

LAMPIRAN



PERKUMPULAN PENGELOLA PENDIDIKAN UMUM DAN TEKNOLOGI NASIONAL MALANG
INSTITUT TEKNOLOGI NASIONAL MALANG

FAKULTAS TEKNOLOGI INDUSTRI
FAKULTAS TEKNIK SIPIL DAN PERENCANAAN
PROGRAM PASCASARJANA MAGISTER TEKNIK

PT. BNI (PERSERO) MALANG
BANK NIAGA MALANG

Kampus I : Jl. Bendungan Sigura-gura No. 2 Telp. (0341) 551431 (Hunting), Fax. (0341) 553015 Malang 65145
Kampus II : Jl. Raya Karanglo, Km 2 Telp. (0341) 417636 Fax. (0341) 417634 Malang

BERITA ACARA UJIAN SKRIPSI
FAKULTAS TEKNOLOGI INDUSTRI

Nama : Eka Pradana Hartinningrum
Nim : 2018101
Jurusan : Teknik Informatika S-1
Judul : IMPLEMENTASI METODE HOLT WINTERS EXPONENTIAL SMOOTHING SEBAGAI PREDIKSI PENJUALAN ROTI AGUNG BAKERY CABANG KOTABARU

Dipertahankan Dihadapan Majelis Penguji Skripsi Jenjang Strata Satu(S-1)
Pada

Hari : Rabu
Tanggal : 19 Juni 2024
Nilai : 81 (A)

**Panitia Ujian Skripsi :
Ketua Majelis Penguji**

(Yosep Agus Pranoto, ST, MT.)
NIP.P. 1031000432

Anggota Penguji :

Dosen Penguji I

(Ali Mahmudi, B.Eng, Ph.D.)
NIP.P. 1031000429

Dosen Penguji II

(Febriana Santi Wahyuni, S.Kom. M.Kom.)
NIP.P. 1031000425



PERKUMPULAN PENGELOLA PENDIDIKAN UMUM DAN TEKNOLOGI NASIONAL MALANG
INSTITUT TEKNOLOGI NASIONAL MALANG

FAKULTAS TEKNOLOGI INDUSTRI
FAKULTAS TEKNIK SIPIL DAN PERENCANAAN
PROGRAM PASCASARJANA MAGISTER TEKNIK

PT. BNI (PERSERO) MALANG
BANK NIAGA MALANG

Kampus I : Jl. Bendungan Sigura-gura No. 2 Telp. (0341) 551431 (Hunting), Fax. (0341) 553015 Malang 65145
Kampus II : Jl. Raya Karanglo, Km 2 Telp. (0341) 417636 Fax. (0341) 417634 Malang

FORMULIR PERBAIKAN SKRIPSI

Dalam pelaksanaan ujian skripsi jenjang Strata 1 Program Studi Teknik Informatika , maka perlu adanya perbaikan skripsi untuk mahasiswa :

NAMA : Eka Pradana Hartinningrum
NIM : 2018101
JURUSAN : Teknik Informatika S-1
JUDUL : Implementasi Metode Holt Winters Exponential Smoothing Sebagai Prediksi Penjualan Roti Agung Bakery Cabang Kotabaru

| No. | Penguji | Tanggal | Uraian |
|-----|------------|--------------|---|
| 1. | Penguji I | 19 Juni 2024 | 1. Versi browser pada pengujian browser 2. Pengujian eser minimal 10 orang 3. Pada tabel, mape beri keterangan % 4. Rancangan database dan relasi antar tabel 5. Pada website dan laporan (tinjauan pustaka) berikan deskripsi tentang roti agung |
| 2. | Penguji II | 19 Juni 2024 | 1. Revisi Laporan |

Anggota Penguji :

Dosen Penguji I

(Ali Mahmudi, B.Eng, Ph.D.)
NIP.P. 1031000429

Dosen Penguji II

(Febriana Santi Wahyuni, S.Kom. M.Kom.)
NIP.P. 1031000425

Mengetahui :

Dosen Pembimbing I

(Dr. Ir. Sentot Achmadi, Msi.)
NIP.P. 1039500281

Dosen Pembimbing II

(Yosep Agus Pranoto, ST., MT.)
NIP.P. 1031000432



PT BNI (PERSERO) MALANG
BANK NIAGA MALANG

PERKUMPULAN PENGELOLA PENDIDIKAN UMUM DAN TEKNOLOGI NASIONAL MALANG
INSTITUT TEKNOLOGI NASIONAL MALANG
FAKULTAS TEKNOLOGI INDUSTRI
FAKULTAS TEKNIK SIPIL DAN PERENCANAAN
PROGRAM PASCASARJANA MAGISTER TEKNIK

Kampus I : Jl. Bendungan Sigura-gura No. 2 Telp. (0341) 551431 (Hunting), Fax. (0341) 553015 Malang 65145
Kampus II : Jl. Raya Karanglo, Km 2 Telp. (0341) 417636 Fax. (0341) 417634 Malang

Malang, 19 Maret 2024

Nomor : ITN-787/III-INF/TA/2024
Lampiran : ---
Perihal : Pembimbing Utama Skripsi

Kepada : **Yth. Bpk/Ibu Dr. Ir. Sentot Achmadi, Msi**
Dosen Program Studi Teknik Informatika S-1
Institut Teknologi Nasional
Malang

Dengan Hormat,
Sesuai dengan permohonan dan persetujuan dalam proposal skripsi untuk mahasiswa :

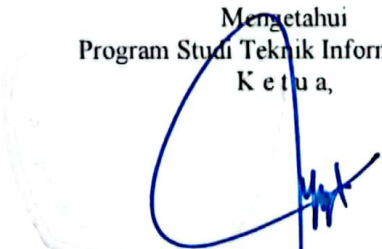
Nama : Eka Pradana Hartinningrum
Nim : 2018101
Prodi : Teknik Informatika S-1
Fakultas : Teknologi Industri

Maka dengan ini pembimbingan kami serahkan sepenuhnya kepada Saudara/i selama waktu 6 (enam) bulan, terhitung mulai tanggal :

28 Februari 2024 s/d 28 Agustus 2024

Sebagai satu syarat untuk menempuh Ujian Akhir Sarjana Teknik, Program Studi Teknik Informatika S-1.
Demikian agar maklum dan atas perhatian serta bantuannya kami sampaikan terima kasih.

Mengetahui
Program Studi Teknik Informatika S-1
Ketua,


Yosep Agus Pranoto, ST., MT.
NIP. P. 1031000432

Form S-4a



PT BNI (PERSERO) MALANG
BANK NIAGA MALANG

PERKUMPULAN PENGELOLA PENDIDIKAN UMUM DAN TEKNOLOGI NASIONAL MALANG
INSTITUT TEKNOLOGI NASIONAL MALANG
FAKULTAS TEKNOLOGI INDUSTRI
FAKULTAS TEKNIK SIPIL DAN PERENCANAAN
PROGRAM PASCASARJANA MAGISTER TEKNIK

Kampus I : Jl. Bendungan Sigura-gura No. 2 Telp. (0341) 551431 (Hunting), Fax. (0341) 553015 Malang 65145
Kampus II : Jl. Raya Karanglo, Km 2 Telp. (0341) 417636 Fax. (0341) 417634 Malang

Malang, 19 Maret 2024

Nomor : ITN-787/III-INF/TA/2024
Lampiran : ---
Perihal : Pembimbing Pendamping Skripsi

Kepada : **Yth. Bpk/Ibu Yosep Agus Pranoto, ST, MT**
Dosen Pembina Program Studi Teknik Informatika S-1
Institut Teknologi Nasional
Malang

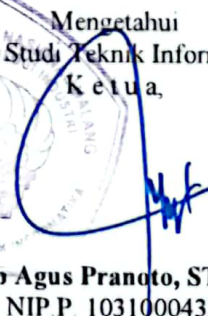
Dengan Hormat,
Sesuai dengan permohonan dan persetujuan dalam proposal skripsi untuk mahasiswa :

Nama : Eka Pradana Hartinningrum
Nim : 2018101
Prodi : Teknik Informatika S-1
Fakultas : Teknologi Industri

Maka dengan ini pembimbingan kami serahkan sepenuhnya kepada Saudara/i selama waktu 6 (enam) bulan, terhitung mulai tanggal :

28 Februari 2024 s/d 28 Agustus 2024

Sebagai satu syarat untuk menempuh Ujian Akhir Sarjana Teknik, Program Studi Teknik Informatika S-1.
Demikian agar maklum dan atas perhatian serta bantuannya kami sampaikan terima kasih

Mengetahui
Program Studi Teknik Informatika S-1
Ketua,

Yosep Agus Pranoto, ST., MT.
NIP.P. 1031000432

Form S-4a




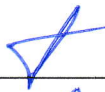






FORMULIR BIMBINGAN SKRIPSI

Nama : EKA PRADANA HARTININGRUM

Nim : 2018101

Masa Bimbingan : 28 februari - 28 Agustus 2024

Judul Skripsi : IMPLEMENTASI METODE HOIT WINTER'S EXPONENTIAL SMOOTHING SEBAGAI PREDIKSI PENJUALAN POTI ASUMSI BERBASIS WEB

| No. | Tanggal | Uraian | Paraf Pembimbing |
|-----|---------------|---|---|
| 1. | 27 Maret 2024 | Penulisan rumus yg benar (diperbaiki) |  |
| 2. | 3 April 2024 | Memperbaiki perhitungan data |  |
| 3. | 19 April 2024 | Bab 2 dan 3, penyelesaian perhitungan dan solusi. |  |
| 4. | 6 Mei 2024 | Konultasi perhitungan |  |
| 5. | 8 Mei 2024 | konultasi perhitungan akurat |  |
| 6. | 13 Mei 2024 | revisi perhitungan |  |
| 7. | 15 Mei 2024 | Demo aplikasi |  |
| 8. | 10 Juni 2024 | Pembahasan revisi Semhar |  |
| 9. | 12 Juni 2024 | Revisi aplikasi (metode) |  |
| 10. | 19 Juni 2024 | ACC. |  |

Malang, 19/6/... 2020

Dosen Pembimbing


 Dr. Ir. Santot Achmadi, Msi




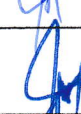
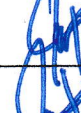
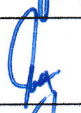


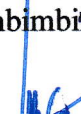

FORMULIR BIMBINGAN SKRIPSI

Nama : EKA PRADAMA HARTINHERUM

Nim : 2018101

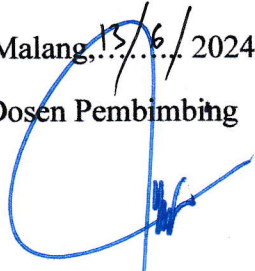
Masa Bimbingan : 28 Februari - 28 Agustus 2024

Judul Skripsi : IMPLEMENTASI METODE HOLT WINTER EXponential SMOOTHING SEBAGAI PREDIKSI PENJUALAN ROKI AGUNG BERBASIS WEB

| No. | Tanggal | Uraian | Paraf Pembimbing |
|-----|---------------|--|---|
| 1. | 27 Maret 2024 | Mengumpulkan data Setiap toko Penjualan Roki di kabupaten kotabaru untuk bisa diprediksi pada penjualan kedepan masing ² toko |  |
| 2. | 3 April 2024 | Simulasi Perhitungan Menggunakan Excel |  |
| 3. | 4 April 2024 | Buat contoh perhitungan di Excel, tambahkan paragraf y landasan teori, perbaikan pada penulisan sub bab, Perbaikan flowchart |  |
| 4. | 14 Mei 2024 | Membuat tampilan project, Memasukkan data dalam project |  |
| 5. | 15 Mei 2024 | Memperbaiki perhitungan metode dalam project |  |
| 6. | 16 Mei 2024 | Perbaikan Penulisan jurnal |  |
| 7. | 17 Mei 2024 | Jurnal dan laporan |  |
| 8. | 10 Juni 2024 | Pembahasan revisi Semhar dan Demo project |  |
| 9. | 11 Juni 2024 | Demo project, Perbaikan y data stabil dan data gangsal |  |
| 10. | 13 Juni 2024 | Laporan & project. |  |

Malang, 15/6/2024

Dosen Pembimbing


 Yosep Agus Pranoto, ST, MT
 T.M.P. 1031000432

Pengujian Oleh User

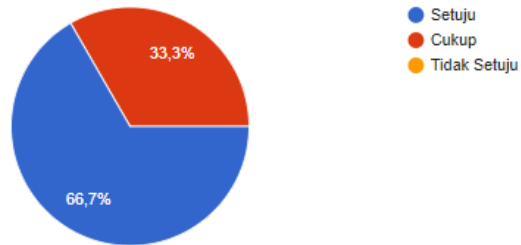


Hasil Kuisioner

Tampilan User interface dari Sistem peramalan penjualan roti menggunakan metode hol't winters exponential smoothing terlihat menarik

[Salin](#)

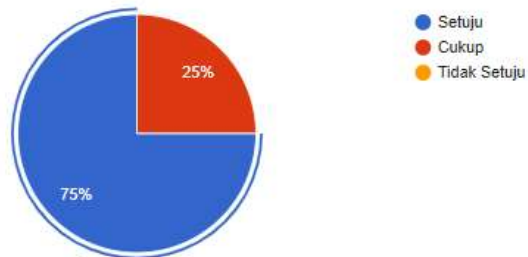
12 jawaban



Fitur yang ada pada sistem peramalan penjualan roti menggunakan metode hol't winters exponential smoothing berfungsi dengan baik.

[Salin](#)

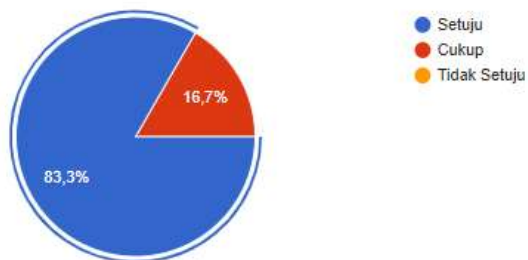
12 jawaban



Sistem peramalan penjualan roti menggunakan metode hol't winters exponential smoothing mudah digunakan

[Salin](#)

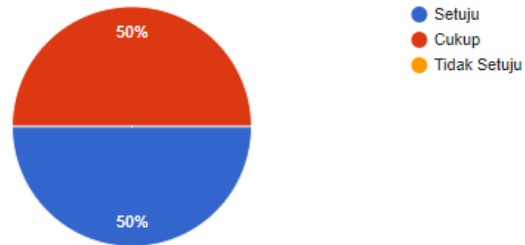
12 jawaban



Informasi yang ada pada Sistem peramalan penjualan roti menggunakan metode hol't winters exponential smoothing mudah di mengerti

[Salin](#)

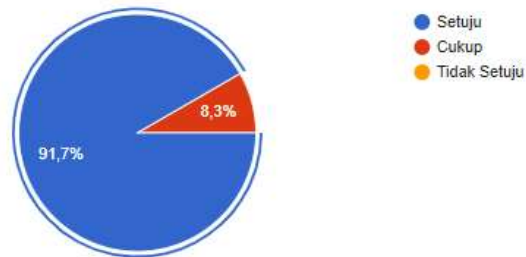
12 jawaban



Sistem peramalan penjualan roti menggunakan metode hol't winters exponential smoothing dapat membantu Kepala umkm roti agung dalam memprediksi penjualan

[Salin](#)

12 jawaban



Perbandingan hasil perhitungan dengan nilai parameter yang lain

Hasil perhitungan roti sisir menggunakan nilai alpha 0.2, beta 0.1 dan gama 0.1 dengan rata-rata nilai mape 2.33

| | Periode | Sale | Level | Trend | Seasonal | Forecast | Mape % |
|---|----------------|-------------|--------------|--------------|-----------------|-----------------|---------------|
| | Minggu-1 | 434 | | | 1.384738 | | |
| | Minggu-2 | 368 | | | 1.174156 | | |
| | Minggu-3 | 406 | | | 1.2954 | | |
| | Minggu-4 | 336 | | | 1.072055 | | |
| | Minggu-5 | 387 | | | 1.234778 | | |
| | Minggu-6 | 297 | | | 0.94762 | | |
| | Minggu-7 | 415 | | | 1.324116 | | |
| | Minggu-8 | 377 | | | 1.202872 | | |
| | Minggu-9 | 357 | | | 1.139059 | | |
| | Minggu-10 | 420 | | | 1.340069 | | |
| | Minggu-11 | 342 | | | 1.091199 | | |
| | Minggu-12 | 301 | | | 0.960383 | | |
| | Minggu-13 | 392 | | | 1.250731 | | |
| | Minggu-14 | 419 | | | 1.336878 | | |
| | Minggu-15 | 345 | | | 1.100771 | | |
| | Minggu-16 | 377 | | | 1.202872 | | |
| 2 | Minggu-17 | 295 | | | 0.941239 | | |
| 0 | Minggu-18 | 242 | | | 0.772135 | | |
| 2 | Minggu-19 | 371 | | | 1.183728 | | |
| 2 | Minggu-20 | 307 | | | 0.979527 | | |
| | Minggu-21 | 392 | | | 1.250731 | | |
| | Minggu-22 | 363 | | | 1.158203 | | |
| | Minggu-23 | 299 | | | 0.954002 | | |
| | Minggu-24 | 359 | | | 1.14544 | | |
| | Minggu-25 | 391 | | | 1.247541 | | |
| | Minggu-26 | 336 | | | 1.072055 | | |
| | Minggu-27 | 294 | | | 0.938048 | | |
| | Minggu-28 | 352 | | | 1.123106 | | |
| | Minggu-29 | 321 | | | 1.024196 | | |
| | Minggu-30 | 241 | | | 0.768944 | | |
| | Minggu-31 | 210 | | | 0.670035 | | |
| | Minggu-32 | 277 | | | 0.883807 | | |
| | Minggu-33 | 189 | | | 0.603031 | | |
| | Minggu-34 | 265 | | | 0.84552 | | |
| | Minggu-35 | 282 | | | 0.899761 | | |
| | Minggu-36 | 200 | | | 0.638128 | | |

| | Periode | Sale | Level | Trend | Seasonal | Forecast | Mape % |
|------------------|----------------|-------------|--------------|--------------|-----------------|-----------------|---------------|
| | Minggu-37 | 203 | | | 0.6477 | | |
| | Minggu-38 | 252 | | | 0.804041 | | |
| | Minggu-39 | 217 | | | 0.692369 | | |
| | Minggu-40 | 270 | | | 0.861473 | | |
| | Minggu-41 | 285 | | | 0.909333 | | |
| | Minggu-42 | 252 | | | 0.804041 | | |
| | Minggu-43 | 299 | | | 0.954002 | | |
| | Minggu-44 | 227 | | | 0.724275 | | |
| | Minggu-45 | 250 | | | 0.79766 | | |
| | Minggu-46 | 326 | | | 1.040149 | | |
| | Minggu-47 | 226 | | | 0.721085 | | |
| | Minggu-48 | 278 | 313.4167 | -0.46 | 0.886998 | | |
| 2 0 2 3 | Minggu-1 | 409 | 309.4378 | -0.81195 | 1.378439 | 433.3629 | 5.956705 |
| | Minggu-2 | 338 | 304.474 | -1.22714 | 1.167751 | 362.3749 | 7.211498 |
| | Minggu-3 | 383 | 301.7298 | -1.37884 | 1.292795 | 392.826 | 2.565537 |
| | Minggu-4 | 309 | 297.927 | -1.62123 | 1.068566 | 321.9928 | 4.204794 |
| | Minggu-5 | 357 | 294.8688 | -1.76493 | 1.232371 | 365.8719 | 2.485118 |
| | Minggu-6 | 269 | 291.2569 | -1.94963 | 0.945217 | 277.7512 | 3.253225 |
| | Minggu-7 | 409 | 293.2229 | -1.55807 | 1.331189 | 383.0763 | 6.338303 |
| | Minggu-8 | 351 | 291.6922 | -1.55533 | 1.202917 | 350.8353 | 0.046923 |
| | Minggu-9 | 331 | 290.2276 | -1.54625 | 1.139201 | 330.4829 | 0.156216 |
| | Minggu-10 | 397 | 290.1958 | -1.39481 | 1.342866 | 386.853 | 2.555914 |
| | Minggu-11 | 311 | 288.0423 | -1.47068 | 1.090049 | 315.1394 | 1.33099 |
| | Minggu-12 | 282 | 287.9839 | -1.32946 | 0.962267 | 275.2185 | 2.404799 |
| | Minggu-13 | 366 | 287.8493 | -1.20997 | 1.252808 | 358.5276 | 2.041636 |
| | Minggu-14 | 402 | 289.4516 | -0.92874 | 1.342074 | 383.202 | 4.676132 |
| | Minggu-15 | 318 | 288.5959 | -0.92143 | 1.100883 | 317.5976 | 0.126552 |
| | Minggu-16 | 342 | 287.0035 | -0.98853 | 1.201747 | 346.0355 | 1.179964 |
| | Minggu-17 | 260 | 284.0583 | -1.1842 | 0.938646 | 269.2085 | 3.541722 |
| | Minggu-18 | 220 | 283.2842 | -1.14319 | 0.772582 | 218.417 | 0.71953 |
| | Minggu-19 | 342 | 283.4963 | -1.00766 | 1.185991 | 333.9781 | 2.345592 |
| | Minggu-20 | 282 | 283.5698 | -0.89955 | 0.98102 | 276.7052 | 1.87759 |
| | Minggu-21 | 357 | 283.2228 | -0.84429 | 1.251707 | 353.5444 | 0.967941 |
| | Minggu-22 | 323 | 281.6789 | -0.91425 | 1.157052 | 327.0515 | 1.254333 |
| | Minggu-23 | 268 | 280.7961 | -0.91111 | 0.954044 | 267.8499 | 0.056012 |
| | Minggu-24 | 344 | 283.9722 | -0.50238 | 1.152035 | 320.5915 | 6.804809 |
| | Minggu-25 | 364 | 285.1307 | -0.3363 | 1.250447 | 353.6401 | 2.846117 |
| | Minggu-26 | 291 | 282.1238 | -0.60336 | 1.067996 | 305.3153 | 4.919364 |
| | Minggu-27 | 279 | 284.7015 | -0.28525 | 0.942241 | 264.0798 | 5.347755 |

| | Periode | Sale | Level | Trend | Seasonal | Forecast | Mape % |
|------------------|----------------|-------------|--------------|--------------|-----------------|-----------------|---------------|
| | Minggu-28 | 311 | 282.9152 | -0.43536 | 1.120722 | 319.4295 | 2.710452 |
| | Minggu-29 | 310 | 286.5192 | -0.03142 | 1.029971 | 289.3146 | 6.672706 |
| | Minggu-30 | 219 | 286.1514 | -0.06506 | 0.768583 | 220.2931 | 0.590479 |
| | Minggu-31 | 193 | 286.478 | -0.02589 | 0.670401 | 191.6877 | 0.679932 |
| | Minggu-32 | 253 | 286.414 | -0.0297 | 0.88376 | 253.1686 | 0.066623 |
| | Minggu-33 | 174 | 286.8159 | 0.013458 | 0.603394 | 172.6986 | 0.747906 |
| | Minggu-34 | 253 | 289.3083 | 0.261355 | 0.848418 | 242.5199 | 4.142328 |
| | Minggu-35 | 267 | 291.0049 | 0.404873 | 0.901536 | 260.5434 | 2.418192 |
| | Minggu-36 | 187 | 291.7367 | 0.437569 | 0.638414 | 185.9568 | 0.557883 |
| | Minggu-37 | 188 | 291.791 | 0.39924 | 0.64736 | 189.2413 | 0.660267 |
| | Minggu-38 | 239 | 293.2018 | 0.500402 | 0.805151 | 234.9331 | 1.70165 |
| | Minggu-39 | 202 | 293.3122 | 0.461396 | 0.692001 | 203.3503 | 0.668489 |
| | Minggu-40 | 257 | 294.6841 | 0.552449 | 0.862538 | 253.078 | 1.526066 |
| | Minggu-41 | 271 | 295.7934 | 0.608133 | 0.910017 | 268.4682 | 0.934231 |
| | Minggu-42 | 233 | 295.0784 | 0.475823 | 0.802599 | 238.3191 | 2.282887 |
| | Minggu-43 | 275 | 294.0953 | 0.329928 | 0.952109 | 281.9592 | 2.53063 |
| | Minggu-44 | 214 | 294.6337 | 0.350777 | 0.72448 | 213.245 | 0.352819 |
| | Minggu-45 | 244 | 297.1665 | 0.56898 | 0.800003 | 235.2974 | 3.566642 |
| | Minggu-46 | 307 | 297.2184 | 0.517271 | 1.039425 | 309.6893 | 0.875982 |
| | Minggu-47 | 217 | 298.3756 | 0.581267 | 0.721703 | 214.6927 | 1.063278 |
| | Minggu-48 | 266 | 299.1431 | 0.599886 | 0.887219 | 265.1742 | 0.310441 |
| 2 0 2 4 | Minggu-1 | | | | | 413.1776 | |
| | Minggu-2 | | | | | 350.7258 | |
| | Minggu-3 | | | | | 389.0573 | |
| | Minggu-4 | | | | | 322.2184 | |
| | Minggu-5 | | | | | 372.3517 | |
| | Minggu-6 | | | | | 286.1572 | |
| | Minggu-7 | | | | | 403.8059 | |
| | Minggu-8 | | | | | 365.6172 | |
| | Minggu-9 | | | | | 346.9347 | |
| | Minggu-10 | | | | | 409.7649 | |
| | Minggu-11 | | | | | 333.2738 | |
| | Minggu-12 | | | | | 294.7825 | |
| | Minggu-13 | | | | | 384.5389 | |
| | Minggu-14 | | | | | 412.7435 | |
| | Minggu-15 | | | | | 339.2275 | |
| | Minggu-16 | | | | | 371.0288 | |
| | Minggu-17 | | | | | 290.3617 | |
| | Minggu-18 | | | | | 239.4549 | |

| | Periode | Sale | Level | Trend | Seasonal | Forecast | Mape % |
|--|----------------|-------------|--------------|--------------|-----------------|-----------------|---------------|
| | Minggu-19 | | | | | 368.2989 | |
| | Minggu-20 | | | | | 305.2355 | |
| | Minggu-21 | | | | | 390.2081 | |
| | Minggu-22 | | | | | 361.3943 | |
| | Minggu-23 | | | | | 298.5591 | |
| | Minggu-24 | | | | | 361.2094 | |
| | Minggu-25 | | | | | 392.8158 | |
| | Minggu-26 | | | | | 336.1412 | |
| | Minggu-27 | | | | | 297.1263 | |
| | Minggu-28 | | | | | 354.0808 | |
| | Minggu-29 | | | | | 326.0269 | |
| | Minggu-30 | | | | | 243.7481 | |
| | Minggu-31 | | | | | 213.0129 | |
| | Minggu-32 | | | | | 281.3358 | |
| | Minggu-33 | | | | | 192.4461 | |
| | Minggu-34 | | | | | 271.1028 | |
| | Minggu-35 | | | | | 288.6168 | |
| | Minggu-36 | | | | | 204.7644 | |
| | Minggu-37 | | | | | 208.0219 | |
| | Minggu-38 | | | | | 259.2094 | |
| | Minggu-39 | | | | | 223.197 | |
| | Minggu-40 | | | | | 278.7192 | |
| | Minggu-41 | | | | | 294.6076 | |
| | Minggu-42 | | | | | 260.3137 | |
| | Minggu-43 | | | | | 309.3764 | |
| | Minggu-44 | | | | | 235.846 | |
| | Minggu-45 | | | | | 260.9114 | |
| | Minggu-46 | | | | | 339.6195 | |
| | Minggu-47 | | | | | 236.2408 | |
| | Minggu-48 | | | | | 290.9525 | |

Hasil perhitungan roti sisir menggunakan nilai alpha 0.3, beta 0.2 dan gama 0.1 dengan rata-rata nilai mape 2.29

| | Periode | Sale | Level | Trend | Seasonal | Forecast | Mape % |
|---|----------------|-------------|--------------|--------------|-----------------|-----------------|---------------|
| 2 | Minggu-1 | 434 | | | | 1.3847 | |
| | Minggu-2 | 368 | | | | 1.1742 | |
| | Minggu-3 | 406 | | | | 1.2954 | |
| | Minggu-4 | 336 | | | | 1.0721 | |
| | Minggu-5 | 387 | | | | 1.2348 | |

| | Periode | Sale | Level | Trend | Seasonal | Forecast | Mape % |
|---|----------------|-------------|--------------|--------------|-----------------|-----------------|---------------|
| 0 | Minggu-6 | 297 | | | 0.9476 | | |
| 2 | Minggu-7 | 415 | | | 1.3241 | | |
| 2 | Minggu-8 | 377 | | | 1.2029 | | |
| | Minggu-9 | 357 | | | 1.1391 | | |
| | Minggu-10 | 420 | | | 1.3401 | | |
| | Minggu-11 | 342 | | | 1.0912 | | |
| | Minggu-12 | 301 | | | 0.9604 | | |
| | Minggu-13 | 392 | | | 1.2507 | | |
| | Minggu-14 | 419 | | | 1.3369 | | |
| | Minggu-15 | 345 | | | 1.1008 | | |
| | Minggu-16 | 377 | | | 1.2029 | | |
| | Minggu-17 | 295 | | | 0.9412 | | |
| | Minggu-18 | 242 | | | 0.7721 | | |
| | Minggu-19 | 371 | | | 1.1837 | | |
| | Minggu-20 | 307 | | | 0.9795 | | |
| | Minggu-21 | 392 | | | 1.2507 | | |
| | Minggu-22 | 363 | | | 1.1582 | | |
| | Minggu-23 | 299 | | | 0.9540 | | |
| | Minggu-24 | 359 | | | 1.1454 | | |
| | Minggu-25 | 391 | | | 1.2475 | | |
| | Minggu-26 | 336 | | | 1.0721 | | |
| | Minggu-27 | 294 | | | 0.9380 | | |
| | Minggu-28 | 352 | | | 1.1231 | | |
| | Minggu-29 | 321 | | | 1.0242 | | |
| | Minggu-30 | 241 | | | 0.7689 | | |
| | Minggu-31 | 210 | | | 0.6700 | | |
| | Minggu-32 | 277 | | | 0.8838 | | |
| | Minggu-33 | 189 | | | 0.6030 | | |
| | Minggu-34 | 265 | | | 0.8455 | | |
| | Minggu-35 | 282 | | | 0.8998 | | |
| | Minggu-36 | 200 | | | 0.6381 | | |
| | Minggu-37 | 203 | | | 0.6477 | | |
| | Minggu-38 | 252 | | | 0.8040 | | |
| | Minggu-39 | 217 | | | 0.6924 | | |
| | Minggu-40 | 270 | | | 0.8615 | | |
| | Minggu-41 | 285 | | | 0.9093 | | |
| | Minggu-42 | 252 | | | 0.8040 | | |
| | Minggu-43 | 299 | | | 0.9540 | | |
| | Minggu-44 | 227 | | | 0.7243 | | |

| | Periode | Sale | Level | Trend | Seasonal | Forecast | Maape % |
|------------------|----------------|-------------|--------------|--------------|-----------------|-----------------|----------------|
| | Minggu-45 | 250 | | | 0.7977 | | |
| | Minggu-46 | 326 | | | 1.0401 | | |
| | Minggu-47 | 226 | | | 0.7211 | | |
| | Minggu-48 | 278 | 313.4167 | -0.46 | 0.8870 | | |
| 2 0 2 3 | Minggu-1 | 409 | 307.6784 | -1.5157 | 1.3792 | 433.363 | 5.956705 |
| | Minggu-2 | 338 | 300.6738 | -2.61348 | 1.1692 | 359.483 | 6.355842 |
| | Minggu-3 | 383 | 297.3407 | -2.75741 | 1.2947 | 386.107 | 0.811337 |
| | Minggu-4 | 309 | 292.6777 | -3.13852 | 1.0704 | 315.810 | 2.203748 |
| | Minggu-5 | 357 | 289.4137 | -3.16363 | 1.2347 | 357.517 | 0.144714 |
| | Minggu-6 | 269 | 285.5357 | -3.30649 | 0.9471 | 271.256 | 0.838797 |
| | Minggu-7 | 409 | 290.2261 | -1.70713 | 1.3326 | 373.704 | 8.629775 |
| | Minggu-8 | 351 | 289.5038 | -1.51016 | 1.2038 | 347.051 | 1.125006 |
| | Minggu-9 | 331 | 288.7728 | -1.35433 | 1.1398 | 328.042 | 0.893762 |
| | Minggu-10 | 397 | 290.0689 | -0.82423 | 1.3429 | 385.161 | 2.982221 |
| | Minggu-11 | 311 | 287.9735 | -1.07846 | 1.0901 | 315.624 | 1.486675 |
| | Minggu-12 | 282 | 288.9164 | -0.67419 | 0.9620 | 275.529 | 2.294635 |
| | Minggu-13 | 366 | 289.5582 | -0.411 | 1.2521 | 360.514 | 1.499029 |
| | Minggu-14 | 402 | 292.6132 | 0.282199 | 1.3406 | 386.555 | 3.842116 |
| | Minggu-15 | 318 | 291.6933 | 0.041779 | 1.0997 | 322.411 | 1.387036 |
| | Minggu-16 | 342 | 289.5104 | -0.40315 | 1.2007 | 350.920 | 2.608138 |
| | Minggu-17 | 260 | 285.2446 | -1.17569 | 0.9383 | 272.119 | 4.661181 |
| | Minggu-18 | 220 | 284.3255 | -1.12437 | 0.7723 | 219.340 | 0.300196 |
| | Minggu-19 | 342 | 284.9161 | -0.78137 | 1.1854 | 335.233 | 1.978641 |
| | Minggu-20 | 282 | 285.2626 | -0.55581 | 0.9804 | 278.318 | 1.305816 |
| | Minggu-21 | 357 | 284.9247 | -0.51223 | 1.2510 | 356.092 | 0.254442 |
| | Minggu-22 | 323 | 282.7528 | -0.84415 | 1.1566 | 329.407 | 1.983656 |
| | Minggu-23 | 268 | 281.6127 | -0.90335 | 0.9538 | 268.941 | 0.351236 |
| | Minggu-24 | 344 | 286.5929 | 0.273364 | 1.1509 | 321.536 | 6.530328 |
| | Minggu-25 | 364 | 288.3386 | 0.567834 | 1.2490 | 357.877 | 1.682066 |
| | Minggu-26 | 291 | 283.6669 | -0.48008 | 1.0674 | 309.724 | 6.434253 |
| | Minggu-27 | 279 | 287.4586 | 0.374275 | 0.9413 | 265.643 | 4.787486 |
| | Minggu-28 | 311 | 284.5562 | -0.28105 | 1.1201 | 323.267 | 3.944263 |
| | Minggu-29 | 310 | 289.7956 | 0.823032 | 1.0287 | 291.153 | 6.079551 |
| | Minggu-30 | 219 | 288.8748 | 0.474277 | 0.7679 | 223.470 | 2.040893 |
| | Minggu-31 | 193 | 288.9578 | 0.396021 | 0.6698 | 193.874 | 0.452798 |
| | Minggu-32 | 253 | 288.4261 | 0.210476 | 0.8831 | 255.733 | 1.080276 |
| | Minggu-33 | 174 | 288.6083 | 0.20482 | 0.6030 | 174.057 | 0.032671 |
| | Minggu-34 | 253 | 291.9365 | 0.829485 | 0.8476 | 244.197 | 3.479356 |
| | Minggu-35 | 267 | 293.9598 | 1.068262 | 0.9006 | 263.419 | 1.341089 |

| | Periode | Sale | Level | Trend | Seasonal | Forecast | Mape % |
|------------------|----------------|-------------|--------------|--------------|-----------------|-----------------|---------------|
| | Minggu-36 | 187 | 294.433 | 0.949251 | 0.6378 | 188.266 | 0.676863 |
| | Minggu-37 | 188 | 293.8449 | 0.641782 | 0.6469 | 191.319 | 1.765497 |
| | Minggu-38 | 239 | 295.3152 | 0.807479 | 0.8046 | 236.780 | 0.929062 |
| | Minggu-39 | 202 | 294.8115 | 0.545233 | 0.6917 | 205.026 | 1.498112 |
| | Minggu-40 | 257 | 296.2476 | 0.723405 | 0.8621 | 254.442 | 0.995401 |
| | Minggu-41 | 271 | 297.2859 | 0.786393 | 0.9096 | 270.045 | 0.352257 |
| | Minggu-42 | 233 | 295.5864 | 0.289218 | 0.8025 | 239.662 | 2.859437 |
| | Minggu-43 | 275 | 293.5908 | -0.16775 | 0.9523 | 282.266 | 2.64212 |
| | Minggu-44 | 214 | 294.0364 | -0.04507 | 0.7246 | 212.519 | 0.692007 |
| | Minggu-45 | 244 | 297.5624 | 0.669126 | 0.7999 | 234.505 | 3.891308 |
| | Minggu-46 | 307 | 297.3071 | 0.484241 | 1.0394 | 310.205 | 1.044021 |
| | Minggu-47 | 217 | 298.7345 | 0.672891 | 0.7216 | 214.733 | 1.044802 |
| | Minggu-48 | 266 | 299.5516 | 0.701718 | 0.8871 | 265.574 | 0.160211 |
| 2 0 2 4 | Minggu-1 | | | | | 414.108 | |
| | Minggu-2 | | | | | 351.863 | |
| | Minggu-3 | | | | | 390.545 | |
| | Minggu-4 | | | | | 323.653 | |
| | Minggu-5 | | | | | 374.174 | |
| | Minggu-6 | | | | | 287.683 | |
| | Minggu-7 | | | | | 405.737 | |
| | Minggu-8 | | | | | 367.366 | |
| | Minggu-9 | | | | | 348.620 | |
| | Minggu-10 | | | | | 411.699 | |
| | Minggu-11 | | | | | 334.948 | |
| | Minggu-12 | | | | | 296.254 | |
| | Minggu-13 | | | | | 386.477 | |
| | Minggu-14 | | | | | 414.741 | |
| | Minggu-15 | | | | | 340.996 | |
| | Minggu-16 | | | | | 373.157 | |
| | Minggu-17 | | | | | 292.252 | |
| | Minggu-18 | | | | | 241.098 | |
| | Minggu-19 | | | | | 370.890 | |
| | Minggu-20 | | | | | 307.449 | |
| | Minggu-21 | | | | | 393.160 | |
| | Minggu-22 | | | | | 364.322 | |
| | Minggu-23 | | | | | 301.096 | |
| | Minggu-24 | | | | | 364.145 | |
| | Minggu-25 | | | | | 396.060 | |
| | Minggu-26 | | | | | 339.227 | |

| | Periode | Sale | Level | Trend | Seasonal | Forecast | Mape % |
|--|----------------|-------------|--------------|--------------|-----------------|-----------------|---------------|
| | Minggu-27 | | | | | 299.802 | |
| | Minggu-28 | | | | | 357.532 | |
| | Minggu-29 | | | | | 329.098 | |
| | Minggu-30 | | | | | 246.179 | |
| | Minggu-31 | | | | | 215.217 | |
| | Minggu-32 | | | | | 284.378 | |
| | Minggu-33 | | | | | 194.599 | |
| | Minggu-34 | | | | | 274.132 | |
| | Minggu-35 | | | | | 291.899 | |
| | Minggu-36 | | | | | 207.175 | |
| | Minggu-37 | | | | | 210.579 | |
| | Minggu-38 | | | | | 262.464 | |
| | Minggu-39 | | | | | 226.113 | |
| | Minggu-40 | | | | | 282.434 | |
| | Minggu-41 | | | | | 298.628 | |
| | Minggu-42 | | | | | 264.030 | |
| | Minggu-43 | | | | | 313.987 | |
| | Minggu-44 | | | | | 239.437 | |
| | Minggu-45 | | | | | 264.868 | |
| | Minggu-46 | | | | | 344.903 | |
| | Minggu-47 | | | | | 239.961 | |
| | Minggu-48 | | | | | 295.611 | |

Hasil Perhitungan Peramalan Seluruh Roti

Tawar putih : α 0,3 β 0,1 dan γ 0,1 dengan nilai rata-rata mape 3,44

| | Periode | Penjualan | Level | Trend | Seasonal | Forecast |
|---|-----------|-----------|-------|-------|----------|----------|
| | Minggu-1 | 721 | | | 1.2547 | |
| | Minggu-2 | 596 | | | 1.0372 | |
| | Minggu-3 | 680 | | | 1.1834 | |
| | Minggu-4 | 492 | | | 0.8562 | |
| | Minggu-5 | 618 | | | 1.0755 | |
| | Minggu-6 | 490 | | | 0.8527 | |
| | Minggu-7 | 628 | | | 1.0929 | |
| | Minggu-8 | 507 | | | 0.8823 | |
| | Minggu-9 | 526 | | | 0.9154 | |
| | Minggu-10 | 638 | | | 1.1103 | |
| | Minggu-11 | 548 | | | 0.9537 | |
| | Minggu-12 | 585 | | | 1.0181 | |
| | Minggu-13 | 629 | | | 1.0946 | |
| | Minggu-14 | 748 | | | 1.3017 | |
| | Minggu-15 | 569 | | | 0.9902 | |
| | Minggu-16 | 621 | | | 1.0807 | |
| | Minggu-17 | 608 | | | 1.0581 | |
| | Minggu-18 | 532 | | | 0.9258 | |
| | Minggu-19 | 663 | | | 1.1538 | |
| 2 | Minggu-20 | 544 | | | 0.9467 | |
| 0 | Minggu-21 | 647 | | | 1.1260 | |
| 2 | Minggu-22 | 595 | | | 1.0355 | |
| 2 | Minggu-23 | 526 | | | 0.9154 | |
| | Minggu-24 | 583 | | | 1.0146 | |
| | Minggu-25 | 701 | | | 1.2199 | |
| | Minggu-26 | 588 | | | 1.0233 | |
| | Minggu-27 | 543 | | | 0.9450 | |
| | Minggu-28 | 762 | | | 1.3261 | |
| | Minggu-29 | 660 | | | 1.1486 | |
| | Minggu-30 | 605 | | | 1.0529 | |
| | Minggu-31 | 578 | | | 1.0059 | |
| | Minggu-32 | 633 | | | 1.1016 | |
| | Minggu-33 | 594 | | | 1.0337 | |
| | Minggu-34 | 483 | | | 0.8405 | |
| | Minggu-35 | 600 | | | 1.0442 | |
| | Minggu-36 | 482 | | | 0.8388 | |
| | Minggu-37 | 475 | | | 0.8266 | |

| | Periode | Penjualan | Level | Trend | Seasonal | Forecast |
|------------------|----------------|------------------|--------------|--------------|-----------------|-----------------|
| | Minggu-38 | 593 | | | 1.0320 | |
| | Minggu-39 | 493 | | | 0.8580 | |
| | Minggu-40 | 557 | | | 0.9693 | |
| | Minggu-41 | 634 | | | 1.1033 | |
| | Minggu-42 | 469 | | | 0.8162 | |
| | Minggu-43 | 528 | | | 0.9189 | |
| | Minggu-44 | 510 | | | 0.8875 | |
| | Minggu-45 | 469 | | | 0.8162 | |
| | Minggu-46 | 410 | | | 0.7135 | |
| | Minggu-47 | 398 | | | 0.6926 | |
| | Minggu-48 | 523 | 574.625 | -0.84 | 0.9102 | |
| 2 0 2 3 | Minggu-1 | 649 | 556.819 | -2.541 | 1.2458 | 719.9403 |
| | Minggu-2 | 557 | 549.1019 | -3.058 | 1.0349 | 574.8964 |
| | Minggu-3 | 631 | 542.196 | -3.443 | 1.1814 | 646.1773 |
| | Minggu-4 | 554 | 571.2381 | -0.195 | 0.8676 | 461.2859 |
| | Minggu-5 | 568 | 558.1708 | -1.482 | 1.0697 | 614.1482 |
| | Minggu-6 | 456 | 550.1082 | -2.140 | 0.8503 | 474.7054 |
| | Minggu-7 | 576 | 541.6912 | -2.768 | 1.0899 | 598.8672 |
| | Minggu-8 | 461 | 533.9933 | -3.261 | 0.8804 | 475.5001 |
| | Minggu-9 | 543 | 549.4718 | -1.387 | 0.9227 | 485.8218 |
| | Minggu-10 | 635 | 555.2364 | -0.672 | 1.1136 | 608.533 |
| | Minggu-11 | 562 | 564.9869 | 0.371 | 0.9578 | 528.8693 |
| | Minggu-12 | 519 | 548.6889 | -1.296 | 1.0108 | 575.5652 |
| | Minggu-13 | 549 | 533.6371 | -2.672 | 1.0880 | 599.1908 |
| | Minggu-14 | 694 | 531.6181 | -2.607 | 1.3021 | 691.1674 |
| | Minggu-15 | 513 | 525.7295 | -2.935 | 0.9888 | 523.8331 |
| | Minggu-16 | 575 | 525.5744 | -2.657 | 1.0820 | 564.9869 |
| | Minggu-17 | 551 | 522.2685 | -2.722 | 1.0578 | 553.2894 |
| | Minggu-18 | 501 | 526.0251 | -2.074 | 0.9285 | 481.0075 |
| | Minggu-19 | 587 | 519.3925 | -2.530 | 1.1514 | 604.5329 |
| | Minggu-20 | 490 | 517.0795 | -2.508 | 0.9468 | 489.3163 |
| | Minggu-21 | 604 | 521.1305 | -1.852 | 1.1293 | 579.3826 |
| | Minggu-22 | 545 | 521.396 | -1.640 | 1.0364 | 537.6909 |
| | Minggu-23 | 481 | 521.4685 | -1.469 | 0.9161 | 475.7737 |
| | Minggu-24 | 551 | 526.925 | -0.777 | 1.0177 | 527.5782 |
| | Minggu-25 | 670 | 533.068 | -0.085 | 1.2236 | 641.8621 |
| | Minggu-26 | 553 | 535.2147 | 0.139 | 1.0243 | 545.3891 |
| | Minggu-27 | 510 | 536.6582 | 0.269 | 0.9455 | 505.8896 |
| | Minggu-28 | 705 | 535.3414 | 0.110 | 1.3252 | 712.0097 |

| | Periode | Penjualan | Level | Trend | Seasonal | Forecast |
|--|----------------|------------------|--------------|--------------|-----------------|-----------------|
| | Minggu-29 | 609 | 533.883 | -0.046 | 1.1478 | 615.0067 |
| | Minggu-30 | 564 | 534.3906 | 0.009 | 1.0531 | 562.0554 |
| | Minggu-31 | 521 | 529.4671 | -0.484 | 1.0037 | 537.5383 |
| | Minggu-32 | 594 | 532.0544 | -0.177 | 1.1031 | 582.7211 |
| | Minggu-33 | 541 | 529.3202 | -0.433 | 1.0326 | 549.811 |
| | Minggu-34 | 445 | 529.0461 | -0.417 | 0.8406 | 444.5554 |
| | Minggu-35 | 550 | 528.0623 | -0.474 | 1.0439 | 551.973 |
| | Minggu-36 | 411 | 516.3064 | -1.602 | 0.8345 | 442.5455 |
| | Minggu-37 | 438 | 519.2526 | -1.147 | 0.8283 | 425.4682 |
| | Minggu-38 | 541 | 519.9448 | -0.963 | 1.0328 | 534.6732 |
| | Minggu-39 | 452 | 521.3381 | -0.727 | 0.8589 | 445.2607 |
| | Minggu-40 | 512 | 522.8878 | -0.500 | 0.9703 | 504.6424 |
| | Minggu-41 | 581 | 523.6482 | -0.374 | 1.1039 | 576.3655 |
| | Minggu-42 | 407 | 515.8906 | -1.112 | 0.8135 | 427.0884 |
| | Minggu-43 | 487 | 519.3463 | -0.655 | 0.9207 | 473.0094 |
| | Minggu-44 | 449 | 514.8523 | -1.039 | 0.8860 | 460.3565 |
| | Minggu-45 | 423 | 515.1487 | -0.906 | 0.8167 | 419.3662 |
| | Minggu-46 | 365 | 513.437 | -0.986 | 0.7132 | 366.9169 |
| | Minggu-47 | 335 | 503.8156 | -1.850 | 0.6899 | 354.9365 |
| | Minggu-48 | 459 | 502.6683 | -1.780 | 0.9105 | 456.8686 |

Tawar Coklat : alpha 0,3 beta 0,1 dan gamma 0,1 dengan nilai rata-rata mape 4,18

| | Periode Minggu | Penjualan | Level | Trend | Seasonal | Forecast |
|------|-----------------------|------------------|--------------|--------------|-----------------|-----------------|
| 2022 | Minggu-1 | 189 | | | 1.3444 | |
| | Minggu-2 | 144 | | | 1.0243 | |
| | Minggu-3 | 182 | | | 1.29461 | |
| | Minggu-4 | 132 | | | 0.93894 | |
| | Minggu-5 | 163 | | | 1.15945 | |
| | Minggu-6 | 136 | | | 0.9674 | |
| | Minggu-7 | 160 | | | 1.13811 | |
| | Minggu-8 | 115 | | | 0.81802 | |
| | Minggu-9 | 138 | | | 0.98162 | |
| | Minggu-10 | 163 | | | 1.15945 | |
| | Minggu-11 | 131 | | | 0.93183 | |
| | Minggu-12 | 109 | | | 0.77534 | |
| | Minggu-13 | 122 | | | 0.86781 | |
| | Minggu-14 | 162 | | | 1.15234 | |
| | Minggu-15 | 132 | | | 0.93894 | |
| | Minggu-16 | 153 | | | 1.08832 | |

| | Periode Minggu | Penjualan | Level | Trend | Seasonal | Forecast |
|------|-----------------------|------------------|--------------|--------------|-----------------|-----------------|
| | Minggu-17 | 150 | | | 1.06698 | |
| | Minggu-18 | 112 | | | 0.79668 | |
| | Minggu-19 | 166 | | | 1.18079 | |
| | Minggu-20 | 135 | | | 0.96028 | |
| | Minggu-21 | 165 | | | 1.17368 | |
| | Minggu-22 | 148 | | | 1.05276 | |
| | Minggu-23 | 113 | | | 0.80379 | |
| | Minggu-24 | 150 | | | 1.06698 | |
| | Minggu-25 | 210 | | | 1.49378 | |
| | Minggu-26 | 178 | | | 1.26615 | |
| | Minggu-27 | 134 | | | 0.95317 | |
| | Minggu-28 | 153 | | | 1.08832 | |
| | Minggu-29 | 172 | | | 1.22347 | |
| | Minggu-30 | 149 | | | 1.05987 | |
| | Minggu-31 | 128 | | | 0.91049 | |
| | Minggu-32 | 170 | | | 1.20925 | |
| | Minggu-33 | 113 | | | 0.80379 | |
| | Minggu-34 | 119 | | | 0.84647 | |
| | Minggu-35 | 140 | | | 0.99585 | |
| | Minggu-36 | 116 | | | 0.82513 | |
| | Minggu-37 | 116 | | | 0.82513 | |
| | Minggu-38 | 132 | | | 0.93894 | |
| | Minggu-39 | 127 | | | 0.90338 | |
| | Minggu-40 | 137 | | | 0.97451 | |
| | Minggu-41 | 161 | | | 1.14523 | |
| | Minggu-42 | 131 | | | 0.93183 | |
| | Minggu-43 | 132 | | | 0.93894 | |
| | Minggu-44 | 120 | | | 0.85359 | |
| | Minggu-45 | 121 | | | 0.8607 | |
| | Minggu-46 | 109 | | | 0.77534 | |
| | Minggu-47 | 96 | | | 0.68287 | |
| | Minggu-48 | 114 | 140.583 | -0.30 | 0.81091 | |
| 2023 | Minggu-1 | 171 | 136.36 | -0.688 | 1.33536 | 188.603 |
| | Minggu-2 | 130 | 133.045 | -0.9506 | 1.01958 | 138.969 |
| | Minggu-3 | 162 | 130.007 | -1.1594 | 1.28975 | 171.01 |
| | Minggu-4 | 119 | 128.214 | -1.2227 | 0.93786 | 120.98 |
| | Minggu-5 | 149 | 127.447 | -1.1772 | 1.16042 | 147.241 |
| | Minggu-6 | 119 | 125.292 | -1.275 | 0.96564 | 122.153 |
| | Minggu-7 | 147 | 125.56 | -1.1207 | 1.14138 | 141.145 |

| | Periode Minggu | Penjualan | Level | Trend | Seasonal | Forecast |
|--|-----------------------|------------------|--------------|--------------|-----------------|-----------------|
| | Minggu-8 | 102 | 124.515 | -1.1131 | 0.81814 | 101.794 |
| | Minggu-9 | 122 | 123.666 | -1.0866 | 0.98211 | 121.134 |
| | Minggu-10 | 150 | 124.617 | -0.8829 | 1.16388 | 142.126 |
| | Minggu-11 | 121 | 125.57 | -0.6994 | 0.93501 | 115.3 |
| | Minggu-12 | 91 | 122.619 | -0.9245 | 0.77202 | 96.817 |
| | Minggu-13 | 112 | 123.905 | -0.7035 | 0.87142 | 105.608 |
| | Minggu-14 | 153 | 126.073 | -0.4163 | 1.15847 | 141.97 |
| | Minggu-15 | 119 | 125.981 | -0.3839 | 0.93951 | 117.984 |
| | Minggu-16 | 143 | 127.336 | -0.2099 | 1.09179 | 136.69 |
| | Minggu-17 | 133 | 126.384 | -0.2842 | 1.06552 | 135.642 |
| | Minggu-18 | 96 | 124.42 | -0.4522 | 0.79417 | 100.461 |
| | Minggu-19 | 150 | 124.887 | -0.3602 | 1.18282 | 146.38 |
| | Minggu-20 | 122 | 125.283 | -0.2847 | 0.96164 | 119.581 |
| | Minggu-21 | 150 | 125.839 | -0.2005 | 1.17551 | 146.708 |
| | Minggu-22 | 131 | 125.278 | -0.2366 | 1.05205 | 132.267 |
| | Minggu-23 | 98 | 124.105 | -0.3302 | 0.80238 | 100.507 |
| | Minggu-24 | 136 | 124.881 | -0.2196 | 1.06919 | 132.066 |
| | Minggu-25 | 191 | 125.622 | -0.1235 | 1.49644 | 186.217 |
| | Minggu-26 | 164 | 126.707 | -0.0027 | 1.26897 | 158.901 |
| | Minggu-27 | 120 | 126.462 | -0.027 | 0.95274 | 120.771 |
| | Minggu-28 | 140 | 127.096 | 0.03914 | 1.08964 | 137.602 |
| | Minggu-29 | 158 | 127.737 | 0.09931 | 1.22482 | 155.546 |
| | Minggu-30 | 135 | 127.697 | 0.08545 | 1.0596 | 135.489 |
| | Minggu-31 | 110 | 125.692 | -0.1236 | 0.90696 | 116.345 |
| | Minggu-32 | 158 | 127.096 | 0.02912 | 1.21264 | 151.843 |
| | Minggu-33 | 97 | 125.191 | -0.1643 | 0.8009 | 102.182 |
| | Minggu-34 | 116 | 128.63 | 0.19608 | 0.85201 | 105.832 |
| | Minggu-35 | 134 | 130.546 | 0.36804 | 0.99891 | 128.292 |
| | Minggu-36 | 102 | 128.725 | 0.14911 | 0.82186 | 108.022 |
| | Minggu-37 | 105 | 128.387 | 0.10046 | 0.8244 | 106.338 |
| | Minggu-38 | 118 | 127.643 | 0.01601 | 0.9375 | 120.643 |
| | Minggu-39 | 100 | 122.57 | -0.4929 | 0.89463 | 115.325 |
| | Minggu-40 | 117 | 121.472 | -0.5534 | 0.97338 | 118.966 |
| | Minggu-41 | 149 | 123.675 | -0.2778 | 1.15118 | 138.48 |
| | Minggu-42 | 105 | 120.182 | -0.5993 | 0.92602 | 114.985 |
| | Minggu-43 | 125 | 123.646 | -0.1929 | 0.94615 | 112.282 |
| | Minggu-44 | 105 | 123.321 | -0.2062 | 0.85337 | 105.378 |
| | Minggu-45 | 113 | 125.567 | 0.039 | 0.86462 | 105.964 |
| | Minggu-46 | 93 | 123.908 | -0.1308 | 0.77286 | 97.3872 |

| | Periode Minggu | Penjualan | Level | Trend | Seasonal | Forecast |
|--|-----------------------|------------------|--------------|--------------|-----------------|-----------------|
| | Minggu-47 | 81 | 122.229 | -0.2856 | 0.68085 | 84.5237 |
| | Minggu-48 | 106 | 124.576 | -0.0223 | 0.8149 | 98.885 |

Tawar Pandan : alpha 0,4 beta 0,1 dan gamma 0,1 dengan nilai rata-rata mape 2,97

| | Periode Minggu | Penjualan | Level | Trend | Seasonal | Forecast |
|------|-----------------------|------------------|--------------|--------------|-----------------|-----------------|
| 2022 | Minggu-1 | 255 | | | 1.25887 | |
| | Minggu-2 | 236 | | | 1.16507 | |
| | Minggu-3 | 266 | | | 1.31317 | |
| | Minggu-4 | 199 | | | 0.98241 | |
| | Minggu-5 | 225 | | | 1.11077 | |
| | Minggu-6 | 181 | | | 0.89355 | |
| | Minggu-7 | 210 | | | 1.03672 | |
| | Minggu-8 | 187 | | | 0.92317 | |
| | Minggu-9 | 221 | | | 1.09102 | |
| | Minggu-10 | 220 | | | 1.08608 | |
| | Minggu-11 | 192 | | | 0.94786 | |
| | Minggu-12 | 160 | | | 0.78988 | |
| | Minggu-13 | 194 | | | 0.95773 | |
| | Minggu-14 | 215 | | | 1.0614 | |
| | Minggu-15 | 192 | | | 0.94786 | |
| | Minggu-16 | 221 | | | 1.09102 | |
| | Minggu-17 | 184 | | | 0.90836 | |
| | Minggu-18 | 154 | | | 0.76026 | |
| | Minggu-19 | 214 | | | 1.05646 | |
| | Minggu-20 | 165 | | | 0.81456 | |
| | Minggu-21 | 246 | | | 1.21444 | |
| | Minggu-22 | 205 | | | 1.01203 | |
| | Minggu-23 | 164 | | | 0.80963 | |
| | Minggu-24 | 192 | | | 0.94786 | |
| | Minggu-25 | 277 | | | 1.36748 | |
| | Minggu-26 | 253 | | | 1.249 | |
| | Minggu-27 | 188 | | | 0.92811 | |
| | Minggu-28 | 275 | | | 1.35761 | |
| | Minggu-29 | 263 | | | 1.29836 | |
| | Minggu-30 | 217 | | | 1.07127 | |
| | Minggu-31 | 197 | | | 0.97254 | |
| | Minggu-32 | 243 | | | 1.19963 | |
| | Minggu-33 | 152 | | | 0.75039 | |
| | Minggu-34 | 184 | | | 0.90836 | |

| | Periode Minggu | Penjualan | Level | Trend | Seasonal | Forecast |
|------|-----------------------|------------------|--------------|--------------|-----------------|-----------------|
| | Minggu-35 | 221 | | | 1.09102 | |
| | Minggu-36 | 189 | | | 0.93305 | |
| | Minggu-37 | 158 | | | 0.78001 | |
| | Minggu-38 | 216 | | | 1.06634 | |
| | Minggu-39 | 165 | | | 0.81456 | |
| | Minggu-40 | 178 | | | 0.87874 | |
| | Minggu-41 | 241 | | | 1.18976 | |
| | Minggu-42 | 181 | | | 0.89355 | |
| | Minggu-43 | 196 | | | 0.9676 | |
| | Minggu-44 | 173 | | | 0.85406 | |
| | Minggu-45 | 189 | | | 0.93305 | |
| | Minggu-46 | 186 | | | 0.91824 | |
| | Minggu-47 | 126 | | | 0.62203 | |
| | Minggu-48 | 157 | 202.563 | -0.42 | 0.77507 | |
| 2023 | Minggu-1 | 232 | 195.003 | -1.1325 | 1.25196 | 254.473 |
| | Minggu-2 | 208 | 187.734 | -1.7461 | 1.15936 | 225.874 |
| | Minggu-3 | 241 | 185.003 | -1.8447 | 1.31213 | 244.235 |
| | Minggu-4 | 172 | 179.927 | -2.1678 | 0.97977 | 179.937 |
| | Minggu-5 | 209 | 181.918 | -1.7519 | 1.11458 | 197.449 |
| | Minggu-6 | 160 | 179.724 | -1.7961 | 0.89322 | 160.988 |
| | Minggu-7 | 198 | 183.152 | -1.2737 | 1.04115 | 184.461 |
| | Minggu-8 | 169 | 182.353 | -1.2263 | 0.92353 | 167.905 |
| | Minggu-9 | 196 | 180.535 | -1.2854 | 1.09049 | 197.613 |
| | Minggu-10 | 206 | 183.419 | -0.8685 | 1.08979 | 194.68 |
| | Minggu-11 | 166 | 179.583 | -1.1652 | 0.94551 | 173.031 |
| | Minggu-12 | 147 | 181.492 | -0.8578 | 0.79189 | 140.929 |
| | Minggu-13 | 178 | 182.723 | -0.6489 | 0.95937 | 172.999 |
| | Minggu-14 | 195 | 182.732 | -0.5831 | 1.06197 | 193.254 |
| | Minggu-15 | 173 | 182.297 | -0.5684 | 0.94797 | 172.651 |
| | Minggu-16 | 197 | 181.263 | -0.6149 | 1.0906 | 198.269 |
| | Minggu-17 | 168 | 182.368 | -0.4429 | 0.90965 | 164.094 |
| | Minggu-18 | 137 | 181.236 | -0.5118 | 0.75983 | 138.31 |
| | Minggu-19 | 192 | 181.13 | -0.4713 | 1.05682 | 190.928 |
| | Minggu-20 | 139 | 176.652 | -0.8718 | 0.81179 | 147.158 |
| | Minggu-21 | 214 | 175.954 | -0.8546 | 1.21462 | 213.475 |
| | Minggu-22 | 185 | 178.18 | -0.5465 | 1.01466 | 177.206 |
| | Minggu-23 | 138 | 174.759 | -0.8339 | 0.80763 | 143.816 |
| | Minggu-24 | 171 | 176.518 | -0.5746 | 0.94994 | 164.856 |
| | Minggu-25 | 246 | 177.523 | -0.4166 | 1.3693 | 240.599 |
| | Minggu-26 | 227 | 178.962 | -0.2311 | 1.25094 | 221.206 |

| | Periode Minggu | Penjualan | Level | Trend | Seasonal | Forecast |
|--|-----------------------|------------------|--------------|--------------|-----------------|-----------------|
| | Minggu-27 | 174 | 182.23 | 0.11881 | 0.93078 | 165.882 |
| | Minggu-28 | 250 | 183.068 | 0.19077 | 1.35841 | 247.558 |
| | Minggu-29 | 233 | 181.738 | 0.03866 | 1.29673 | 237.937 |
| | Minggu-30 | 207 | 186.357 | 0.4967 | 1.07522 | 194.733 |
| | Minggu-31 | 181 | 186.557 | 0.46698 | 0.97231 | 181.723 |
| | Minggu-32 | 223 | 186.57 | 0.42166 | 1.19919 | 224.359 |
| | Minggu-33 | 134 | 183.625 | 0.08497 | 0.74832 | 140.316 |
| | Minggu-34 | 164 | 182.444 | -0.0416 | 0.90742 | 166.875 |
| | Minggu-35 | 202 | 183.5 | 0.06817 | 1.092 | 199.005 |
| | Minggu-36 | 171 | 183.45 | 0.05625 | 0.93295 | 171.278 |
| | Minggu-37 | 142 | 182.923 | -0.002 | 0.77963 | 143.136 |
| | Minggu-38 | 192 | 181.775 | -0.1166 | 1.06533 | 195.056 |
| | Minggu-39 | 148 | 181.672 | -0.1153 | 0.81457 | 147.972 |
| | Minggu-40 | 160 | 181.766 | -0.0944 | 0.87889 | 159.541 |
| | Minggu-41 | 206 | 178.261 | -0.4354 | 1.18634 | 216.144 |
| | Minggu-42 | 159 | 177.872 | -0.4308 | 0.89359 | 158.896 |
| | Minggu-43 | 184 | 182.529 | 0.07801 | 0.97165 | 171.692 |
| | Minggu-44 | 154 | 181.69 | -0.0136 | 0.85341 | 155.957 |
| | Minggu-45 | 179 | 185.744 | 0.39309 | 0.93611 | 169.513 |
| | Minggu-46 | 162 | 182.252 | 0.00462 | 0.9153 | 170.918 |
| | Minggu-47 | 116 | 183.949 | 0.17378 | 0.62289 | 113.369 |
| | Minggu-48 | 154 | 189.95 | 0.75656 | 0.77864 | 142.708 |

Tawar Kulit : alpha 0,2 beta 0,3 dan gamma 0,1 dengan nilai rata-rata mape 3,67

| | Periode | Penjualan | Level | Trend | Seasonal | Forecast |
|------|----------------|------------------|--------------|--------------|-----------------|-----------------|
| 2022 | Minggu-1 | 177 | | | 1.35719 | |
| | Minggu-2 | 138 | | | 1.05815 | |
| | Minggu-3 | 160 | | | 1.22684 | |
| | Minggu-4 | 106 | | | 0.81278 | |
| | Minggu-5 | 150 | | | 1.15016 | |
| | Minggu-6 | 120 | | | 0.92013 | |
| | Minggu-7 | 147 | | | 1.12716 | |
| | Minggu-8 | 119 | | | 0.91246 | |
| | Minggu-9 | 146 | | | 1.11949 | |
| | Minggu-10 | 168 | | | 1.28818 | |
| | Minggu-11 | 140 | | | 1.07348 | |
| | Minggu-12 | 132 | | | 1.01214 | |
| | Minggu-13 | 148 | | | 1.13482 | |
| | Minggu-14 | 182 | | | 1.39553 | |

| | Periode | Penjualan | Level | Trend | Seasonal | Forecast |
|------|----------------|------------------|--------------|--------------|-----------------|-----------------|
| | Minggu-15 | 150 | | | 1.15016 | |
| | Minggu-16 | 167 | | | 1.28051 | |
| | Minggu-17 | 134 | | | 1.02748 | |
| | Minggu-18 | 104 | | | 0.79744 | |
| | Minggu-19 | 141 | | | 1.08115 | |
| | Minggu-20 | 108 | | | 0.82812 | |
| | Minggu-21 | 154 | | | 1.18083 | |
| | Minggu-22 | 139 | | | 1.06581 | |
| | Minggu-23 | 114 | | | 0.87412 | |
| | Minggu-24 | 153 | | | 1.17316 | |
| | Minggu-25 | 173 | | | 1.32652 | |
| | Minggu-26 | 146 | | | 1.11949 | |
| | Minggu-27 | 121 | | | 0.9278 | |
| | Minggu-28 | 150 | | | 1.15016 | |
| | Minggu-29 | 140 | | | 1.07348 | |
| | Minggu-30 | 135 | | | 1.03514 | |
| | Minggu-31 | 114 | | | 0.87412 | |
| | Minggu-32 | 152 | | | 1.1655 | |
| | Minggu-33 | 98 | | | 0.75144 | |
| | Minggu-34 | 114 | | | 0.87412 | |
| | Minggu-35 | 131 | | | 1.00447 | |
| | Minggu-36 | 83 | | | 0.63642 | |
| | Minggu-37 | 102 | | | 0.78211 | |
| | Minggu-38 | 128 | | | 0.98147 | |
| | Minggu-39 | 93 | | | 0.7131 | |
| | Minggu-40 | 130 | | | 0.99681 | |
| | Minggu-41 | 135 | | | 1.03514 | |
| | Minggu-42 | 95 | | | 0.72843 | |
| | Minggu-43 | 114 | | | 0.87412 | |
| | Minggu-44 | 99 | | | 0.75911 | |
| | Minggu-45 | 91 | | | 0.69776 | |
| | Minggu-46 | 105 | | | 0.80511 | |
| | Minggu-47 | 106 | | | 0.81278 | |
| | Minggu-48 | 108 | 130.417 | -0.27 | 0.82812 | |
| 2023 | Minggu-1 | 164 | 128.284 | -0.8301 | 1.34931 | 176.631 |
| | Minggu-2 | 119 | 124.455 | -1.7297 | 1.04795 | 134.864 |
| | Minggu-3 | 152 | 122.959 | -1.6594 | 1.22777 | 150.564 |
| | Minggu-4 | 95 | 120.417 | -1.9245 | 0.81039 | 98.5901 |
| | Minggu-5 | 136 | 118.443 | -1.9393 | 1.14997 | 136.285 |

| | Periode | Penjualan | Level | Trend | Seasonal | Forecast |
|--|----------------|------------------|--------------|--------------|-----------------|-----------------|
| | Minggu-6 | 106 | 116.243 | -2.0174 | 0.9193 | 107.198 |
| | Minggu-7 | 131 | 114.625 | -1.8977 | 1.12873 | 128.75 |
| | Minggu-8 | 106 | 113.415 | -1.6911 | 0.91468 | 102.859 |
| | Minggu-9 | 133 | 113.14 | -1.2663 | 1.12509 | 125.074 |
| | Minggu-10 | 157 | 113.875 | -0.6661 | 1.29723 | 144.114 |
| | Minggu-11 | 131 | 114.973 | -0.1367 | 1.08007 | 121.527 |
| | Minggu-12 | 117 | 114.989 | -0.0911 | 1.01268 | 116.231 |
| | Minggu-13 | 133 | 115.358 | 0.04699 | 1.13664 | 130.389 |
| | Minggu-14 | 165 | 115.971 | 0.21679 | 1.39825 | 161.051 |
| | Minggu-15 | 137 | 116.773 | 0.39237 | 1.15247 | 133.634 |
| | Minggu-16 | 147 | 116.692 | 0.25032 | 1.27843 | 150.031 |
| | Minggu-17 | 121 | 117.107 | 0.29965 | 1.02805 | 120.155 |
| | Minggu-18 | 89 | 116.246 | -0.0483 | 0.79426 | 93.6249 |
| | Minggu-19 | 128 | 116.637 | 0.08334 | 1.08278 | 125.627 |
| | Minggu-20 | 99 | 117.286 | 0.25305 | 0.82971 | 96.6578 |
| | Minggu-21 | 136 | 117.066 | 0.1111 | 1.17892 | 138.794 |
| | Minggu-22 | 126 | 117.385 | 0.17365 | 1.06657 | 124.889 |
| | Minggu-23 | 104 | 117.843 | 0.25871 | 0.87496 | 102.761 |
| | Minggu-24 | 142 | 118.689 | 0.43505 | 1.17549 | 138.552 |
| | Minggu-25 | 152 | 118.216 | 0.16275 | 1.32244 | 158.02 |
| | Minggu-26 | 134 | 118.643 | 0.24185 | 1.12048 | 132.524 |
| | Minggu-27 | 102 | 117.095 | -0.295 | 0.92212 | 110.301 |
| | Minggu-28 | 135 | 116.915 | -0.2605 | 1.15061 | 134.339 |
| | Minggu-29 | 126 | 116.799 | -0.2173 | 1.07401 | 125.227 |
| | Minggu-30 | 120 | 116.45 | -0.2566 | 1.03468 | 120.679 |
| | Minggu-31 | 99 | 115.606 | -0.4328 | 0.87234 | 101.568 |
| | Minggu-32 | 141 | 116.335 | -0.0845 | 1.17015 | 134.234 |
| | Minggu-33 | 87 | 116.156 | -0.1129 | 0.75119 | 87.3547 |
| | Minggu-34 | 105 | 116.858 | 0.13181 | 0.87656 | 101.435 |
| | Minggu-35 | 116 | 116.689 | 0.04141 | 1.00344 | 117.513 |
| | Minggu-36 | 74 | 116.639 | 0.0141 | 0.63622 | 74.2896 |
| | Minggu-37 | 94 | 117.36 | 0.22618 | 0.78399 | 91.2355 |
| | Minggu-38 | 113 | 117.096 | 0.079 | 0.97982 | 115.407 |
| | Minggu-39 | 83 | 117.019 | 0.03212 | 0.71272 | 83.5572 |
| | Minggu-40 | 116 | 116.915 | -0.0086 | 0.99634 | 116.677 |
| | Minggu-41 | 120 | 116.71 | -0.0674 | 1.03445 | 121.015 |
| | Minggu-42 | 80 | 115.279 | -0.4765 | 0.72499 | 84.9666 |
| | Minggu-43 | 101 | 114.951 | -0.432 | 0.87457 | 100.351 |
| | Minggu-44 | 79 | 112.429 | -1.059 | 0.75346 | 86.932 |

| | Periode | Penjualan | Level | Trend | Seasonal | Forecast |
|--|----------------|------------------|--------------|--------------|-----------------|-----------------|
| | Minggu-45 | 84 | 113.173 | -0.5181 | 0.70221 | 77.7101 |
| | Minggu-46 | 115 | 118.691 | 1.29285 | 0.82149 | 90.6999 |
| | Minggu-47 | 85 | 116.903 | 0.36856 | 0.80421 | 97.5208 |
| | Minggu-48 | 99 | 117.727 | 0.50516 | 0.8294 | 97.1146 |

Manis Bulat : alpha 0,4 beta 0,1 dan gamma 0,1 dengan nilai rata-rata mape 3,69

| | Periode | Penjualan | Level | Trend | Seasonal | Forecast |
|------|----------------|------------------|--------------|--------------|-----------------|-----------------|
| 2022 | Minggu-1 | 198 | | | 1.35752 | |
| | Minggu-2 | 164 | | | 1.12441 | |
| | Minggu-3 | 215 | | | 1.47408 | |
| | Minggu-4 | 121 | | | 0.8296 | |
| | Minggu-5 | 161 | | | 1.10384 | |
| | Minggu-6 | 128 | | | 0.87759 | |
| | Minggu-7 | 158 | | | 1.08327 | |
| | Minggu-8 | 108 | | | 0.74047 | |
| | Minggu-9 | 147 | | | 1.00786 | |
| | Minggu-10 | 188 | | | 1.28896 | |
| | Minggu-11 | 125 | | | 0.85702 | |
| | Minggu-12 | 113 | | | 0.77475 | |
| | Minggu-13 | 156 | | | 1.06956 | |
| | Minggu-14 | 174 | | | 1.19297 | |
| | Minggu-15 | 122 | | | 0.83645 | |
| | Minggu-16 | 159 | | | 1.09013 | |
| | Minggu-17 | 143 | | | 0.98043 | |
| | Minggu-18 | 116 | | | 0.79531 | |
| | Minggu-19 | 145 | | | 0.99414 | |
| | Minggu-20 | 63 | | | 0.43194 | |
| | Minggu-21 | 161 | | | 1.10384 | |
| | Minggu-22 | 147 | | | 1.00786 | |
| | Minggu-23 | 124 | | | 0.85016 | |
| | Minggu-24 | 146 | | | 1.001 | |
| | Minggu-25 | 213 | | | 1.46036 | |
| | Minggu-26 | 199 | | | 1.36438 | |
| | Minggu-27 | 158 | | | 1.08327 | |
| | Minggu-28 | 220 | | | 1.50836 | |
| | Minggu-29 | 150 | | | 1.02842 | |
| | Minggu-30 | 122 | | | 0.83645 | |
| | Minggu-31 | 122 | | | 0.83645 | |
| | Minggu-32 | 157 | | | 1.07642 | |

| | Periode | Penjualan | Level | Trend | Seasonal | Forecast |
|------|----------------|------------------|--------------|--------------|-----------------|-----------------|
| | Minggu-33 | 99 | | | 0.67876 | |
| | Minggu-34 | 122 | | | 0.83645 | |
| | Minggu-35 | 132 | | | 0.90501 | |
| | Minggu-36 | 88 | | | 0.60334 | |
| | Minggu-37 | 107 | | | 0.73361 | |
| | Minggu-38 | 136 | | | 0.93244 | |
| | Minggu-39 | 104 | | | 0.71304 | |
| | Minggu-40 | 170 | | | 1.16555 | |
| | Minggu-41 | 155 | | | 1.06271 | |
| | Minggu-42 | 112 | | | 0.76789 | |
| | Minggu-43 | 149 | | | 1.02157 | |
| | Minggu-44 | 132 | | | 0.90501 | |
| | Minggu-45 | 171 | | | 1.1724 | |
| | Minggu-46 | 194 | | | 1.3301 | |
| | Minggu-47 | 134 | | | 0.91873 | |
| | Minggu-48 | 173 | 145.854 | -0.29 | 1.18612 | |
| 2023 | Minggu-1 | 176 | 139.196 | -0.9287 | 1.34821 | 197.603 |
| | Minggu-2 | 147 | 135.255 | -1.23 | 1.12065 | 155.47 |
| | Minggu-3 | 196 | 133.601 | -1.2724 | 1.47337 | 197.563 |
| | Minggu-4 | 108 | 131.471 | -1.3581 | 0.82878 | 109.779 |
| | Minggu-5 | 149 | 132.061 | -1.1633 | 1.10628 | 143.624 |
| | Minggu-6 | 111 | 129.132 | -1.3399 | 0.87579 | 114.874 |
| | Minggu-7 | 144 | 129.847 | -1.1344 | 1.08585 | 138.433 |
| | Minggu-8 | 96 | 129.087 | -1.0969 | 0.74079 | 95.3074 |
| | Minggu-9 | 129 | 127.992 | -1.0968 | 1.00786 | 128.995 |
| | Minggu-10 | 169 | 128.582 | -0.928 | 1.2915 | 163.562 |
| | Minggu-11 | 114 | 129.8 | -0.7134 | 0.85915 | 109.402 |
| | Minggu-12 | 98 | 128.049 | -0.8172 | 0.7738 | 100.01 |
| | Minggu-13 | 143 | 129.819 | -0.5585 | 1.07276 | 136.083 |
| | Minggu-14 | 164 | 132.545 | -0.23 | 1.19741 | 154.204 |
| | Minggu-15 | 108 | 131.036 | -0.358 | 0.83523 | 110.675 |
| | Minggu-16 | 146 | 131.978 | -0.2279 | 1.09174 | 142.456 |
| | Minggu-17 | 127 | 130.864 | -0.3165 | 0.97944 | 129.172 |
| | Minggu-18 | 105 | 131.138 | -0.2575 | 0.79585 | 103.826 |
| | Minggu-19 | 131 | 131.237 | -0.2219 | 0.99455 | 130.114 |
| | Minggu-20 | 46 | 121.208 | -1.2026 | 0.4267 | 56.5904 |
| | Minggu-21 | 149 | 125.996 | -0.6035 | 1.11172 | 132.467 |
| | Minggu-22 | 130 | 126.83 | -0.4597 | 1.00957 | 126.378 |
| | Minggu-23 | 121 | 132.753 | 0.17847 | 0.85629 | 107.436 |
| | Minggu-24 | 135 | 133.705 | 0.25584 | 1.00187 | 133.064 |

| | Periode | Penjualan | Level | Trend | Seasonal | Forecast |
|--|----------------|------------------|--------------|--------------|-----------------|-----------------|
| | Minggu-25 | 188 | 131.87 | 0.04682 | 1.45689 | 195.631 |
| | Minggu-26 | 175 | 130.456 | -0.0993 | 1.36208 | 179.985 |
| | Minggu-27 | 144 | 131.386 | 0.00364 | 1.08455 | 141.212 |
| | Minggu-28 | 208 | 133.993 | 0.26399 | 1.51275 | 198.182 |
| | Minggu-29 | 146 | 137.34 | 0.57229 | 1.03189 | 138.073 |
| | Minggu-30 | 121 | 140.611 | 0.84214 | 0.83886 | 115.357 |
| | Minggu-31 | 101 | 133.171 | 0.01394 | 0.82865 | 118.319 |
| | Minggu-32 | 141 | 132.307 | -0.0739 | 1.07535 | 143.363 |
| | Minggu-33 | 90 | 132.378 | -0.0594 | 0.67887 | 89.7546 |
| | Minggu-34 | 111 | 132.472 | -0.044 | 0.8366 | 110.678 |
| | Minggu-35 | 121 | 132.937 | 0.00685 | 0.90553 | 119.849 |
| | Minggu-36 | 77 | 130.815 | -0.206 | 0.60187 | 80.2106 |
| | Minggu-37 | 95 | 130.164 | -0.2505 | 0.73323 | 95.8161 |
| | Minggu-38 | 123 | 130.713 | -0.1706 | 0.93329 | 121.136 |
| | Minggu-39 | 95 | 131.618 | -0.063 | 0.71392 | 93.0822 |
| | Minggu-40 | 158 | 133.157 | 0.09715 | 1.16765 | 153.334 |
| | Minggu-41 | 140 | 132.648 | 0.03657 | 1.06198 | 141.61 |
| | Minggu-42 | 98 | 130.66 | -0.1659 | 0.76611 | 101.887 |
| | Minggu-43 | 132 | 129.981 | -0.2171 | 1.02096 | 133.308 |
| | Minggu-44 | 117 | 129.571 | -0.2365 | 0.90481 | 117.438 |
| | Minggu-45 | 152 | 129.46 | -0.224 | 1.17257 | 151.632 |
| | Minggu-46 | 173 | 129.568 | -0.1908 | 1.33061 | 171.896 |
| | Minggu-47 | 123 | 131.179 | -0.0106 | 0.92062 | 118.862 |
| | Minggu-48 | 157 | 131.647 | 0.03727 | 1.18676 | 155.581 |

Manis Btl :alpha 0,2 beta 0,1 dan gamma 0,1 dengan nilai rata-rata mape 2,59

| | Periode | Penjualan | Level | Trend | Seasonal | Forecast |
|------|----------------|------------------|--------------|--------------|-----------------|-----------------|
| 2022 | Minggu-1 | 308 | | | 1.3587 | |
| | Minggu-2 | 272 | | | 1.19989 | |
| | Minggu-3 | 295 | | | 1.30135 | |
| | Minggu-4 | 190 | | | 0.83816 | |
| | Minggu-5 | 269 | | | 1.18666 | |
| | Minggu-6 | 204 | | | 0.89992 | |
| | Minggu-7 | 241 | | | 1.06314 | |
| | Minggu-8 | 211 | | | 0.9308 | |
| | Minggu-9 | 215 | | | 0.94844 | |
| | Minggu-10 | 274 | | | 1.20871 | |
| | Minggu-11 | 225 | | | 0.99256 | |
| | Minggu-12 | 196 | | | 0.86463 | |

| | Periode | Penjualan | Level | Trend | Seasonal | Forecast |
|------|----------------|------------------|--------------|--------------|-----------------|-----------------|
| | Minggu-13 | 259 | | | 1.14254 | |
| | Minggu-14 | 321 | | | 1.41605 | |
| | Minggu-15 | 248 | | | 1.09402 | |
| | Minggu-16 | 255 | | | 1.1249 | |
| | Minggu-17 | 226 | | | 0.99697 | |
| | Minggu-18 | 195 | | | 0.86022 | |
| | Minggu-19 | 272 | | | 1.19989 | |
| | Minggu-20 | 178 | | | 0.78522 | |
| | Minggu-21 | 294 | | | 1.29694 | |
| | Minggu-22 | 243 | | | 1.07196 | |
| | Minggu-23 | 235 | | | 1.03667 | |
| | Minggu-24 | 271 | | | 1.19548 | |
| | Minggu-25 | 327 | | | 1.44251 | |
| | Minggu-26 | 311 | | | 1.37193 | |
| | Minggu-27 | 230 | | | 1.01461 | |
| | Minggu-28 | 282 | | | 1.244 | |
| | Minggu-29 | 276 | | | 1.21754 | |
| | Minggu-30 | 228 | | | 1.00579 | |
| | Minggu-31 | 191 | | | 0.84257 | |
| | Minggu-32 | 245 | | | 1.08078 | |
| | Minggu-33 | 155 | | | 0.68376 | |
| | Minggu-34 | 206 | | | 0.90874 | |
| | Minggu-35 | 215 | | | 0.94844 | |
| | Minggu-36 | 153 | | | 0.67494 | |
| | Minggu-37 | 181 | | | 0.79846 | |
| | Minggu-38 | 209 | | | 0.92197 | |
| | Minggu-39 | 180 | | | 0.79404 | |
| | Minggu-40 | 180 | | | 0.79404 | |
| | Minggu-41 | 211 | | | 0.9308 | |
| | Minggu-42 | 144 | | | 0.63524 | |
| | Minggu-43 | 194 | | | 0.8558 | |
| | Minggu-44 | 159 | | | 0.70141 | |
| | Minggu-45 | 144 | | | 0.63524 | |
| | Minggu-46 | 187 | | | 0.82492 | |
| | Minggu-47 | 165 | | | 0.72787 | |
| | Minggu-48 | 211 | 226.688 | -0.33 | 0.9308 | |
| 2023 | Minggu-1 | 284 | 222.887 | -0.6812 | 1.35025 | 307.545 |
| | Minggu-2 | 251 | 219.602 | -0.9416 | 1.1942 | 266.622 |
| | Minggu-3 | 274 | 217.038 | -1.1038 | 1.29746 | 284.554 |
| | Minggu-4 | 182 | 216.176 | -1.0796 | 0.83853 | 180.987 |

| | Periode | Penjualan | Level | Trend | Seasonal | Forecast |
|--|----------------|------------------|--------------|--------------|-----------------|-----------------|
| | Minggu-5 | 245 | 213.37 | -1.2523 | 1.18281 | 255.245 |
| | Minggu-6 | 191 | 212.142 | -1.2498 | 0.89996 | 190.888 |
| | Minggu-7 | 228 | 211.606 | -1.1785 | 1.06457 | 224.208 |
| | Minggu-8 | 197 | 210.671 | -1.1541 | 0.93123 | 195.865 |
| | Minggu-9 | 211 | 212.108 | -0.895 | 0.95308 | 198.715 |
| | Minggu-10 | 270 | 213.646 | -0.6517 | 1.21422 | 255.295 |
| | Minggu-11 | 214 | 213.516 | -0.5995 | 0.99353 | 211.408 |
| | Minggu-12 | 193 | 214.977 | -0.3935 | 0.86794 | 184.093 |
| | Minggu-13 | 237 | 213.153 | -0.5365 | 1.13948 | 245.171 |
| | Minggu-14 | 304 | 213.03 | -0.4952 | 1.41714 | 301.075 |
| | Minggu-15 | 227 | 211.526 | -0.5961 | 1.09193 | 232.516 |
| | Minggu-16 | 241 | 211.592 | -0.5298 | 1.12631 | 237.274 |
| | Minggu-17 | 213 | 211.58 | -0.4781 | 0.99794 | 210.422 |
| | Minggu-18 | 176 | 209.801 | -0.6081 | 0.85808 | 181.593 |
| | Minggu-19 | 251 | 209.192 | -0.6083 | 1.19989 | 251.009 |
| | Minggu-20 | 158 | 207.11 | -0.7556 | 0.78299 | 163.784 |
| | Minggu-21 | 278 | 207.954 | -0.5957 | 1.30093 | 267.629 |
| | Minggu-22 | 227 | 208.239 | -0.5076 | 1.07377 | 222.28 |
| | Minggu-23 | 217 | 208.05 | -0.4758 | 1.0373 | 215.349 |
| | Minggu-24 | 257 | 209.055 | -0.3277 | 1.19886 | 248.15 |
| | Minggu-25 | 315 | 210.655 | -0.1349 | 1.4478 | 301.091 |
| | Minggu-26 | 274 | 208.36 | -0.3509 | 1.36624 | 288.82 |
| | Minggu-27 | 213 | 208.394 | -0.3124 | 1.01536 | 211.049 |
| | Minggu-28 | 272 | 210.195 | -0.1011 | 1.24901 | 258.854 |
| | Minggu-29 | 262 | 211.113 | 0.00082 | 1.21989 | 255.796 |
| | Minggu-30 | 212 | 211.047 | -0.0059 | 1.00566 | 212.336 |
| | Minggu-31 | 174 | 210.135 | -0.0965 | 0.84112 | 177.817 |
| | Minggu-32 | 230 | 210.593 | -0.0411 | 1.08192 | 227.006 |
| | Minggu-33 | 136 | 208.221 | -0.2741 | 0.6807 | 143.967 |
| | Minggu-34 | 187 | 207.514 | -0.3174 | 0.90798 | 188.97 |
| | Minggu-35 | 197 | 207.299 | -0.3072 | 0.94863 | 196.514 |
| | Minggu-36 | 139 | 206.782 | -0.3281 | 0.67466 | 139.706 |
| | Minggu-37 | 163 | 205.992 | -0.3743 | 0.79774 | 164.845 |
| | Minggu-38 | 197 | 207.229 | -0.2132 | 0.92484 | 189.574 |
| | Minggu-39 | 160 | 205.912 | -0.3235 | 0.79234 | 164.379 |
| | Minggu-40 | 170 | 207.29 | -0.1534 | 0.79665 | 163.247 |
| | Minggu-41 | 195 | 207.609 | -0.1062 | 0.93164 | 192.802 |
| | Minggu-42 | 128 | 206.302 | -0.2263 | 0.63376 | 131.813 |
| | Minggu-43 | 176 | 205.991 | -0.2347 | 0.85566 | 176.36 |
| | Minggu-44 | 140 | 204.525 | -0.3578 | 0.69972 | 144.319 |

| | Periode | Penjualan | Level | Trend | Seasonal | Forecast |
|--|----------------|------------------|--------------|--------------|-----------------|-----------------|
| | Minggu-45 | 128 | 203.634 | -0.4112 | 0.63457 | 129.694 |
| | Minggu-46 | 168 | 203.309 | -0.4025 | 0.82506 | 167.643 |
| | Minggu-47 | 151 | 203.816 | -0.3116 | 0.72917 | 147.691 |
| | Minggu-48 | 197 | 205.133 | -0.1488 | 0.93375 | 189.421 |

Manis Gulung : alpha 0,4 beta 0,1 dan gamma 0,1 dengan nilai rata-rata mape 4,74

| | Periode | Penjualan | Level | Trend | Seasonal | Forecast |
|------|----------------|------------------|--------------|--------------|-----------------|-----------------|
| 2022 | Minggu-1 | 87 | | | 1.20069 | |
| | Minggu-2 | 79 | | | 1.09028 | |
| | Minggu-3 | 87 | | | 1.20069 | |
| | Minggu-4 | 72 | | | 0.99367 | |
| | Minggu-5 | 91 | | | 1.25589 | |
| | Minggu-6 | 60 | | | 0.82806 | |
| | Minggu-7 | 69 | | | 0.95227 | |
| | Minggu-8 | 67 | | | 0.92467 | |
| | Minggu-9 | 64 | | | 0.88327 | |
| | Minggu-10 | 88 | | | 1.21449 | |
| | Minggu-11 | 69 | | | 0.95227 | |
| | Minggu-12 | 74 | | | 1.02128 | |
| | Minggu-13 | 86 | | | 1.18689 | |
| | Minggu-14 | 98 | | | 1.3525 | |
| | Minggu-15 | 75 | | | 1.03508 | |
| | Minggu-16 | 87 | | | 1.20069 | |
| | Minggu-17 | 63 | | | 0.86947 | |
| | Minggu-18 | 63 | | | 0.86947 | |
| | Minggu-19 | 76 | | | 1.04888 | |
| | Minggu-20 | 59 | | | 0.81426 | |
| | Minggu-21 | 91 | | | 1.25589 | |
| | Minggu-22 | 72 | | | 0.99367 | |
| | Minggu-23 | 56 | | | 0.77286 | |
| | Minggu-24 | 72 | | | 0.99367 | |
| | Minggu-25 | 81 | | | 1.11788 | |
| | Minggu-26 | 96 | | | 1.3249 | |
| | Minggu-27 | 74 | | | 1.02128 | |
| | Minggu-28 | 95 | | | 1.3111 | |
| | Minggu-29 | 74 | | | 1.02128 | |
| | Minggu-30 | 59 | | | 0.81426 | |
| | Minggu-31 | 59 | | | 0.81426 | |
| | Minggu-32 | 52 | | | 0.71765 | |

| | Periode | Penjualan | Level | Trend | Seasonal | Forecast |
|------|----------------|------------------|--------------|--------------|-----------------|-----------------|
| | Minggu-33 | 58 | | | 0.80046 | |
| | Minggu-34 | 67 | | | 0.92467 | |
| | Minggu-35 | 76 | | | 1.04888 | |
| | Minggu-36 | 55 | | | 0.75906 | |
| | Minggu-37 | 50 | | | 0.69005 | |
| | Minggu-38 | 84 | | | 1.15929 | |
| | Minggu-39 | 60 | | | 0.82806 | |
| | Minggu-40 | 73 | | | 1.00748 | |
| | Minggu-41 | 77 | | | 1.06268 | |
| | Minggu-42 | 64 | | | 0.88327 | |
| | Minggu-43 | 91 | | | 1.25589 | |
| | Minggu-44 | 63 | | | 0.86947 | |
| | Minggu-45 | 59 | | | 0.81426 | |
| | Minggu-46 | 74 | | | 1.02128 | |
| | Minggu-47 | 62 | | | 0.85566 | |
| | Minggu-48 | 70 | 72.4583 | -0.19 | 0.96607 | |
| 2023 | Minggu-1 | 76 | 68.6827 | -0.5441 | 1.19127 | 86.7778 |
| | Minggu-2 | 62 | 63.6296 | -0.995 | 1.07869 | 74.2902 |
| | Minggu-3 | 76 | 62.8995 | -0.9686 | 1.20145 | 75.2046 |
| | Minggu-4 | 62 | 62.1164 | -0.95 | 0.99412 | 61.5392 |
| | Minggu-5 | 82 | 62.8167 | -0.785 | 1.26084 | 76.8186 |
| | Minggu-6 | 47 | 59.9226 | -0.9959 | 0.82369 | 51.3661 |
| | Minggu-7 | 59 | 60.1389 | -0.8747 | 0.95515 | 56.1143 |
| | Minggu-8 | 57 | 60.216 | -0.7795 | 0.92686 | 54.7998 |
| | Minggu-9 | 55 | 60.5695 | -0.6662 | 0.88574 | 52.4983 |
| | Minggu-10 | 76 | 60.973 | -0.5592 | 1.21769 | 72.752 |
| | Minggu-11 | 59 | 61.0311 | -0.4975 | 0.95372 | 57.5303 |
| | Minggu-12 | 61 | 60.2119 | -0.5297 | 1.02046 | 61.8216 |
| | Minggu-13 | 73 | 60.4114 | -0.4567 | 1.18904 | 70.8361 |
| | Minggu-14 | 84 | 60.8157 | -0.3706 | 1.35537 | 81.0888 |
| | Minggu-15 | 66 | 61.7724 | -0.2379 | 1.03841 | 62.5653 |
| | Minggu-16 | 76 | 62.2394 | -0.1674 | 1.20273 | 73.8838 |
| | Minggu-17 | 55 | 62.5461 | -0.12 | 0.87045 | 53.9695 |
| | Minggu-18 | 53 | 61.8385 | -0.1788 | 0.86823 | 54.2773 |
| | Minggu-19 | 71 | 64.0724 | 0.0625 | 1.0548 | 64.6736 |
| | Minggu-20 | 49 | 62.5518 | -0.0958 | 0.81117 | 52.2225 |
| | Minggu-21 | 79 | 62.635 | -0.0779 | 1.25643 | 78.4381 |
| | Minggu-22 | 63 | 62.8946 | -0.0442 | 0.99447 | 62.1614 |
| | Minggu-23 | 47 | 62.0356 | -0.1256 | 0.77134 | 48.5745 |
| | Minggu-24 | 60 | 61.2988 | -0.1868 | 0.99219 | 61.5183 |

| | Periode | Penjualan | Level | Trend | Seasonal | Forecast |
|--|----------------|------------------|--------------|--------------|-----------------|-----------------|
| | Minggu-25 | 68 | 60.9989 | -0.1981 | 1.11757 | 68.3161 |
| | Minggu-26 | 93 | 64.5581 | 0.17766 | 1.33647 | 80.555 |
| | Minggu-27 | 66 | 64.6914 | 0.17323 | 1.02117 | 66.1131 |
| | Minggu-28 | 85 | 64.8513 | 0.17188 | 1.31106 | 85.044 |
| | Minggu-29 | 63 | 63.6889 | 0.03846 | 1.01807 | 66.4066 |
| | Minggu-30 | 50 | 62.7986 | -0.0544 | 0.81245 | 51.8907 |
| | Minggu-31 | 56 | 65.1561 | 0.18677 | 0.81878 | 51.0901 |
| | Minggu-32 | 45 | 64.2874 | 0.08123 | 0.71589 | 46.8936 |
| | Minggu-33 | 51 | 64.1066 | 0.05502 | 0.79997 | 51.5246 |
| | Minggu-34 | 57 | 63.1544 | -0.0457 | 0.92246 | 59.3282 |
| | Minggu-35 | 70 | 64.5604 | 0.09947 | 1.05242 | 66.1934 |
| | Minggu-36 | 47 | 63.5635 | -0.0102 | 0.75709 | 49.0805 |
| | Minggu-37 | 42 | 62.478 | -0.1177 | 0.68827 | 43.8551 |
| | Minggu-38 | 73 | 62.6041 | -0.0933 | 1.15996 | 72.2935 |
| | Minggu-39 | 49 | 61.1762 | -0.2268 | 0.82535 | 51.7628 |
| | Minggu-40 | 59 | 59.9945 | -0.3223 | 1.00507 | 61.405 |
| | Minggu-41 | 69 | 61.7754 | -0.1119 | 1.06811 | 63.4125 |
| | Minggu-42 | 59 | 63.7171 | 0.09341 | 0.88754 | 54.4653 |
| | Minggu-43 | 82 | 64.4032 | 0.15268 | 1.25763 | 80.1393 |
| | Minggu-44 | 53 | 63.1163 | 0.00872 | 0.86649 | 56.1291 |
| | Minggu-45 | 51 | 62.9284 | -0.0109 | 0.81388 | 51.4003 |
| | Minggu-46 | 70 | 65.1671 | 0.21403 | 1.02657 | 64.2561 |
| | Minggu-47 | 52 | 63.5373 | 0.02964 | 0.85194 | 55.9443 |
| | Minggu-48 | 58 | 62.1549 | -0.1116 | 0.96278 | 61.4103 |

Manis Dorayaki : alpha 0,3 beta 0,1 dan gamma 0,1 dengan nilai rata-rata mape 2,68

| | Periode | Penjualan | Level | Trend | Seasonal | Forecast |
|------|----------------|------------------|--------------|--------------|-----------------|-----------------|
| 2022 | Minggu-1 | 448 | | | 1.24987 | |
| | Minggu-2 | 389 | | | 1.08527 | |
| | Minggu-3 | 398 | | | 1.11037 | |
| | Minggu-4 | 247 | | | 0.6891 | |
| | Minggu-5 | 437 | | | 1.21918 | |
| | Minggu-6 | 357 | | | 0.99599 | |
| | Minggu-7 | 432 | | | 1.20523 | |
| | Minggu-8 | 389 | | | 1.08527 | |
| | Minggu-9 | 364 | | | 1.01552 | |
| | Minggu-10 | 578 | | | 1.61255 | |
| | Minggu-11 | 368 | | | 1.02668 | |

| | Periode | Penjualan | Level | Trend | Seasonal | Forecast |
|------|----------------|------------------|--------------|--------------|-----------------|-----------------|
| | Minggu-12 | 331 | | | 0.92345 | |
| | Minggu-13 | 428 | | | 1.19407 | |
| | Minggu-14 | 479 | | | 1.33636 | |
| | Minggu-15 | 378 | | | 1.05458 | |
| | Minggu-16 | 370 | | | 1.03226 | |
| | Minggu-17 | 358 | | | 0.99878 | |
| | Minggu-18 | 332 | | | 0.92624 | |
| | Minggu-19 | 377 | | | 1.05179 | |
| | Minggu-20 | 311 | | | 0.86765 | |
| | Minggu-21 | 391 | | | 1.09085 | |
| | Minggu-22 | 409 | | | 1.14106 | |
| | Minggu-23 | 366 | | | 1.0211 | |
| | Minggu-24 | 416 | | | 1.16059 | |
| | Minggu-25 | 439 | | | 1.22476 | |
| | Minggu-26 | 393 | | | 1.09643 | |
| | Minggu-27 | 382 | | | 1.06574 | |
| | Minggu-28 | 429 | | | 1.19686 | |
| | Minggu-29 | 402 | | | 1.12153 | |
| | Minggu-30 | 365 | | | 1.01831 | |
| | Minggu-31 | 332 | | | 0.92624 | |
| | Minggu-32 | 357 | | | 0.99599 | |
| | Minggu-33 | 240 | | | 0.66957 | |
| | Minggu-34 | 315 | | | 0.87881 | |
| | Minggu-35 | 349 | | | 0.97367 | |
| | Minggu-36 | 260 | | | 0.72537 | |
| | Minggu-37 | 284 | | | 0.79233 | |
| | Minggu-38 | 349 | | | 0.97367 | |
| | Minggu-39 | 236 | | | 0.65841 | |
| | Minggu-40 | 289 | | | 0.80628 | |
| | Minggu-41 | 296 | | | 0.82581 | |
| | Minggu-42 | 266 | | | 0.74211 | |
| | Minggu-43 | 298 | | | 0.83139 | |
| | Minggu-44 | 315 | | | 0.87881 | |
| | Minggu-45 | 318 | | | 0.88718 | |
| | Minggu-46 | 335 | | | 0.93461 | |
| | Minggu-47 | 266 | | | 0.74211 | |
| | Minggu-48 | 337 | 358.438 | -0.57 | 0.94019 | |
| 2023 | Minggu-1 | 414 | 349.88 | -1.3651 | 1.24321 | 447.293 |
| | Minggu-2 | 349 | 340.435 | -2.1731 | 1.07926 | 378.232 |
| | Minggu-3 | 376 | 338.37 | -2.1623 | 1.11046 | 375.597 |

| | Periode | Penjualan | Level | Trend | Seasonal | Forecast |
|--|----------------|------------------|--------------|--------------|-----------------|-----------------|
| | Minggu-4 | 207 | 325.463 | -3.2368 | 0.68379 | 231.682 |
| | Minggu-5 | 402 | 324.477 | -3.0117 | 1.22115 | 392.852 |
| | Minggu-6 | 330 | 324.425 | -2.7158 | 0.99811 | 320.176 |
| | Minggu-7 | 408 | 326.753 | -2.2113 | 1.20957 | 387.733 |
| | Minggu-8 | 365 | 328.076 | -1.8579 | 1.08799 | 352.215 |
| | Minggu-9 | 340 | 328.794 | -1.6003 | 1.01738 | 331.281 |
| | Minggu-10 | 536 | 328.753 | -1.4444 | 1.61434 | 527.618 |
| | Minggu-11 | 340 | 328.466 | -1.3287 | 1.02752 | 336.041 |
| | Minggu-12 | 297 | 325.482 | -1.4942 | 0.92236 | 302.096 |
| | Minggu-13 | 395 | 326.032 | -1.2898 | 1.19582 | 386.864 |
| | Minggu-14 | 453 | 329.014 | -0.8626 | 1.3404 | 433.97 |
| | Minggu-15 | 352 | 329.841 | -0.6937 | 1.05584 | 346.061 |
| | Minggu-16 | 347 | 331.25 | -0.4834 | 1.03379 | 339.765 |
| | Minggu-17 | 324 | 328.855 | -0.6745 | 0.99743 | 330.363 |
| | Minggu-18 | 304 | 328.189 | -0.6737 | 0.92625 | 303.975 |
| | Minggu-19 | 347 | 328.235 | -0.6017 | 1.05233 | 344.476 |
| | Minggu-20 | 283 | 327.193 | -0.6457 | 0.86738 | 284.273 |
| | Minggu-21 | 359 | 327.314 | -0.5691 | 1.09144 | 356.213 |
| | Minggu-22 | 381 | 328.891 | -0.3544 | 1.1428 | 372.837 |
| | Minggu-23 | 340 | 329.868 | -0.2213 | 1.02206 | 335.468 |
| | Minggu-24 | 396 | 333.114 | 0.12544 | 1.16341 | 382.586 |
| | Minggu-25 | 415 | 334.92 | 0.2935 | 1.22619 | 408.139 |
| | Minggu-26 | 376 | 337.529 | 0.52507 | 1.09818 | 367.537 |
| | Minggu-27 | 352 | 335.725 | 0.29207 | 1.06401 | 360.277 |
| | Minggu-28 | 397 | 334.722 | 0.1626 | 1.19578 | 402.165 |
| | Minggu-29 | 374 | 334.461 | 0.12021 | 1.1212 | 375.585 |
| | Minggu-30 | 335 | 332.9 | -0.0479 | 1.01711 | 340.707 |
| | Minggu-31 | 307 | 332.43 | -0.0901 | 0.92597 | 308.301 |
| | Minggu-32 | 332 | 332.639 | -0.0602 | 0.9962 | 331.007 |
| | Minggu-33 | 227 | 334.512 | 0.13313 | 0.67048 | 222.686 |
| | Minggu-34 | 289 | 332.907 | -0.0407 | 0.87774 | 294.091 |
| | Minggu-35 | 328 | 334.067 | 0.07944 | 0.97449 | 324.102 |
| | Minggu-36 | 244 | 334.817 | 0.14642 | 0.72571 | 242.38 |
| | Minggu-37 | 264 | 334.433 | 0.09339 | 0.79203 | 265.401 |
| | Minggu-38 | 317 | 331.84 | -0.1752 | 0.97183 | 325.718 |
| | Minggu-39 | 208 | 326.939 | -0.6478 | 0.65619 | 218.373 |
| | Minggu-40 | 270 | 328.865 | -0.3904 | 0.80775 | 263.081 |
| | Minggu-41 | 273 | 329.108 | -0.3271 | 0.82618 | 271.257 |
| | Minggu-42 | 238 | 326.359 | -0.5693 | 0.74082 | 243.992 |
| | Minggu-43 | 283 | 330.171 | -0.1311 | 0.83396 | 270.857 |

| | Periode | Penjualan | Level | Trend | Seasonal | Forecast |
|--|----------------|------------------|--------------|--------------|-----------------|-----------------|
| | Minggu-44 | 289 | 329.684 | -0.1668 | 0.87859 | 290.044 |
| | Minggu-45 | 289 | 328.387 | -0.2798 | 0.88647 | 292.342 |
| | Minggu-46 | 315 | 330.786 | -0.0118 | 0.93638 | 306.653 |
| | Minggu-47 | 215 | 318.457 | -1.2436 | 0.73541 | 245.471 |
| | Minggu-48 | 319 | 323.837 | -0.5813 | 0.94468 | 298.241 |

Manis Btl Kecil : alpha 0,4 beta 0,1 dan gamma 0,1 dengan nilai rata-rata mape 5,39

| | Periode | Penjualan | Level | Trend | Seasonal | Forecast |
|------|----------------|------------------|--------------|--------------|-----------------|-----------------|
| 2022 | Minggu-1 | 196 | | | 1.23643 | |
| | Minggu-2 | 180 | | | 1.1355 | |
| | Minggu-3 | 199 | | | 1.25536 | |
| | Minggu-4 | 167 | | | 1.05349 | |
| | Minggu-5 | 174 | | | 1.09765 | |
| | Minggu-6 | 134 | | | 0.84531 | |
| | Minggu-7 | 168 | | | 1.0598 | |
| | Minggu-8 | 117 | | | 0.73807 | |
| | Minggu-9 | 163 | | | 1.02826 | |
| | Minggu-10 | 183 | | | 1.15442 | |
| | Minggu-11 | 139 | | | 0.87686 | |
| | Minggu-12 | 109 | | | 0.68761 | |
| | Minggu-13 | 161 | | | 1.01564 | |
| | Minggu-14 | 177 | | | 1.11657 | |
| | Minggu-15 | 152 | | | 0.95886 | |
| | Minggu-16 | 170 | | | 1.07241 | |
| | Minggu-17 | 151 | | | 0.95256 | |
| | Minggu-18 | 136 | | | 0.85793 | |
| | Minggu-19 | 167 | | | 1.05349 | |
| | Minggu-20 | 121 | | | 0.76331 | |
| | Minggu-21 | 171 | | | 1.07872 | |
| | Minggu-22 | 153 | | | 0.96517 | |
| | Minggu-23 | 145 | | | 0.91471 | |
| | Minggu-24 | 155 | | | 0.97779 | |
| | Minggu-25 | 221 | | | 1.39414 | |
| | Minggu-26 | 201 | | | 1.26797 | |
| | Minggu-27 | 181 | | | 1.14181 | |
| | Minggu-28 | 223 | | | 1.40676 | |
| | Minggu-29 | 260 | | | 1.64016 | |
| | Minggu-30 | 131 | | | 0.82639 | |

| | Periode | Penjualan | Level | Trend | Seasonal | Forecast |
|------|----------------|------------------|--------------|--------------|-----------------|-----------------|
| | Minggu-31 | 143 | | | 0.90209 | |
| | Minggu-32 | 152 | | | 0.95886 | |
| | Minggu-33 | 124 | | | 0.78223 | |
| | Minggu-34 | 130 | | | 0.82008 | |
| | Minggu-35 | 136 | | | 0.85793 | |
| | Minggu-36 | 99 | | | 0.62452 | |
| | Minggu-37 | 134 | | | 0.84531 | |
| | Minggu-38 | 153 | | | 0.96517 | |
| | Minggu-39 | 116 | | | 0.73177 | |
| | Minggu-40 | 158 | | | 0.99671 | |
| | Minggu-41 | 157 | | | 0.99041 | |
| | Minggu-42 | 116 | | | 0.73177 | |
| | Minggu-43 | 155 | | | 0.97779 | |
| | Minggu-44 | 94 | | | 0.59298 | |
| | Minggu-45 | 110 | | | 0.69392 | |
| | Minggu-46 | 183 | | | 1.15442 | |
| | Minggu-47 | 200 | | | 1.26166 | |
| | Minggu-48 | 244 | 158.521 | -0.53 | 1.53923 | |
| 2023 | Minggu-1 | 165 | 148.172 | -1.5146 | 1.22414 | 195.341 |
| | Minggu-2 | 155 | 142.596 | -1.9207 | 1.13065 | 166.529 |
| | Minggu-3 | 170 | 138.573 | -2.1309 | 1.2525 | 176.598 |
| | Minggu-4 | 142 | 135.781 | -2.197 | 1.05272 | 143.74 |
| | Minggu-5 | 149 | 134.449 | -2.1106 | 1.09871 | 146.629 |
| | Minggu-6 | 111 | 131.928 | -2.1516 | 0.84492 | 111.867 |
| | Minggu-7 | 144 | 132.216 | -1.9077 | 1.06273 | 137.536 |
| | Minggu-8 | 96 | 130.212 | -1.9173 | 0.73799 | 96.1768 |
| | Minggu-9 | 136 | 129.882 | -1.7585 | 1.03014 | 131.92 |
| | Minggu-10 | 158 | 131.62 | -1.4089 | 1.15902 | 147.909 |
| | Minggu-11 | 118 | 131.955 | -1.2345 | 0.87859 | 114.177 |
| | Minggu-12 | 98 | 135.442 | -0.7624 | 0.6912 | 89.8846 |
| | Minggu-13 | 137 | 134.764 | -0.7539 | 1.01573 | 136.786 |
| | Minggu-14 | 152 | 134.858 | -0.6691 | 1.11763 | 149.632 |
| | Minggu-15 | 134 | 136.413 | -0.4467 | 0.96121 | 128.669 |
| | Minggu-16 | 146 | 136.036 | -0.4397 | 1.0725 | 145.812 |
| | Minggu-17 | 130 | 135.948 | -0.4046 | 0.95293 | 129.163 |
| | Minggu-18 | 115 | 134.943 | -0.4646 | 0.85736 | 116.287 |
| | Minggu-19 | 142 | 134.603 | -0.4521 | 1.05364 | 141.672 |
| | Minggu-20 | 98 | 131.846 | -0.6826 | 0.7613 | 102.399 |
| | Minggu-21 | 149 | 133.949 | -0.4041 | 1.08209 | 141.489 |
| | Minggu-22 | 130 | 134.003 | -0.3583 | 0.96567 | 128.894 |

| | Periode | Penjualan | Level | Trend | Seasonal | Forecast |
|--|----------------|------------------|--------------|--------------|-----------------|-----------------|
| | Minggu-23 | 125 | 134.849 | -0.2378 | 0.91593 | 122.246 |
| | Minggu-24 | 131 | 134.357 | -0.2632 | 0.97751 | 131.622 |
| | Minggu-25 | 191 | 135.257 | -0.1469 | 1.39594 | 186.945 |
| | Minggu-26 | 163 | 132.487 | -0.4093 | 1.26421 | 171.316 |
| | Minggu-27 | 155 | 133.547 | -0.2624 | 1.14369 | 150.807 |
| | Minggu-28 | 194 | 135.133 | -0.0775 | 1.40964 | 187.498 |
| | Minggu-29 | 132 | 113.225 | -2.2605 | 1.59273 | 221.513 |
| | Minggu-30 | 104 | 116.918 | -1.6652 | 0.8327 | 91.7001 |
| | Minggu-31 | 116 | 120.588 | -1.1317 | 0.90808 | 103.969 |
| | Minggu-32 | 137 | 128.825 | -0.1948 | 0.96932 | 114.542 |
| | Minggu-33 | 99 | 127.802 | -0.2776 | 0.78147 | 100.618 |
| | Minggu-34 | 106 | 128.217 | -0.2084 | 0.82075 | 104.581 |
| | Minggu-35 | 118 | 131.821 | 0.1729 | 0.86165 | 109.823 |
| | Minggu-36 | 76 | 127.874 | -0.2392 | 0.6215 | 82.4335 |
| | Minggu-37 | 110 | 128.632 | -0.1394 | 0.8463 | 107.891 |
| | Minggu-38 | 128 | 130.143 | 0.02566 | 0.96701 | 124.018 |
| | Minggu-39 | 93 | 128.937 | -0.0975 | 0.73072 | 95.2531 |
| | Minggu-40 | 138 | 132.686 | 0.28711 | 1.00105 | 128.417 |
| | Minggu-41 | 133 | 133.499 | 0.33972 | 0.99099 | 131.697 |
| | Minggu-42 | 96 | 132.779 | 0.23376 | 0.73089 | 97.9386 |
| | Minggu-43 | 130 | 132.989 | 0.23136 | 0.97776 | 130.059 |
| | Minggu-44 | 78 | 132.548 | 0.16409 | 0.59253 | 78.9972 |
| | Minggu-45 | 88 | 130.354 | -0.0717 | 0.69203 | 92.0906 |
| | Minggu-46 | 162 | 134.301 | 0.33021 | 1.1596 | 150.4 |
| | Minggu-47 | 188 | 140.383 | 0.90533 | 1.26942 | 169.86 |
| | Minggu-48 | 215 | 140.645 | 0.84102 | 1.53817 | 217.475 |

Source Code

```
<?php

namespace App\Http\Controllers;

use App\Models\Hitung;
use App\Models\HitungDetail;
use App\Models\KotabaruModel;
use App\Models\Perhitunganbaru;
use App\Models\ProdukModel;
use Carbon\Carbon;
use Illuminate\Http\Request;
use Illuminate\Support\Facades\DB;
use stdClass;

class prediksiController extends Controller
{
    public function index()
    {
        $data = Hitung::join('tb_produk', 'tb_produk.id_produk',
        '=', 'tb_perhitungan.id_produk')->get();
        return view('peramalan/peramalan', ['data' => $data]);
    }

    public function create()
    {
        $dataTerbaru = count(Hitung::all()); //mengambil data
dari Hitung
        if ($dataTerbaru > 0) {
            $kodeOtomatis = 'PRE' . $dataTerbaru + 1;
        } else {
            $kodeOtomatis = 'PRE' . 1;
        }
        $produkList = ProdukModel::all();
        $now = Carbon::today()->toDateString(); //ambil tanggal
sekarang
        return view('peramalan/peramalan_create', ['produkList'
=> $produkList, 'id' => $kodeOtomatis, 'now' => $now]);
    }

    public function store(Request $request) //ambil data dari
form
    {
        //ambil data id dari request
        $id = $request->id_perhitungan;
        $produk = $request->id_produk;
        $data = KotabaruModel::where('id_produk', $produk)-
>orderBy('tanggal_penjualan')->pluck('jumlah_penjualan')-
>toArray();
        $tanggal = $request->tanggal;
        $periode = $request->season;
        $tanggalPenjualan = KotabaruModel::where('id_produk',
$produk)->orderBy('tanggal_penjualan')-
>pluck('tanggal_penjualan')->toArray();// tggl diurutkan sesuai
tanggal

        $hasilPeramalan = [];
        $jmlDataPenjualan = count($data);
    }
}
```

```

    $seasonLength = $jmlDataPenjualan > 0 ?
    ceil($jmlDataPenjualan / 2) : 0;

    $dataPenjualan = KotabaruModel::where('id_produk',
    $produk)->orderBy('tanggal_penjualan')//ambil data
        ->limit($seasonLength)
        ->pluck('jumlah_penjualan')
        ->toArray();
    $selectYear1 = DB::table('tb_kotabaru') //ambil tahun
    ->select(DB::raw('MIN(YEAR(tanggal_penjualan)) as
    penjualan'))
        ->where('id_produk', $produk)
        ->first();
    $dateYear1 = $selectYear1->penjualan; //disimpan

    $selectYear2 = DB::table('tb_kotabaru')
        ->selectRaw('MAX(YEAR(tanggal_penjualan)) as
    penjualan')
        ->where('id_produk', $produk)
        ->first();
    $dateYear2 = $selectYear2->penjualan;

    //ambil data tahun
    $year1 = KotabaruModel::whereYear('tanggal_penjualan',
    $dateYear1)
        ->where('id_produk', $produk)
        ->pluck('jumlah_penjualan')
        ->toArray();
    $year2 = KotabaruModel::whereYear('tanggal_penjualan',
    $dateYear2)
        ->where('id_produk', $produk)
        ->pluck('jumlah_penjualan')
        ->toArray();
    $no = 0;
    //pilih parameter
    for ($alpha = 0.1; $alpha < 0.9; $alpha += 0.1) {
        for ($beta = 0.1; $beta < 0.9; $beta += 0.1) {
            for ($gamma = 0.1; $gamma < 0.9; $gamma += 0.1)
            {
                $hasilPeramalan[$no] = new stdClass;
                $hasilPeramalan[$no]->info = new stdClass;
                $hasilPeramalan[$no]->info->alpha = $alpha;
                $hasilPeramalan[$no]->info->beta = $beta;
                $hasilPeramalan[$no]->info->gamma = $gamma;
                //inisialisasi
                $averageLevel = array_sum($dataPenjualan) /
    count($dataPenjualan);

                $iterasiTren = array_map(function ($a, $b)
    {
                return $a - $b;
            }, $year2, $year1);

                $pembagianTren = array_map(function ($a) use
    ($seasonLength) {
                return $a / $seasonLength;
            }, $iterasiTren);
            }
        }
    }

```



```

$averageTrend = array_sum($pembagianTren) /
count($dataPenjualan); //inisial
$averageSeasonal = [];

for ($i = 0; $i < count($dataPenjualan);
$i++) {
    $averageSeasonal[$i] =
    $dataPenjualan[$i] / $averageLevel; //inisial
    $hasilPeramalan[$no]->data[] = [
        'id_perhitungan' => $id,
        'id_produk' => $produk,
        'tanggal_penjualan' =>
    $tanggalPenjualan[$i],
        'value' => $dataPenjualan[$i],
        'level' => '',
        'trend' => '',
        'prediction' => '',
        'mape' => '',
        'season' => $averageSeasonal[$i]
    ];
}

//awal
$level = $averageLevel;
$trend = $averageTrend;
$seasonal = array_slice($averageSeasonal, 0,
$seasonLength);
$lastPerhitungan =
count($hasilPeramalan[$no]->data);
$hitungForecast = $seasonLength +
$lastPerhitungan;
$forecast = [];

for ($i = $lastPerhitungan; $i <
$hitungForecast && isset($data[$i]); $i++) {

    $lastLevel = $level;
    $lastTrend = $trend;

    // Update
    $level = $alpha * ($data[$i] /
$seasonal[$i % $seasonLength]) + (1 - $alpha) * ($lastLevel +
$lastTrend);
    $trend = $beta * ($level - $lastLevel) +
(1 - $beta) * $lastTrend;
    $forecastValue = ($lastLevel + 1 *
$lastTrend) * $seasonal[$i % $seasonLength];
    $seasonal[$i % $seasonLength] = $gamma *
($data[$i] / $level) + (1 - $gamma) * $seasonal[$i %
$seasonLength];

    $hasilPeramalan[$no]->data[] = [
        'id_perhitungan' => $id,
        'id_produk' => $produk,
        'tanggal_penjualan' =>
    $tanggalPenjualan[$i],
        'value' => $data[$i],
        'level' => $level,
        'trend' => $trend,

```

```

'season' => $seasonal[$i %
$seasonLength],
'prediction' => $forecastValue,
'mape' => $data[$i] > 0 ?
(abs($data[$i] - $forecastValue) / $data[$i]) * 100 : 0,
];
$forecast[] = $forecastValue;
}

$n = count($data);
//Perhitungan untuk prediksi penjualan
berikutnya
for ($i = 0; $i < $periode; $i++) {
    $nextLevel = $level + $trend;
    $prediction = $nextLevel * $seasonal[($n
+ $i) % $seasonLength];
    $nextDate = date('Y-m-d', strtotime(0));
    $hasilPeramalan[$no]->data[] = [
        'id_perhitungan' => $id,
        'id_produk' => $produk,
        'tanggal_penjualan' => $nextDate,
        'prediction' => $prediction,
        'value' => '',
        'level' => '',
        'trend' => '',
        'season' => '',
        'mape' => '',
    ];
    $forecast[] = $prediction;
    $level = $nextLevel;
}
$no++;
}
}

$peramalanTerbaik = $hasilPeramalan;

for ($i = 0; $i < count($hasilPeramalan); $i++) {
    $tempMapeLength = 0;
    $_mape = [];
    for ($j = 0; $j < count($hasilPeramalan[$i]->data);
$j++) {
        if ($hasilPeramalan[$i]->data[$j]['mape'] != '')
        {
            $_mape[] = $hasilPeramalan[$i]-
>data[$j]['mape'];
            $tempMapeLength++;
        }
    }
    $peramalanTerbaik[$i]->info->avgMape =
array_sum($_mape) / $seasonLength;
}
usort($peramalanTerbaik, function ($a, $b) {
    return $a->info->avgMape <=> $b->info->avgMape;
});

for ($i = 0; $i < count($peramalanTerbaik[0]->data);
$i++) {

```

```

        Perhitunganbaru::create([
            'id_perhitungan' => $peramalanTerbaik[0]-
>data[$i]['id_perhitungan'],
            'id_produk' => $peramalanTerbaik[0]-
>data[$i]['id_produk'],
            'tanggal_penjualan' => $peramalanTerbaik[0]-
>data[$i]['tanggal_penjualan'],
            'value' => $peramalanTerbaik[0]-
>data[$i]['value'] != '' ? $peramalanTerbaik[0]-
>data[$i]['value'] : 0,
            'level' => $peramalanTerbaik[0]-
>data[$i]['level'] != '' ? $peramalanTerbaik[0]-
>data[$i]['level'] : 0,
            'trend' => $peramalanTerbaik[0]-
>data[$i]['trend'] != '' ? $peramalanTerbaik[0]-
>data[$i]['trend'] : 0,
            'season' => $peramalanTerbaik[0]-
>data[$i]['season'] != '' ? $peramalanTerbaik[0]-
>data[$i]['season'] : 0,
            'prediction' => $peramalanTerbaik[0]-
>data[$i]['prediction'] != '' ? $peramalanTerbaik[0]-
>data[$i]['prediction'] : 0,
            'mape' => $peramalanTerbaik[0]->data[$i]['mape']
!= '' ? $peramalanTerbaik[0]->data[$i]['mape'] : 0,
        ]);
    }
    //record baru
    Hitung::create([
        'id_perhitungan' => $id,
        'id_produk' => $request->id_produk,
        'tanggal' => $tanggal,
        'alpha' => $peramalanTerbaik[0]->info->alpha,
        'beta' => $peramalanTerbaik[0]->info->beta,
        'gamma' => $peramalanTerbaik[0]->info->gamma,
        'jumlah_periode' => $periode,
        'mape' => $peramalanTerbaik[0]->info->avgMape,
        'akurasi' => 0
    ]);

    return view('peramalan/peramalan_detail', [
        'data' => [$hasilPeramalan[0]],
        'data2' => [],
        'jmlPeramalan' => $jmlDataPenjualan,
        'peramalanTerbaik' => $peramalanTerbaik[0]
    ]);
}

public function detail($id)
{
    $data = Perhitunganbaru::where('id_perhitungan', $id)-
>get();
    $data2 = Perhitunganbaru::where('id_perhitungan', $id)-
>get()->first();
    return view('peramalan/peramalan_detail_show', ['data'
=> $data, 'data2' => $data2]);
}

public function getData($id)
{

```

```
        $salesData = Perhitunganbaru::where('id_perhitungan',  
$id)->get();  
        return response()->json($salesData);  
    }  
  
    public function delete($id)  
    {  
        $data = Hitung::where('id_perhitungan', $id);  
        $data->delete();  
        $data2 = Perhitunganbaru::where('id_perhitungan', $id);  
        $data2->delete();  
        return redirect('/peramalan');  
    }  
}
```