |                    |
|------------------|----------------------|----------------------|-----------|--------|-------|--------|-----------------|----|------|--------------------|
| Model            | Number of Predictors | MetodeFit statistics |           |        |       |        | Ljung-Box Q(18) |    |      | Number of Outliers |
|                  |                      | Stationary R-squared | R-squared | RMSE   | MAPE  | MAE    | Statistics      | DF | Sig. |                    |
| ADHI-Model_1     | 1                    | 0,454                | 0,92      | 15,654 | 2,74  | 12,139 | 110,261         | 15 | 0    | 0                  |
| PTPP-Model_2     | 1                    | 0,496                | 0,951     | 27,336 | 3,036 | 20,188 | 146,360         | 15 | 0    | 0                  |
| WIK-Model_3      | 1                    | 0,577                | 0,975     | 25,716 | 3,027 | 19,156 | 203,68          | 15 | 0    | 0                  |

(1,0,0)(0,1,0)

| MetodeStatistics |                      |                      |           |        |       |        |                 |    |       |                    |
|------------------|----------------------|----------------------|-----------|--------|-------|--------|-----------------|----|-------|--------------------|
| Model            | Number of Predictors | MetodeFit statistics |           |        |       |        | Ljung-Box Q(18) |    |       | Number of Outliers |
|                  |                      | Stationary R-squared | R-squared | RMSE   | MAPE  | MAE    | Statistics      | DF | Sig.  |                    |
| ADHI-Model_1     | 1                    | 0,627                | 0,945     | 12,913 | 2,317 | 10,3   | 42,122          | 17 | 0,001 | 0                  |
| PTPP-Model_2     | 1                    | 0,656                | 0,968     | 21,776 | 2,669 | 17,458 | 37,88           | 17 | 0,003 | 0                  |
| WIK-Model_3      | 1                    | 0,712                | 0,981     | 22,105 | 2,61  | 16,555 | 36,064          | 17 | 0,004 | 0                  |

(1,0,0)(0,1,1)

| MetodeStatistis |                      |                      |           |        |       |        |                 |    |       |                    |
|-----------------|----------------------|----------------------|-----------|--------|-------|--------|-----------------|----|-------|--------------------|
| Model           | Number of Predictors | MetodeFit statistics |           |        |       |        | Ljung-Box Q(18) |    |       | Number of Outliers |
|                 |                      | Stationary R-squared | R-squared | RMSE   | MAPE  | MAE    | Statistics      | DF | Sig.  |                    |
| ADHI-Model_1    | 1                    | 0,786                | 0         | 9,986  | 1,613 | 7,275  | 12,444          | 6  | 0,713 | 0                  |
| PTPP-Model_2    | 1                    | 0,806                | 0         | 17,109 | 1,956 | 13,153 | 8,888           | 6  | 0,918 | 0                  |
| WIKI-Model_3    | 1                    | 0,833                | 0         | 17,297 | 2,038 | 13,132 | 18,246          | 6  | 0,31  | 0                  |

(1,0,0)(1,1,0)

| MetodeStatistics |                      |                      |           |        |       |        |                 |    |       |                    |
|------------------|----------------------|----------------------|-----------|--------|-------|--------|-----------------|----|-------|--------------------|
| Model            | Number of Predictors | MetodeFit statistics |           |        |       |        | Ljung-Box Q(18) |    |       | Number of Outliers |
|                  |                      | Stationary R-squared | R-squared | RMSE   | MAPE  | MAE    | Statistics      | DF | Sig   |                    |
| ADHI-Model_1     | 1                    | 0,627                | 0,945     | 12,913 | 2,317 | 10,3   | 42,122          | 17 | 0,001 | 0                  |
| PTPP-Model_2     | 1                    | 0,656                | 0,968     | 21,776 | 2,669 | 17,458 | 37,88           | 17 | 0,003 | 0                  |
| WIKI-Model_3     | 1                    | 0,712                | 0,981     | 22,105 | 2,61  | 16,555 | 36,064          | 17 | 0,004 | 0                  |

(1,0,0)(1,1,1)

| MetodeStatistis |                      |                      |           |        |       |        |                 |    |       |                    |
|-----------------|----------------------|----------------------|-----------|--------|-------|--------|-----------------|----|-------|--------------------|
| Model           | Number of Predictors | MetodeFit statistics |           |        |       |        | Ljung-Box Q(18) |    |       | Number of Outliers |
|                 |                      | Stationary R-squared | R-squared | RMSE   | MAPE  | MAE    | Statistics      | DF | Sig.  |                    |
| ADHI-Model_1    | 1                    | 0,786                | 0         | 9,986  | 1,613 | 7,275  | 12,444          | 6  | 0,713 | 0                  |
| PTPP-Model_2    | 1                    | 0,806                | 0         | 17,109 | 1,956 | 13,153 | 8,888           | 6  | 0,918 | 0                  |
| WIKI-Model_3    | 1                    | 0,833                | 0         | 17,297 | 2,038 | 13,132 | 18,246          | 6  | 0,31  | 0                  |

(1,0,1)(0,1,0)

| MetodeStatistics |                      |                      |           |        |       |        |                 |    |       |                    |
|------------------|----------------------|----------------------|-----------|--------|-------|--------|-----------------|----|-------|--------------------|
| Model            | Number of Predictors | MetodeFit statistics |           |        |       |        | Ljung-Box Q(18) |    |       | Number of Outliers |
|                  |                      | Stationary R-squared | R-squared | RMSE   | MAPE  | MAE    | Statistics      | DF | Sig.  |                    |
| ADHI-Model_1     | 1                    | 0,699                | 0,955     | 11,719 | 1,953 | 8,736  | 32,923          | 6  | 0,008 | 0                  |
| PTPP-Model_2     | 1                    | 0,725                | 0,974     | 19,939 | 2,34  | 15,507 | 25,348          | 6  | 0,064 | 0                  |
| WIKI-Model_3     | 1                    | 0,76                 | 0,984     | 20,47  | 2,391 | 15,166 | 31,407          | 6  | 0,012 | 0                  |

(1,0,1)(0,1,1)

| MetodeStatistics |                      |                      |           |        |       |        |                 |    |       |                    |
|------------------|----------------------|----------------------|-----------|--------|-------|--------|-----------------|----|-------|--------------------|
| Model            | Number of Predictors | MetodeFit statistics |           |        |       |        | Ljung-Box Q(18) |    |       | Number of Outliers |
|                  |                      | Stationary R-squared | R-squared | RMSE   | MAPE  | MAE    | Statistics      | DF | Sig.  |                    |
| ADHI-Model_1     | 1                    | 0,627                | 0,945     | 13,008 | 2,319 | 10,311 | 42,121          | 15 | 0     | 0                  |
| PTPP-Model_2     | 1                    | 0,807                | 0,98      | 17,183 | 1,956 | 13,163 | 9,229           | 15 | 0,865 | 0                  |
| WIKI-Model_3     | 1                    | 0,833                | 0,989     | 17,361 | 2,037 | 13,139 | 18,555          | 15 | 0,235 | 0                  |

(1,0,1)(1,1,0)

| MetodeStatistics |                      |                      |           |      |      |     |                 |    |      |                    |
|------------------|----------------------|----------------------|-----------|------|------|-----|-----------------|----|------|--------------------|
| Model            | Number of Predictors | MetodeFit statistics |           |      |      |     | Ljung-Box Q(18) |    |      | Number of Outliers |
|                  |                      | Stationary R-squared | R-squared | RMSE | MAPE | MAE | Statistics      | DF | Sig. |                    |

|              |   |       |       |        |       |        |        |    |       |   |
|--------------|---|-------|-------|--------|-------|--------|--------|----|-------|---|
| ADHI-Model_1 | 1 | 0,631 | 0,945 | 12,895 | 2,306 | 10,259 | 43,122 | 16 | 0     | 0 |
| PTPP-Model_2 | 1 | 0,656 | 0,968 | 21,87  | 2,672 | 17,482 | 38,465 | 16 | 0,001 | 0 |
| WIKA-Model_3 | 1 | 0,712 | 0,981 | 22,189 | 2,611 | 16,558 | 36,096 | 16 | 0,003 | 0 |

(1,0,1)(1,1,1)

| MetodeStatistics |                      |                      |           |        |       |        |                 |    |       |                    |
|------------------|----------------------|----------------------|-----------|--------|-------|--------|-----------------|----|-------|--------------------|
| Model            | Number of Predictors | MetodeFit statistics |           |        |       |        | Ljung-Box Q(18) |    |       | Number of Outliers |
|                  |                      | Stationary R-squared | R-squared | RMSE   | MAPE  | MAE    | Statistics      | DF | Sig   |                    |
| ADHI-Model_1     | 1                    | 0,787                | 0,967     | 9,999  | 1,609 | 7,259  | 12,8            | 15 | 0,618 | 0                  |
| PTPP-Model_2     | 1                    | 0,806                | 0,98      | 17,175 | 1,957 | 13,157 | 8,868           | 15 | 0,884 | 0                  |
| WIKA-Model_3     | 1                    | 0,833                | 0,989     | 17,362 | 2,038 | 13,139 | 17,596          | 15 | 0,284 | 0                  |

#### Lampiran 4 RMSE Exponential Smoothing Holt Winter

##### Holt Winters' Multiplicative

| Metode Description |      |         |                                |
|--------------------|------|---------|--------------------------------|
|                    |      |         | MetodeType                     |
| MetodeID           | ADHI | Model_1 | <i>Winters' Multiplicative</i> |
|                    | PTPP | Model_2 | <i>Winters' Multiplicative</i> |
|                    | WIKA | Model_3 | <i>Winters' Multiplicative</i> |

| MetodeStatistics |                       |                       |            |        |       |        |                 |    |       |                    |
|------------------|-----------------------|-----------------------|------------|--------|-------|--------|-----------------|----|-------|--------------------|
| Model            | Number of Predictor s | MetodeFit statistics  |            |        |       |        | Ljung-Box Q(18) |    |       | Number of Outliers |
|                  |                       | Stationar y R-squared | R-square d | RMS E  | MAP E | MAE    | Stat istics     | DF | Sig.  |                    |
| ADHI-Model_1     | 0                     | 0,546                 | 0,973      | 9,338  | 1,525 | 6,83   | 16,595          | 15 | 0,344 | 0                  |
| PTPP-Model_2     | 0                     | 0,528                 | 0,984      | 16,030 | 1,869 | 12,460 | 10,773          | 15 | 0,768 | 0                  |
| WIKA-Model_3     | 0                     | 0,549                 | 0,991      | 15,789 | 1,871 | 11,825 | 20,976          | 15 | 0,138 | 0                  |

*Winters' Additive*

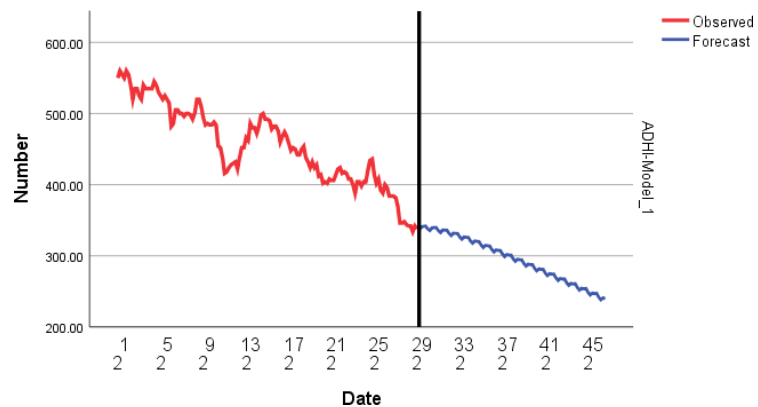
| Metode Description |      |         |                          |
|--------------------|------|---------|--------------------------|
|                    |      |         | MetodeType               |
| Metode ID          | ADHI | Model_1 | <i>Winters' Additive</i> |
|                    | PTPP | Model_2 | <i>Winters' Additive</i> |
|                    | WIKA | Model_3 | <i>Winters' Additive</i> |

| MetodeStatistics |                       |                       |            |        |       |        |                 |    |       |                    |
|------------------|-----------------------|-----------------------|------------|--------|-------|--------|-----------------|----|-------|--------------------|
| Model            | Number of Predictor s | MetodeFit statistics  |            |        |       |        | Ljung-Box Q(18) |    |       | Number of Outliers |
|                  |                       | Stationar y R-squared | R-square d | RMS E  | MAP E | MAE    | Statist ics     | DF | Sig.  |                    |
| ADHI-Model_1     | 0                     | 0,544                 | 0,974      | 9,305  | 1,515 | 6,784  | 16,045          | 15 | 0,379 | 0                  |
| PTPP-Model_2     | 0                     | 0,536                 | 0,984      | 15,965 | 1,849 | 12,285 | 11,326          | 15 | 0,729 | 0                  |
| WIKA-Model_3     | 0                     | 0,549                 | 0,991      | 15,744 | 1,859 | 11,724 | 20,833          | 15 | 0,142 | 0                  |

## Lampiran 5 Plot Hasil Prediksi ARIMA

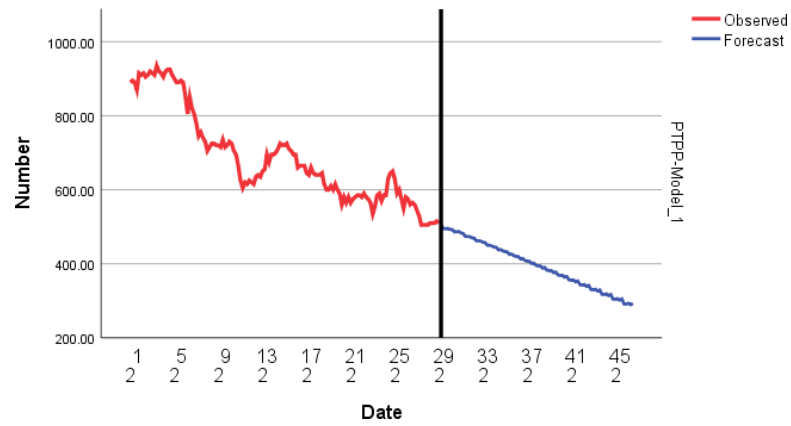
ADHI (1,0,0)(1,1,0)

| MetodeStatistics |                      |                      |           |       |       |       |                 |    |      |                    |
|------------------|----------------------|----------------------|-----------|-------|-------|-------|-----------------|----|------|--------------------|
| Model            | Number of Predictors | MetodeFit statistics |           |       |       |       | Ljung-Box Q(18) |    |      | Number of Outliers |
|                  |                      | Stationary R-squared | R-squared | RMSE  | MAPE  | MAE   | Statistics      | DF | Sig. |                    |
| ADHI-Model_1     | 1                    | ,786                 | ,967      | 9,986 | 1,613 | 7,275 | 12,444          | 16 | ,713 | 0                  |



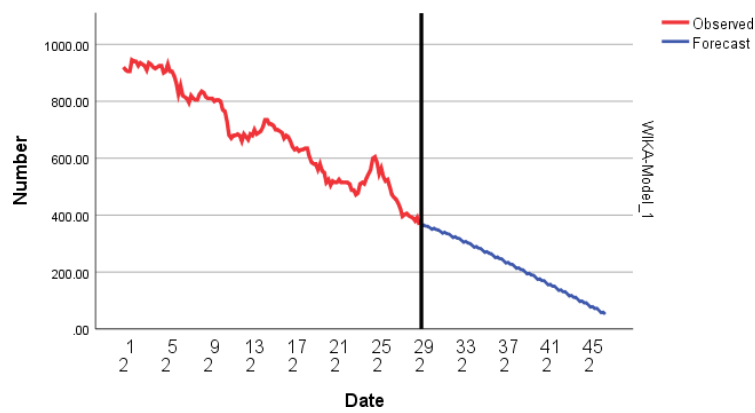
PTPP (1,0,1)(1,1,0)

| MetodeStatistis |                      |                      |           |        |       |        |                 |    |      |                    |
|-----------------|----------------------|----------------------|-----------|--------|-------|--------|-----------------|----|------|--------------------|
| Model           | Number of Predictors | MetodeFit statistics |           |        |       |        | Ljung-Box Q(18) |    |      | Number of Outliers |
|                 |                      | Stationary R-squared | R-squared | RMSE   | MAPE  | MAE    | Statistics      | DF | Sig. |                    |
| PTPP-Model_1    | 1                    | ,726                 | ,973      | 20,020 | 2,343 | 15,530 | 25,367          | 15 | ,045 | 0                  |



WIKI (1,0,0)(0,1,1)

| Metode Statistics |                      |                      |           |        |       |        |                 |    |      |                    |
|-------------------|----------------------|----------------------|-----------|--------|-------|--------|-----------------|----|------|--------------------|
| Model             | Number of Predictors | MetodeFit statistics |           |        |       |        | Ljung-Box Q(18) |    |      | Number of Outliers |
|                   |                      | Stationary R-squared | R-squared | RMSE   | MAPE  | MAE    | Statistics      | DF | Sig. |                    |
| WIKI-Model_1      | 1                    | 0,833                | 0,989     | 17,297 | 2,038 | 13,132 | 18,246          | 6  | 0,31 | 0                  |

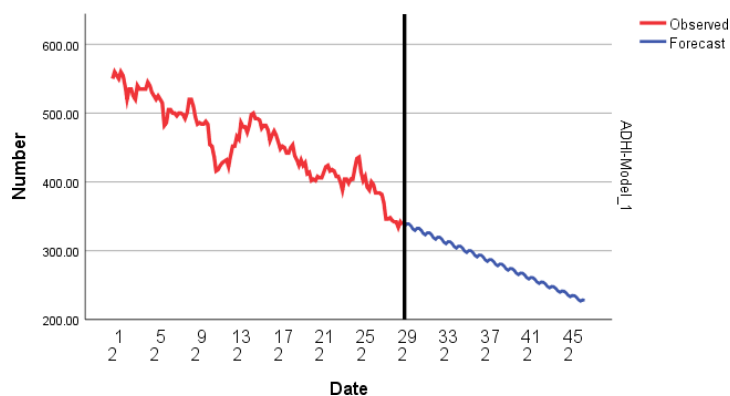


## Lampiran 6 Plot Hasil Prediksi *Exponential Smoothing Holt Winter*

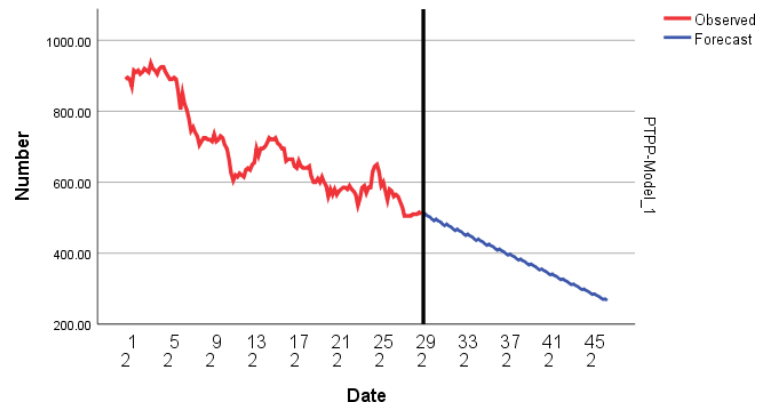
### *Winters' Multiplicative*

| Metode Statistics |                       |                      |           |        |       |        |                 |    |      |                    |
|-------------------|-----------------------|----------------------|-----------|--------|-------|--------|-----------------|----|------|--------------------|
| Model             | Number of Predictor s | MetodeFit statistics |           |        |       |        | Ljung-Box Q(18) |    |      | Number of Outliers |
|                   |                       | Stationary R-squared | R-squared | RMSE   | MAPE  | MAE    | Statistics      | DF | Sig. |                    |
| ADHI-Model_1      | 0                     | ,546                 | ,973      | 9,338  | 1,525 | 6,830  | 16,595          | 15 | ,344 | 0                  |
| PTPP-Model_2      | 0                     | ,528                 | ,984      | 16,030 | 1,869 | 12,460 | 10,773          | 15 | ,768 | 0                  |
| WIKI-Model_3      | 0                     | ,549                 | ,991      | 15,789 | 1,871 | 11,825 | 20,976          | 15 | ,138 | 0                  |

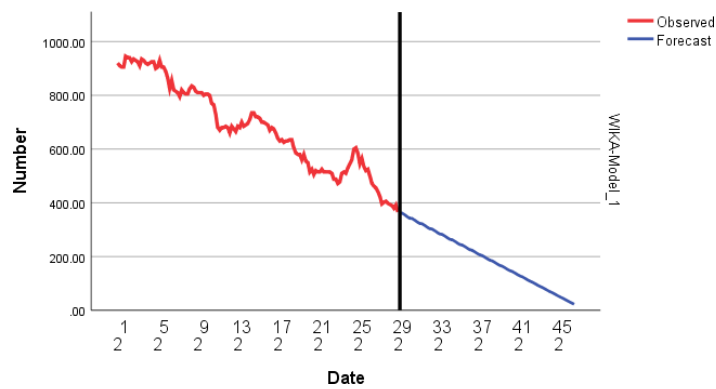
### ADHI



## PTPP



## WIKA

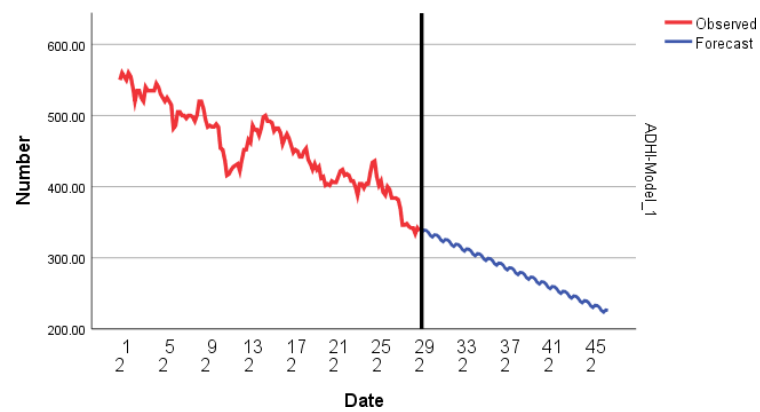


## Winters' Additive

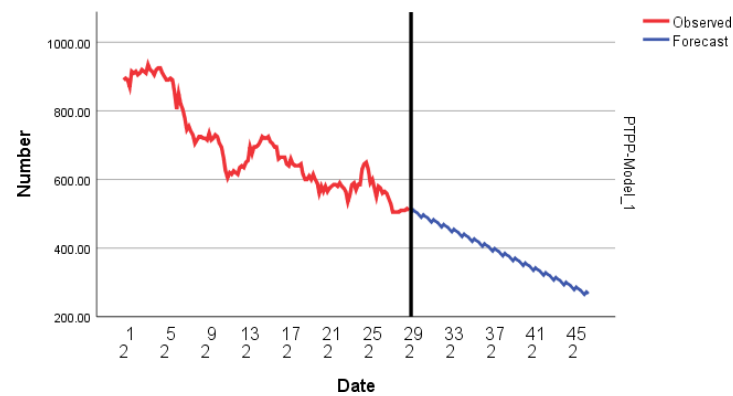
| MetodeStatistics |                       |                      |           |       |       |       |                 |    |      |                    |
|------------------|-----------------------|----------------------|-----------|-------|-------|-------|-----------------|----|------|--------------------|
| Model            | Number of Predictor s | MetodeFit statistics |           |       |       |       | Ljung-Box Q(18) |    |      | Number of Outliers |
|                  |                       | Stationary R-squared | R-squared | RMSE  | MAPE  | MAE   | Statistics      | DF | Sig. |                    |
| ADHI-Model_1     | 0                     | ,544                 | ,974      | 9,305 | 1,515 | 6,784 | 16,045          | 15 | ,379 | 0                  |

|                  |   |      |      |        |       |        |        |    |      |   |
|------------------|---|------|------|--------|-------|--------|--------|----|------|---|
| PTPP-<br>Model_2 | 0 | ,536 | ,984 | 15,965 | 1,849 | 12,285 | 11,326 | 15 | ,729 | 0 |
| WIKA-<br>Model_3 | 0 | ,549 | ,991 | 15,744 | 1,859 | 11,724 | 20,833 | 15 | ,142 | 0 |

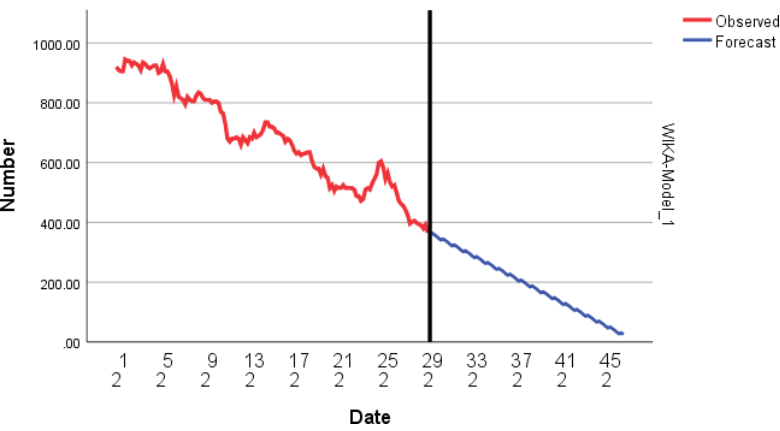
## ADHI



## PTPP



WIKI



Lampiran 7 Harga Saham ARIMA

ADHI

| Tanggal    | Harga Saham | 17/08/2023 | 336.26 |
|------------|-------------|------------|--------|
| 01/08/2023 | 336.26      | 18/08/2023 | 336.11 |
| 02/08/2023 | 340.80      | 21/08/2023 | 331.36 |
| 03/08/2023 | 341.52      | 22/08/2023 | 328.44 |
| 04/08/2023 | 341.85      | 23/08/2023 | 331.91 |
| 07/08/2023 | 337.77      | 24/08/2023 | 331.61 |
| 08/08/2023 | 335.48      | 25/08/2023 | 331.38 |
| 09/08/2023 | 339.52      | 28/08/2023 | 326.45 |
| 10/08/2023 | 339.76      | 29/08/2023 | 323.35 |
| 11/08/2023 | 339.78      | 30/08/2023 | 326.66 |
| 14/08/2023 | 335.30      | 31/08/2023 | 326.21 |
| 15/08/2023 | 332.64      | 01/09/2023 | 325.96 |
| 16/08/2023 | 336.34      | 04/09/2023 | 320.89 |

|            |        |
|------------|--------|
| 05/09/2023 | 317.68 |
| 06/09/2023 | 320.87 |
| 07/09/2023 | 320.31 |
| 08/09/2023 | 320.09 |
| 11/09/2023 | 314.92 |
| 12/09/2023 | 311.62 |
| 13/09/2023 | 314.72 |
| 14/09/2023 | 314.09 |
| 15/09/2023 | 313.91 |
| 18/09/2023 | 308.67 |
| 19/09/2023 | 305.30 |
| 20/09/2023 | 308.34 |
| 21/09/2023 | 307.65 |
| 22/09/2023 | 307.53 |
| 25/09/2023 | 302.24 |
| 26/09/2023 | 298.82 |
| 27/09/2023 | 301.81 |
| 28/09/2023 | 301.07 |
| 29/09/2023 | 301.03 |
| 02/10/2023 | 295.69 |
| 03/10/2023 | 292.23 |
| 04/10/2023 | 295.17 |

|            |        |
|------------|--------|
| 05/10/2023 | 294.39 |
| 06/10/2023 | 294.44 |
| 09/10/2023 | 289.06 |
| 10/10/2023 | 285.56 |
| 11/10/2023 | 288.47 |
| 12/10/2023 | 287.66 |
| 13/10/2023 | 287.79 |
| 16/10/2023 | 282.38 |
| 17/10/2023 | 278.85 |
| 18/10/2023 | 281.73 |
| 19/10/2023 | 280.88 |
| 20/10/2023 | 281.10 |
| 23/10/2023 | 275.67 |
| 24/10/2023 | 272.10 |
| 25/10/2023 | 274.95 |
| 26/10/2023 | 274.08 |
| 27/10/2023 | 274.39 |
| 30/10/2023 | 268.93 |
| 31/10/2023 | 265.34 |
| 01/11/2023 | 268.16 |
| 02/11/2023 | 267.26 |
| 03/11/2023 | 267.67 |

|            |        |
|------------|--------|
| 06/11/2023 | 262.18 |
| 07/11/2023 | 258.56 |
| 08/11/2023 | 261.35 |
| 09/11/2023 | 260.42 |
| 10/11/2023 | 260.93 |
| 13/11/2023 | 255.42 |
| 14/11/2023 | 251.77 |
| 15/11/2023 | 254.54 |
| 16/11/2023 | 253.58 |
| 17/11/2023 | 254.19 |
| 20/11/2023 | 248.65 |
| 21/11/2023 | 244.97 |
| 22/11/2023 | 247.72 |
| 23/11/2023 | 246.74 |
| 24/11/2023 | 247.44 |
| 27/11/2023 | 241.87 |
| 28/11/2023 | 238.18 |
| 29/11/2023 | 240.90 |
| 30/11/2023 | 239.89 |

PTPP

| Tanggal    | Harga Saham |
|------------|-------------|
| 01/08/2023 | 505.97      |
| 02/08/2023 | 494.83      |
| 03/08/2023 | 494.64      |
| 04/08/2023 | 495.61      |
| 07/08/2023 | 492.70      |
| 08/08/2023 | 492.57      |
| 09/08/2023 | 486.29      |
| 10/08/2023 | 486.24      |
| 11/08/2023 | 487.32      |
| 14/08/2023 | 483.62      |
| 15/08/2023 | 481.93      |
| 16/08/2023 | 473.69      |
| 17/08/2023 | 473.76      |
| 18/08/2023 | 473.27      |
| 21/08/2023 | 470.13      |
| 22/08/2023 | 469.35      |
| 23/08/2023 | 462.21      |
| 24/08/2023 | 462.48      |
| 25/08/2023 | 461.22      |
| 28/08/2023 | 458.11      |

|            |        |
|------------|--------|
| 29/08/2023 | 457.21 |
| 30/08/2023 | 449.88 |
| 31/08/2023 | 450.36 |
| 01/09/2023 | 448.01 |
| 04/09/2023 | 445.20 |
| 05/09/2023 | 444.66 |
| 06/09/2023 | 437.73 |
| 07/09/2023 | 438.43 |
| 08/09/2023 | 435.15 |
| 11/09/2023 | 432.53 |
| 12/09/2023 | 432.17 |
| 13/09/2023 | 425.39 |
| 14/09/2023 | 426.32 |
| 15/09/2023 | 422.06 |
| 18/09/2023 | 419.69 |
| 19/09/2023 | 419.58 |
| 20/09/2023 | 413.07 |
| 21/09/2023 | 414.24 |
| 22/09/2023 | 409.02 |
| 25/09/2023 | 406.88 |
| 26/09/2023 | 406.99 |

|            |        |
|------------|--------|
| 27/09/2023 | 400.71 |
| 28/09/2023 | 402.11 |
| 29/09/2023 | 395.93 |
| 02/10/2023 | 394.03 |
| 03/10/2023 | 394.39 |
| 04/10/2023 | 388.35 |
| 05/10/2023 | 389.99 |
| 06/10/2023 | 382.85 |
| 09/10/2023 | 381.18 |
| 10/10/2023 | 381.78 |
| 11/10/2023 | 375.98 |
| 12/10/2023 | 377.86 |
| 13/10/2023 | 369.75 |
| 16/10/2023 | 368.33 |
| 17/10/2023 | 369.17 |
| 18/10/2023 | 363.61 |
| 19/10/2023 | 365.73 |
| 20/10/2023 | 356.66 |
| 23/10/2023 | 355.48 |
| 24/10/2023 | 356.55 |
| 25/10/2023 | 351.23 |
| 26/10/2023 | 353.59 |

|            |        |
|------------|--------|
| 27/10/2023 | 343.57 |
| 30/10/2023 | 342.62 |
| 31/10/2023 | 343.94 |
| 01/11/2023 | 338.86 |
| 02/11/2023 | 341.46 |
| 03/11/2023 | 330.47 |
| 06/11/2023 | 329.76 |
| 07/11/2023 | 331.32 |
| 08/11/2023 | 326.48 |
| 09/11/2023 | 329.32 |
| 10/11/2023 | 317.37 |
| 13/11/2023 | 316.91 |
| 14/11/2023 | 318.71 |
| 15/11/2023 | 314.10 |
| 16/11/2023 | 317.19 |
| 17/11/2023 | 304.28 |
| 20/11/2023 | 304.05 |
| 21/11/2023 | 306.09 |
| 22/11/2023 | 301.73 |
| 23/11/2023 | 305.05 |
| 24/11/2023 | 291.18 |
| 27/11/2023 | 291.20 |

|            |        |
|------------|--------|
| 28/11/2023 | 293.47 |
| 29/11/2023 | 289.35 |

|            |        |
|------------|--------|
| 30/11/2023 | 292.91 |
|------------|--------|

## WIKI

| Tanggal    | Harga  |
|------------|--------|
|            | Saham  |
| 01/08/2023 | 360.82 |
| 02/08/2023 | 365.75 |
| 03/08/2023 | 361.17 |
| 04/08/2023 | 360.97 |
| 07/08/2023 | 355.62 |
| 08/08/2023 | 349.78 |
| 09/08/2023 | 354.09 |
| 10/08/2023 | 348.93 |
| 11/08/2023 | 348.44 |
| 14/08/2023 | 342.58 |
| 15/08/2023 | 336.25 |
| 16/08/2023 | 340.12 |
| 17/08/2023 | 334.53 |
| 18/08/2023 | 333.89 |
| 21/08/2023 | 327.65 |
| 22/08/2023 | 320.97 |

|            |        |
|------------|--------|
| 23/08/2023 | 324.50 |
| 24/08/2023 | 318.60 |
| 25/08/2023 | 317.90 |
| 28/08/2023 | 311.38 |
| 29/08/2023 | 304.44 |
| 30/08/2023 | 307.71 |
| 31/08/2023 | 301.58 |
| 01/09/2023 | 300.90 |
| 04/09/2023 | 294.16 |
| 05/09/2023 | 287.02 |
| 06/09/2023 | 290.10 |
| 07/09/2023 | 283.78 |
| 08/09/2023 | 283.18 |
| 11/09/2023 | 276.27 |
| 12/09/2023 | 268.97 |
| 13/09/2023 | 271.90 |
| 14/09/2023 | 265.43 |
| 15/09/2023 | 264.94 |

|            |        |
|------------|--------|
| 18/09/2023 | 257.91 |
| 19/09/2023 | 250.47 |
| 20/09/2023 | 253.28 |
| 21/09/2023 | 246.70 |
| 22/09/2023 | 246.34 |
| 25/09/2023 | 239.20 |
| 26/09/2023 | 231.66 |
| 27/09/2023 | 234.37 |
| 28/09/2023 | 227.69 |
| 29/09/2023 | 227.48 |
| 02/10/2023 | 220.25 |
| 03/10/2023 | 212.62 |
| 04/10/2023 | 215.24 |
| 05/10/2023 | 208.48 |
| 06/10/2023 | 208.44 |
| 09/10/2023 | 201.13 |
| 10/10/2023 | 193.43 |
| 11/10/2023 | 195.97 |
| 12/10/2023 | 189.14 |
| 13/10/2023 | 189.27 |
| 16/10/2023 | 181.89 |
| 17/10/2023 | 174.12 |

|            |        |
|------------|--------|
| 18/10/2023 | 176.60 |
| 19/10/2023 | 169.69 |
| 20/10/2023 | 170.01 |
| 23/10/2023 | 162.56 |
| 24/10/2023 | 154.73 |
| 25/10/2023 | 157.14 |
| 26/10/2023 | 150.18 |
| 27/10/2023 | 150.69 |
| 30/10/2023 | 143.18 |
| 31/10/2023 | 135.28 |
| 01/11/2023 | 137.64 |
| 02/11/2023 | 130.61 |
| 03/11/2023 | 131.31 |
| 06/11/2023 | 123.75 |
| 07/11/2023 | 115.79 |
| 08/11/2023 | 118.09 |
| 09/11/2023 | 111.01 |
| 10/11/2023 | 111.91 |
| 13/11/2023 | 104.28 |
| 14/11/2023 | 96.28  |
| 15/11/2023 | 98.52  |
| 16/11/2023 | 91.39  |

|            |       |
|------------|-------|
| 17/11/2023 | 92.48 |
| 20/11/2023 | 84.80 |
| 21/11/2023 | 76.74 |
| 22/11/2023 | 78.93 |
| 23/11/2023 | 71.75 |
| 24/11/2023 | 73.03 |
| 27/11/2023 | 65.30 |
| 28/11/2023 | 57.19 |
| 29/11/2023 | 59.33 |
| 30/11/2023 | 52.09 |

### Lampiran 8 Harga Saham *Exponential Smoothing*

Multiplicative dan Additive ADHI

| Tanggal    | Harga Saham ADHI |          |
|------------|------------------|----------|
|            | Multiplicative   | Additive |
| 01/08/2023 | 335.74           | 335.74   |
| 02/08/2023 | 339.20           | 339.04   |
| 03/08/2023 | 339.29           | 338.62   |
| 04/08/2023 | 336.46           | 336.17   |
| 07/08/2023 | 331.57           | 331.40   |
| 08/08/2023 | 329.33           | 329.14   |
| 09/08/2023 | 332.70           | 332.44   |
| 10/08/2023 | 332.76           | 332.02   |
| 11/08/2023 | 329.96           | 329.56   |
| 14/08/2023 | 325.14           | 324.79   |
| 15/08/2023 | 322.92           | 322.54   |
| 16/08/2023 | 326.19           | 325.83   |
| 17/08/2023 | 326.23           | 325.41   |
| 18/08/2023 | 323.46           | 322.96   |
| 21/08/2023 | 318.71           | 318.19   |
| 22/08/2023 | 316.51           | 315.94   |
| 23/08/2023 | 319.69           | 319.23   |

|            |        |        |
|------------|--------|--------|
| 24/08/2023 | 319.70 | 318.81 |
| 25/08/2023 | 316.96 | 316.36 |
| 28/08/2023 | 312.28 | 311.59 |
| 29/08/2023 | 310.09 | 309.33 |
| 30/08/2023 | 313.19 | 312.63 |
| 31/08/2023 | 313.17 | 312.21 |
| 01/09/2023 | 310.46 | 309.75 |
| 04/09/2023 | 305.84 | 304.99 |
| 05/09/2023 | 303.68 | 302.73 |
| 06/09/2023 | 306.68 | 306.03 |
| 07/09/2023 | 306.64 | 305.61 |
| 08/09/2023 | 303.96 | 303.15 |
| 11/09/2023 | 299.41 | 298.38 |
| 12/09/2023 | 297.27 | 296.13 |
| 13/09/2023 | 300.18 | 299.42 |
| 14/09/2023 | 300.11 | 299.00 |
| 15/09/2023 | 297.46 | 296.55 |
| 18/09/2023 | 292.98 | 291.78 |
| 19/09/2023 | 290.86 | 289.53 |
| 20/09/2023 | 293.68 | 292.82 |
| 21/09/2023 | 293.58 | 292.40 |

|            |        |        |
|------------|--------|--------|
| 22/09/2023 | 290.95 | 289.95 |
| 25/09/2023 | 286.55 | 285.18 |
| 26/09/2023 | 284.44 | 282.92 |
| 27/09/2023 | 287.17 | 286.22 |
| 28/09/2023 | 287.05 | 285.80 |
| 29/09/2023 | 284.45 | 283.34 |
| 02/10/2023 | 280.12 | 278.58 |
| 03/10/2023 | 278.03 | 276.32 |
| 04/10/2023 | 280.67 | 279.62 |
| 05/10/2023 | 280.52 | 279.20 |
| 06/10/2023 | 277.95 | 276.74 |
| 09/10/2023 | 273.69 | 271.97 |
| 10/10/2023 | 271.62 | 269.72 |
| 11/10/2023 | 274.17 | 273.01 |
| 12/10/2023 | 273.99 | 272.59 |
| 13/10/2023 | 271.45 | 270.14 |
| 16/10/2023 | 267.26 | 265.37 |
| 17/10/2023 | 265.21 | 263.11 |
| 18/10/2023 | 267.66 | 266.41 |
| 19/10/2023 | 267.46 | 265.99 |
| 20/10/2023 | 264.95 | 263.54 |

|            |        |        |
|------------|--------|--------|
| 23/10/2023 | 260.83 | 258.77 |
| 24/10/2023 | 258.79 | 256.51 |
| 25/10/2023 | 261.16 | 259.81 |
| 26/10/2023 | 260.93 | 259.39 |
| 27/10/2023 | 258.45 | 256.93 |
| 30/10/2023 | 254.40 | 252.17 |
| 31/10/2023 | 252.38 | 249.91 |
| 01/11/2023 | 254.66 | 253.20 |
| 02/11/2023 | 254.40 | 252.79 |
| 03/11/2023 | 251.95 | 250.33 |
| 06/11/2023 | 247.96 | 245.56 |
| 07/11/2023 | 245.97 | 243.31 |
| 08/11/2023 | 248.15 | 246.60 |
| 09/11/2023 | 247.87 | 246.18 |
| 10/11/2023 | 245.45 | 243.73 |
| 13/11/2023 | 241.53 | 238.96 |
| 14/11/2023 | 239.56 | 236.70 |
| 15/11/2023 | 241.65 | 240.00 |
| 16/11/2023 | 241.34 | 239.58 |
| 17/11/2023 | 238.95 | 237.13 |
| 20/11/2023 | 235.10 | 232.36 |

|            |        |        |
|------------|--------|--------|
| 21/11/2023 | 233.14 | 230.10 |
| 22/11/2023 | 235.15 | 233.40 |
| 23/11/2023 | 234.81 | 232.98 |
| 24/11/2023 | 232.45 | 230.52 |
| 27/11/2023 | 228.67 | 225.75 |
| 28/11/2023 | 226.73 | 223.50 |
| 29/11/2023 | 228.64 | 226.79 |
| 30/11/2023 | 228.28 | 226.37 |

#### PTPP

| Tanggal    | Harga Saham PTPP |          |
|------------|------------------|----------|
|            | Multiplicative   | Additive |
| 01/08/2023 | 505.15           | 503.45   |
| 02/08/2023 | 510.40           | 511.67   |
| 03/08/2023 | 504.56           | 506.13   |
| 04/08/2023 | 502.65           | 503.10   |
| 07/08/2023 | 496.05           | 495.94   |
| 08/08/2023 | 491.31           | 489.40   |
| 09/08/2023 | 496.34           | 497.61   |
| 10/08/2023 | 490.58           | 492.08   |
| 11/08/2023 | 488.65           | 489.04   |

|            |        |        |
|------------|--------|--------|
| 14/08/2023 | 482.15 | 481.88 |
| 15/08/2023 | 477.47 | 475.34 |
| 16/08/2023 | 482.28 | 483.56 |
| 17/08/2023 | 476.60 | 478.02 |
| 18/08/2023 | 474.64 | 474.99 |
| 21/08/2023 | 468.25 | 467.83 |
| 22/08/2023 | 463.63 | 461.29 |
| 23/08/2023 | 468.21 | 469.50 |
| 24/08/2023 | 462.62 | 463.97 |
| 25/08/2023 | 460.64 | 460.93 |
| 28/08/2023 | 454.35 | 453.77 |
| 29/08/2023 | 449.78 | 447.23 |
| 30/08/2023 | 454.15 | 455.45 |
| 31/08/2023 | 448.64 | 449.91 |
| 01/09/2023 | 446.63 | 446.87 |
| 04/09/2023 | 440.46 | 439.72 |
| 05/09/2023 | 435.94 | 433.17 |
| 06/09/2023 | 440.08 | 441.39 |
| 07/09/2023 | 434.66 | 435.85 |
| 08/09/2023 | 432.63 | 432.82 |
| 11/09/2023 | 426.56 | 425.66 |

|            |        |        |
|------------|--------|--------|
| 12/09/2023 | 422.10 | 419.12 |
| 13/09/2023 | 426.02 | 427.33 |
| 14/09/2023 | 420.68 | 421.80 |
| 15/09/2023 | 418.62 | 418.76 |
| 18/09/2023 | 412.66 | 411.60 |
| 19/09/2023 | 408.25 | 405.06 |
| 20/09/2023 | 411.96 | 413.28 |
| 21/09/2023 | 406.70 | 407.74 |
| 22/09/2023 | 404.62 | 404.71 |
| 25/09/2023 | 398.76 | 397.55 |
| 26/09/2023 | 394.41 | 391.01 |
| 27/09/2023 | 397.89 | 399.22 |
| 28/09/2023 | 392.72 | 393.69 |
| 29/09/2023 | 390.61 | 390.65 |
| 02/10/2023 | 384.86 | 383.49 |
| 03/10/2023 | 380.57 | 376.95 |
| 04/10/2023 | 383.83 | 385.17 |
| 05/10/2023 | 378.74 | 379.63 |
| 06/10/2023 | 376.61 | 376.59 |
| 09/10/2023 | 370.97 | 369.44 |
| 10/10/2023 | 366.72 | 362.89 |

|            |        |        |
|------------|--------|--------|
| 11/10/2023 | 369.77 | 371.11 |
| 12/10/2023 | 364.76 | 365.57 |
| 13/10/2023 | 362.61 | 362.54 |
| 16/10/2023 | 357.07 | 355.38 |
| 17/10/2023 | 352.88 | 348.84 |
| 18/10/2023 | 355.70 | 357.05 |
| 19/10/2023 | 350.78 | 351.52 |
| 20/10/2023 | 348.60 | 348.48 |
| 23/10/2023 | 343.17 | 341.32 |
| 24/10/2023 | 339.04 | 334.78 |
| 25/10/2023 | 341.64 | 343.00 |
| 26/10/2023 | 336.80 | 337.46 |
| 27/10/2023 | 334.60 | 334.43 |
| 30/10/2023 | 329.27 | 327.27 |
| 31/10/2023 | 325.20 | 320.73 |
| 01/11/2023 | 327.57 | 328.94 |
| 02/11/2023 | 322.82 | 323.41 |
| 03/11/2023 | 320.59 | 320.37 |
| 06/11/2023 | 315.37 | 313.21 |
| 07/11/2023 | 311.35 | 306.67 |
| 08/11/2023 | 313.51 | 314.89 |

|            |        |        |
|------------|--------|--------|
| 09/11/2023 | 308.84 | 309.35 |
| 10/11/2023 | 306.59 | 306.31 |
| 13/11/2023 | 301.47 | 299.16 |
| 14/11/2023 | 297.51 | 292.61 |
| 15/11/2023 | 299.45 | 300.83 |
| 16/11/2023 | 294.86 | 295.29 |
| 17/11/2023 | 292.58 | 292.26 |
| 20/11/2023 | 287.58 | 285.10 |
| 21/11/2023 | 283.67 | 278.56 |
| 22/11/2023 | 285.38 | 286.77 |
| 23/11/2023 | 280.88 | 281.24 |
| 24/11/2023 | 278.58 | 278.20 |
| 27/11/2023 | 273.68 | 271.04 |
| 28/11/2023 | 269.82 | 264.50 |
| 29/11/2023 | 271.32 | 272.72 |
| 30/11/2023 | 266.90 | 267.18 |

#### WIKI

| Tanggal    | Harga Saham WIKI |          |
|------------|------------------|----------|
|            | Multiplicative   | Additive |
| 01/08/2023 | 361.68           | 360.63   |

|            |        |        |
|------------|--------|--------|
| 02/08/2023 | 361.92 | 364.28 |
| 03/08/2023 | 357.28 | 358.53 |
| 04/08/2023 | 352.34 | 353.71 |
| 07/08/2023 | 346.50 | 346.41 |
| 08/08/2023 | 342.19 | 341.03 |
| 09/08/2023 | 342.20 | 344.67 |
| 10/08/2023 | 337.60 | 338.92 |
| 11/08/2023 | 332.71 | 334.10 |
| 14/08/2023 | 326.98 | 326.80 |
| 15/08/2023 | 322.69 | 321.42 |
| 16/08/2023 | 322.48 | 325.07 |
| 17/08/2023 | 317.92 | 319.32 |
| 18/08/2023 | 313.09 | 314.49 |
| 21/08/2023 | 307.46 | 307.20 |
| 22/08/2023 | 303.19 | 301.82 |
| 23/08/2023 | 302.76 | 305.46 |
| 24/08/2023 | 298.23 | 299.71 |
| 25/08/2023 | 293.46 | 294.89 |
| 28/08/2023 | 287.94 | 287.59 |
| 29/08/2023 | 283.70 | 282.21 |
| 30/08/2023 | 283.03 | 285.85 |

|            |        |        |
|------------|--------|--------|
| 31/08/2023 | 278.55 | 280.10 |
| 01/09/2023 | 273.83 | 275.28 |
| 04/09/2023 | 268.42 | 267.99 |
| 05/09/2023 | 264.20 | 262.61 |
| 06/09/2023 | 263.31 | 266.25 |
| 07/09/2023 | 258.86 | 260.50 |
| 08/09/2023 | 254.20 | 255.68 |
| 11/09/2023 | 248.90 | 248.38 |
| 12/09/2023 | 244.70 | 243.00 |
| 13/09/2023 | 243.59 | 246.64 |
| 14/09/2023 | 239.18 | 240.89 |
| 15/09/2023 | 234.57 | 236.07 |
| 18/09/2023 | 229.38 | 228.78 |
| 19/09/2023 | 225.21 | 223.39 |
| 20/09/2023 | 223.87 | 227.04 |
| 21/09/2023 | 219.49 | 221.29 |
| 22/09/2023 | 214.95 | 216.47 |
| 25/09/2023 | 209.86 | 209.17 |
| 26/09/2023 | 205.71 | 203.79 |
| 27/09/2023 | 204.14 | 207.43 |
| 28/09/2023 | 199.81 | 201.68 |

|            |        |        |
|------------|--------|--------|
| 29/09/2023 | 195.32 | 196.86 |
| 02/10/2023 | 190.34 | 189.56 |
| 03/10/2023 | 186.21 | 184.18 |
| 04/10/2023 | 184.42 | 187.83 |
| 05/10/2023 | 180.13 | 182.08 |
| 06/10/2023 | 175.69 | 177.25 |
| 09/10/2023 | 170.82 | 169.96 |
| 10/10/2023 | 166.71 | 164.58 |
| 11/10/2023 | 164.70 | 168.22 |
| 12/10/2023 | 160.44 | 162.47 |
| 13/10/2023 | 156.06 | 157.65 |
| 16/10/2023 | 151.30 | 150.35 |
| 17/10/2023 | 147.22 | 144.97 |
| 18/10/2023 | 144.98 | 148.61 |
| 19/10/2023 | 140.76 | 142.86 |
| 20/10/2023 | 136.43 | 138.04 |
| 23/10/2023 | 131.78 | 130.75 |
| 24/10/2023 | 127.72 | 125.37 |
| 25/10/2023 | 125.25 | 129.01 |
| 26/10/2023 | 121.07 | 123.26 |
| 27/10/2023 | 116.80 | 118.44 |

|            |        |        |
|------------|--------|--------|
| 30/10/2023 | 112.26 | 111.14 |
| 31/10/2023 | 108.22 | 105.76 |
| 01/11/2023 | 105.53 | 109.40 |
| 02/11/2023 | 101.39 | 103.65 |
| 03/11/2023 | 97.18  | 98.83  |
| 06/11/2023 | 92.74  | 91.54  |
| 07/11/2023 | 88.73  | 86.15  |
| 08/11/2023 | 85.81  | 89.80  |
| 09/11/2023 | 81.71  | 84.05  |
| 10/11/2023 | 77.55  | 79.23  |
| 13/11/2023 | 73.22  | 71.93  |
| 14/11/2023 | 69.23  | 66.55  |
| 15/11/2023 | 66.09  | 70.19  |
| 16/11/2023 | 62.02  | 64.44  |
| 17/11/2023 | 57.92  | 59.62  |
| 20/11/2023 | 53.70  | 52.32  |
| 21/11/2023 | 49.73  | 46.94  |
| 22/11/2023 | 46.36  | 50.59  |
| 23/11/2023 | 42.34  | 44.84  |
| 24/11/2023 | 38.29  | 40.01  |
| 27/11/2023 | 34.18  | 32.72  |

|            |       |       |
|------------|-------|-------|
| 28/11/2023 | 30.24 | 27.34 |
| 29/11/2023 | 26.64 | 30.98 |
| 30/11/2023 | 22.65 | 25.23 |

## **RIWAYAT HIDUP PENULIS**

### **A. IDENTITAS**

- |                           |                                                                                                          |
|---------------------------|----------------------------------------------------------------------------------------------------------|
| 1. Nama                   | : Winda Fajriyah                                                                                         |
| 2. Tempat Tanggal Lahir   | : Pekalongan, 27 Maret 2001                                                                              |
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| 7. Nama Ayah              | : Taufiq Widayat                                                                                         |
| 8. Pekerjaan Ayah         | : Buruh                                                                                                  |
| 9. Nama Ibu               | : Kumaidah                                                                                               |
| 10. Pekerjaan Ibu         | : Buruh                                                                                                  |

### **B. RIWAYAT PENDIDIKAN**

- |        |                            |
|--------|----------------------------|
| 1. SD  | : SD Negeri 01 Kedungwuni  |
| 2. SMP | : SMP Negeri 01 Kedungwuni |
| 3. SMA | : SMA Negeri 01 Kedungwuni |

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