

DAFTAR PUSTAKA

- Aminnudin, Yoga Faisal, Erna Apriliani, dan Nuri Wahyuningsih. 2018. "Penerapan Filter Kalman dalam Perbaikan Hasil Prediksi Return Harga Minyak Mentah Dunia dengan Model Arima." *Jurnal Sains dan Seni ITS* 7(1).
- As'ad, Mohamad, Sigit Setyo Wibowo, dan Evy Sophia. 2017. "Peramalan Jumlah Mahasiswa Baru Dengan Model Autoregressive Integrated Moving Average (Arima)." *J I M P - Jurnal Informatika Merdeka Pasuruan* 2(3): 20–33.
- Ayu Wulandari, Rosita, dan Rahmat Gernowo. 2019. "Metode Autoregressive Integrated Moving Average (ARIMA) dan Metode Adaptive Neuro Fuzzy Inference System (ANFIS) dalam Analisis Curah Hujan." *Berkala Fisika* 22(1): 41–48.
- Daniel. 2018. "Analisis Pengaruh Inflasi Terhadap Laju Pertumbuhan Ekonomi Di Kota Jambi Prima Audia Daniel STIE Muhammaadiyah Jambi." 2(1): 131–36.
- Dianto, Agus, dan Andri Pranolo. 2018. "Prediksi Laju Pertumbuhan Penduduk Di Kabupaten Sleman Dengan Metode Adaptive Neuro-Fuzzy Inference System (Anfis) Dan Metode Sugeno." 6(3): 1–7.
- Essien, J. P., E. J. Akpan, dan E. P. Essien. 2005. "Studies on mould growth and biomass production using waste banana peel." *Bioresource Technology* 96(13): 1451–56.
- Fitriyati, Nina, dan Madona Yunita Wijaya. 2022. "Forecasting Indonesian inflation using a hybrid ARIMA-ANFIS." *Desimal: Jurnal Matematika* 5: 289–304. <http://ejournal.radenintan.ac.id/index.php/desimal/index>.
- Hamdi, Naufal. 2014. "Halaman ini sengaja dikosongkan." 17: 47–48.
- Hamilton, Bruce W. 2001. "2. Hamilton2001."
- Indrasetianingsih, Artanti, Ika Damayanti, dan Teguh Susanto. 2017. "Analisis ARIMA Box Jenkins untuk Peramalan Jumlah Kunjungan Wisatawan Mancanegara di Indonesia." *Seminar Nasional Matematika dan Aplikasinya*: 226–29.
- Kamadewi, R, dan A I Achmad. 2021. "Pemodelan Hybrid ARIMA (Autoregressive Integrated Moving Average) â€"ANN (Artificial Neural Network) pada Data Inflasi Indonesia Tahun 2009-2020." *Prosiding Statistika*: 33–41. <https://karyailmiah.unisba.ac.id/index.php/statistika/article/view/25503>.
- Kristiana, Ana, Yuciana Wilandari, dan Alan Prahutama. 2015. "Peramalan Beban Puncak Pemakaian Listrik Di Area Semarang Dengan Metode Hybrid Arima (Autoregressive Integrated Moving Average)-Anfis (Adaptive Neuro Fuzzy Inference System) (Studi Kasus Di Pt Pln (Persero) Distribusi Jawa Tengah Dan Diy)." *None* 4(4): 714–23.
- Makridakis S, Wheelwright SC, Hyndman RJ. 1997. "1 / the Forecasting Perspective." *Forecasting methods and applications*: 1–632.
- Mardianto, Is, Muhamad Ichsan Gunawan, Dedy Sugiarto, dan Abdul Rochman.

2020. "Comparison of Rice Price Forecasting Using the ARIMA Method on Amazon Forecast and Sagemaker." *Jurnal RESTI (Rekayasa Sistem dan Teknologi Informasi)* 4(3): 537–43.
- Muzakki, Achmad Fikri, Darmawan Aditama, dan Indra Gita Anugrah. 2022. "Penerapan Metode Autoregressive Integrated Moving Average Untuk Memprediksi Penggunaan Barang." 4(1): 1–16.
- Nilawati, Lala et al. 2015. "Penilaian properti menggunakan metode anfis." *Konferensi Nasional Ilmu Pengetahuan dan Teknologi*: 127–32.
- Phalupy, Friska Zehan. 2013. "Per Rbandin Ngan Me Etode Perama Alan Inf Flasi : O Ry Least Squar Re (Ols), Expon Thing Da."
- Pujjastuti, Christina Ani, dan Joko Riyono. 2020. "Pelatihan Pembuatan Analisis Runtun Waktu Untuk Optimasi Produk Dengan Minitab." *Jurnal Abdi Masyarakat Indonesia (JAMIN)* 2(2): 129–36.
- Rahmania, Ade Rizky, Winita Sulandari, dan Isnandar Slamet. 2023. "Penerapan Model Hibrida Arima-Runtun Waktu Fuzzy Chen Pada Saham Jii." *Prosiding Seminar Pendidikan Matematika dan Matematika* 7(2721): 1–8.
- Rivaldi, Rivaldi, R Ratianingsih, dan D Lusiyanti. 2017. "Aplikasi Model Neuro Fuzzy Untuk Pengontrol Tingkat Inflasi Di Provinsi Sulawesi Tengah." *Jurnal Ilmiah Matematika Dan Terapan* 14(1): 95–106.
- Sabar Sautomo, dan Hilman Ferdinandus Pardede. 2021. "Prediksi Belanja Pemerintah Indonesia Menggunakan Long Short-Term Memory (LSTM)." *Jurnal RESTI (Rekayasa Sistem dan Teknologi Informasi)* 5(1): 99–106.
- Sezer, Omer Berat, Mehmet Ugur Gudelek, dan Ahmet Murat Ozbayoglu. 2020. "Financial time series forecasting with deep learning: A systematic literature review: 2005–2019." *Applied Soft Computing Journal* 90: 106181. <https://doi.org/10.1016/j.asoc.2020.106181>.
- sri Kusumadewi, Sri Hartati, Retantyo Wardoyo, Agus Harjoko. 2006. "Penggunaan Operator Quantifier Guided Dominance Degree (QGDD) Sebagai Certainty Factor Pada Clinical Group Decision." 2006(SNATI): 21–26.
- Stephani, Clara Agustin. 2015. "Peramalan Inflasi Nasional Berdasarkan Faktor Ekonomi Makro Menggunakan Pendekatan Time Series Klasik dan ANFIS." *Sains Dan Seni ITS* 4(1): 67–72. 10.12962/j23373520.v4i1.8873.
- Sulistyowati, Ratna et al. 2018. "Model Peramalan Hibrida Untuk Prediksi Jumlah Penumpang Udara Dan Volume."
- Surtiningsih, Listiya, M Tanzil Furqon, dan Sigit Adinugroho. 2018. "Prediksi Jumlah Kunjungan Wisatawan Mancanegara Ke Bali Menggunakan Support Vector Regression dengan Algoritma Genetika." *Jurnal Pengembangan Teknologi Informasi dan Ilmu Komputer* 2(8): 2578–86. <http://j-ptiik.ub.ac.id>.
- Utami, Ruli, dan Suryo Atmojo. 2017. "Perbandingan Metode Holt Eksponensial Smoothing dan Winter Eksponensial Smoothing Untuk Peramalan Penjualan Souvenir." *Jurnal Ilmiah Teknologi Informasi Asia* 11(2): 123.

- Wei, William. 1991. "Time Series Analysis: Univariate and Multivariate Methods." *Technometrics* 33(1): 108–9.
- Wilson, Granville Tunnicliffe. 2016. "Time Series Analysis: Forecasting and Control, 5th Edition, by George E. P. Box, Gwilym M. Jenkins, Gregory C. Reinsel and Greta M. Ljung, 2015. Published by John Wiley and Sons Inc., Hoboken, New Jersey, pp. 712. ISBN: 978-1-118-67502-1." *Journal of Time Series Analysis* 37(5): 709–11.
- Zhang, Peter G. 2003. "Time series forecasting using a hybrid ARIMA and neural network model." *Neurocomputing* 50: 159–75..

LAMPIRAN

Lampiran 1. Data Penelitian

Data Penelitian Inflasi Di Provinsi Sulawesi Selatan Periode Januari 2011-
November 2023

	2011	2012	2013	2014	2015	2016	2017	2018
Januari	1.29	1.12	1.13	1.11	-0.17	1.22	1.12	0.81
Februari	-0.20	0.44	0.71	0.30	-0.27	-0.08	0.75	0.23
Maret	-0.33	0.34	0.26	0.03	0.50	0.08	-0.18	-0.06
April	-0.07	0.34	-0.12	0.36	0.33	-0.39	0.33	0.18
Mei	0.16	-0.52	-0.26	-0.16	0.31	-0.03	-0.24	0.37
Juni	0.53	0.60	0.56	0.30	0.73	0.45	0.97	0.94
Juli	0.71	0.65	3.05	1.17	1.19	1.04	0.93	0.56
Agustus	0.99	1.25	1.58	0.40	0.37	-0.44	-0.26	-0.10
September	-0.62	-0.22	-0.18	0.25	0.54	0.32	-0.07	-0.86
Oktober	-0.50	-0.13	-0.72	0.41	-0.08	0.00	-0.31	0.27
November	0.22	-0.13	-0.67	1.41	0.26	0.45	0.28	0.28
Desember	0.68	0.59	0.77	2.75	0.70	0.30	1.04	0.86

	2019	2020	2021	2022	2023
Januari	0.53	0.63	0.29	0.63	0.57
Februari	-0.19	0.44	0.33	-0.22	-0.04
Maret	0.22	-0.10	0.36	0.75	0.54
April	0.42	0.42	0.33	0.20	1.21
Mei	0.76	0.50	0.34	0.09	0.28
Juni	0.20	0.06	-0.25	0.16	0.33
Juli	-0.05	-0.40	0.09	0.06	1.12
Agustus	0.36	-0.10	-0.31	-0.08	-0.27
September	-0.15	0.02	-0.14	-0.06	1.12
Oktober	0.07	-0.09	0.04	0.36	-0.18
November	0.11	0.15	0.37	0.16	0.25
Desember	0.04	0.50	0.92	0.71	

Data pada metode ANFIS dikelompokkan menjadi data *training* 80% dan data *testing* 20%.

No	Pembagian Data	Periode	Jumlah Data
1.	Data <i>Training</i>	Januari 2011 - Desember 2021	132
2.	Data <i>Testing</i>	Januari 2022 - November 2023	23

Data bahan latih adalah data dari 6 bulan sebelumnya dan target latih adalah bulan ke 7.

Pola	Data Latih	Data Target
1	Data pada bulan ke-1 sampai bulan ke-6	Data pada bulan ke-7
2	Data pada bulan ke-2 sampai bulan ke-7	Data pada bulan ke-8
3	Data pada bulan ke-3 sampai bulan ke-8	Data pada bulan ke-9
.	.	.
.	.	.
.	.	.
126	Data pada bulan ke-126 sampai bulan ke-131	Data pada bulan ke-132

Data latih menggunakan metode ANFIS

Bulan	Data Training						Target Latih
	1	2	3	4	5	6	7
	0.536305	0.099694	0.2205	0.264872	0.200628	0.238651	0.317285
	0.099694	0.2205	0.264872	0.200628	0.238651	0.317285	0.485168
	0.2205	0.264872	0.200628	0.238651	0.317285	0.485168	0.069687
	0.264872	0.200628	0.238651	0.317285	0.485168	0.069687	0.182481
	0.200628	0.238651	0.317285	0.485168	0.069687	0.182481	0.286131
	0.238651	0.317285	0.485168	0.069687	0.182481	0.286131	0.268656
	0.317285	0.485168	0.069687	0.182481	0.286131	0.268656	0.352834
	0.485168	0.069687	0.182481	0.286131	0.268656	0.352834	0.338014
	0.069687	0.182481	0.286131	0.268656	0.352834	0.338014	0.416327
	0.182481	0.286131	0.268656	0.352834	0.338014	0.416327	0.405316
	0.286131	0.268656	0.352834	0.338014	0.416327	0.405316	0.072594
	0.268656	0.352834	0.338014	0.416327	0.405316	0.072594	0.373165
	0.352834	0.338014	0.416327	0.405316	0.072594	0.373165	0.284238
	0.338014	0.416327	0.405316	0.072594	0.373165	0.284238	0.460818
	0.416327	0.405316	0.072594	0.373165	0.284238	0.460818	0.183265
	0.405316	0.072594	0.373165	0.284238	0.460818	0.183265	0.309514

0.072594	0.373165	0.284238	0.460818	0.183265	0.309514	0.22622
0.373165	0.284238	0.460818	0.183265	0.309514	0.22622	0.336685
0.284238	0.460818	0.183265	0.309514	0.22622	0.336685	0.388356
0.460818	0.183265	0.309514	0.22622	0.336685	0.388356	0.325588
0.183265	0.309514	0.22622	0.336685	0.388356	0.325588	0.294781
0.309514	0.22622	0.336685	0.388356	0.325588	0.294781	0.245595
0.22622	0.336685	0.388356	0.325588	0.294781	0.245595	0.245781
0.336685	0.388356	0.325588	0.294781	0.245595	0.245781	0.317405
0.388356	0.325588	0.294781	0.245595	0.245781	0.317405	1
0.325588	0.294781	0.245595	0.245781	0.317405	1	0.440298
0.294781	0.245595	0.245781	0.317405	1	0.440298	0.27015
0.245595	0.245781	0.317405	1	0.440298	0.27015	0.262888
0.245781	0.317405	1	0.440298	0.27015	0.262888	0.171866
0.317405	1	0.440298	0.27015	0.262888	0.171866	0.331476
1	0.440298	0.27015	0.262888	0.171866	0.331476	0.239833
0.440298	0.27015	0.262888	0.171866	0.331476	0.239833	0.130656
0.27015	0.262888	0.171866	0.331476	0.239833	0.130656	0.298226
0.262888	0.171866	0.331476	0.239833	0.130656	0.298226	0.479725
0.171866	0.331476	0.239833	0.130656	0.298226	0.479725	0.212993
0.331476	0.239833	0.130656	0.298226	0.479725	0.212993	0.221946
0.239833	0.130656	0.298226	0.479725	0.212993	0.221946	0.266103
0.130656	0.298226	0.479725	0.212993	0.221946	0.266103	0.176583
0.298226	0.479725	0.212993	0.221946	0.266103	0.176583	0.340095
0.479725	0.212993	0.221946	0.266103	0.176583	0.340095	0.423874
0.212993	0.221946	0.266103	0.176583	0.340095	0.423874	0.68538
0.221946	0.266103	0.176583	0.340095	0.423874	0.68538	0.93477
0.266103	0.176583	0.340095	0.423874	0.68538	0.93477	0.042782
0.176583	0.340095	0.423874	0.68538	0.93477	0.042782	0.322839
0.340095	0.423874	0.68538	0.93477	0.042782	0.322839	0.518151
0.423874	0.68538	0.93477	0.042782	0.322839	0.518151	0.22035
0.68538	0.93477	0.042782	0.322839	0.518151	0.22035	0.200546
0.93477	0.042782	0.322839	0.518151	0.22035	0.200546	0.359002
0.042782	0.322839	0.518151	0.22035	0.200546	0.359002	0.50832
0.322839	0.518151	0.22035	0.200546	0.359002	0.50832	0.349774
0.518151	0.22035	0.200546	0.359002	0.50832	0.349774	0.434362
0.22035	0.200546	0.359002	0.50832	0.349774	0.434362	0.175453
0.200546	0.359002	0.50832	0.349774	0.434362	0.175453	0.189193
0.359002	0.50832	0.349774	0.434362	0.175453	0.189193	0.190971

0.50832	0.349774	0.434362	0.175453	0.189193	0.190971	0.565521
0.349774	0.434362	0.175453	0.189193	0.190971	0.565521	0.13791
0.434362	0.175453	0.189193	0.190971	0.565521	0.13791	0.254231
0.175453	0.189193	0.190971	0.565521	0.13791	0.254231	0.150127
0.189193	0.190971	0.565521	0.13791	0.254231	0.150127	0.219347
0.190971	0.565521	0.13791	0.254231	0.150127	0.219347	0.238093
0.565521	0.13791	0.254231	0.150127	0.219347	0.238093	0.347184
0.13791	0.254231	0.150127	0.219347	0.238093	0.347184	0
0.254231	0.150127	0.219347	0.238093	0.347184	0	0.35727
0.150127	0.219347	0.238093	0.347184	0	0.35727	0.263075
0.219347	0.238093	0.347184	0	0.35727	0.263075	0.316811
0.238093	0.347184	0	0.35727	0.263075	0.316811	0.194107
0.347184	0	0.35727	0.263075	0.316811	0.194107	0.442997
0	0.35727	0.263075	0.316811	0.194107	0.442997	0.438083
0.35727	0.263075	0.316811	0.194107	0.442997	0.438083	0.176636
0.263075	0.316811	0.194107	0.442997	0.438083	0.176636	0.429378
0.316811	0.194107	0.442997	0.438083	0.176636	0.429378	0.153152
0.194107	0.442997	0.438083	0.176636	0.429378	0.153152	0.467103
0.442997	0.438083	0.176636	0.429378	0.153152	0.467103	0.344369
0.438083	0.176636	0.429378	0.153152	0.467103	0.344369	0.15026
0.176636	0.429378	0.153152	0.467103	0.344369	0.15026	0.246515
0.429378	0.153152	0.467103	0.344369	0.15026	0.246515	0.180124
0.153152	0.467103	0.344369	0.15026	0.246515	0.180124	0.258387
0.467103	0.344369	0.15026	0.246515	0.180124	0.258387	0.430313
0.344369	0.15026	0.246515	0.180124	0.258387	0.430313	0.283854
0.15026	0.246515	0.180124	0.258387	0.430313	0.283854	0.248755
0.246515	0.180124	0.258387	0.430313	0.283854	0.248755	0.312394
0.180124	0.258387	0.430313	0.283854	0.248755	0.312394	0.303178
0.258387	0.430313	0.283854	0.248755	0.312394	0.303178	0.31815
0.430313	0.283854	0.248755	0.312394	0.303178	0.31815	0.3504
0.283854	0.248755	0.312394	0.303178	0.31815	0.3504	0.2697
0.248755	0.312394	0.303178	0.31815	0.3504	0.2697	0.249038
0.312394	0.303178	0.31815	0.3504	0.2697	0.249038	0.036941
0.303178	0.31815	0.3504	0.2697	0.249038	0.036941	0.380704
0.31815	0.3504	0.2697	0.249038	0.036941	0.380704	0.191194
0.3504	0.2697	0.249038	0.036941	0.380704	0.191194	0.305497
0.2697	0.249038	0.036941	0.380704	0.191194	0.305497	0.28134
0.249038	0.036941	0.380704	0.191194	0.305497	0.28134	0.193542

0.036941	0.380704	0.191194	0.305497	0.28134	0.193542	0.374325
0.380704	0.191194	0.305497	0.28134	0.193542	0.374325	0.326192
0.191194	0.305497	0.28134	0.193542	0.374325	0.326192	0.357795
0.305497	0.28134	0.193542	0.374325	0.326192	0.357795	0.152374
0.28134	0.193542	0.374325	0.326192	0.357795	0.152374	0.199654
0.193542	0.374325	0.326192	0.357795	0.152374	0.199654	0.393386
0.374325	0.326192	0.357795	0.152374	0.199654	0.393386	0.218465
0.326192	0.357795	0.152374	0.199654	0.393386	0.218465	0.18467
0.357795	0.152374	0.199654	0.393386	0.218465	0.18467	0.21365
0.152374	0.199654	0.393386	0.218465	0.18467	0.21365	0.160631
0.199654	0.393386	0.218465	0.18467	0.21365	0.160631	0.377519
0.393386	0.218465	0.18467	0.21365	0.160631	0.377519	0.330887
0.218465	0.18467	0.21365	0.160631	0.377519	0.330887	0.145111
0.18467	0.21365	0.160631	0.377519	0.330887	0.145111	0.349807
0.21365	0.160631	0.377519	0.330887	0.145111	0.349807	0.318891
0.160631	0.377519	0.330887	0.145111	0.349807	0.318891	0.206027
0.377519	0.330887	0.145111	0.349807	0.318891	0.206027	0.098229
0.330887	0.145111	0.349807	0.318891	0.206027	0.098229	0.175256
0.145111	0.349807	0.318891	0.206027	0.098229	0.175256	0.219245
0.349807	0.318891	0.206027	0.098229	0.175256	0.219245	0.137554
0.318891	0.206027	0.098229	0.175256	0.219245	0.137554	0.229572
0.206027	0.098229	0.175256	0.219245	0.137554	0.229572	0.353873
0.098229	0.175256	0.219245	0.137554	0.229572	0.353873	0.241295
0.175256	0.219245	0.137554	0.229572	0.353873	0.241295	0.302265
0.219245	0.137554	0.229572	0.353873	0.241295	0.302265	0.349386
0.137554	0.229572	0.353873	0.241295	0.302265	0.349386	0.275588
0.229572	0.353873	0.241295	0.302265	0.349386	0.275588	0.276797
0.353873	0.241295	0.302265	0.349386	0.275588	0.276797	0.13782
0.241295	0.302265	0.349386	0.275588	0.276797	0.13782	0.298725
0.302265	0.349386	0.275588	0.276797	0.13782	0.298725	0.110652
0.349386	0.275588	0.276797	0.13782	0.298725	0.110652	0.16311
0.275588	0.276797	0.13782	0.298725	0.110652	0.16311	0.217735
0.276797	0.13782	0.298725	0.110652	0.16311	0.217735	0.28803
0.13782	0.298725	0.110652	0.16311	0.217735	0.28803	0.428456
0.298725	0.110652	0.16311	0.217735	0.28803	0.428456	0.345883
0.110652	0.16311	0.217735	0.28803	0.428456	0.345883	0.210094
0.16311	0.217735	0.28803	0.428456	0.345883	0.210094	0.423509
0.217735	0.28803	0.428456	0.345883	0.210094	0.423509	0.555751

0.28803	0.428456	0.345883	0.210094	0.423509	0.555751	0.20758
0.428456	0.345883	0.210094	0.423509	0.555751	0.20758	0.356076

Lampiran 2 SARIMA Menggunakan Software R Studio

Pengolahan Data Metode ARIMA Dengan R Studio

```
> library(readxl)
> library(forecast)
> library(nortest)
> library(tseries)
> inflasi1=ts(data_dj$Inflasi, start = c(2011,1), end = c(2022,12),frequency=12)
> inflasi1
```

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2011	1.29	-0.20	-0.33	-0.07	0.16	0.53	0.71	0.99	-0.62	-0.50	0.22	0.68
2012	1.12	0.44	0.34	0.34	-0.52	0.60	0.65	1.25	-0.22	-0.13	-0.13	0.59
2013	1.13	0.71	0.26	-0.12	-0.26	0.56	3.05	1.58	-0.18	-0.72	-0.67	0.77
2014	1.11	0.30	0.03	0.36	-0.16	0.30	1.17	0.40	0.25	0.41	1.41	2.75
2015	-0.17	-0.27	0.50	0.33	0.31	0.73	1.19	0.37	0.54	-0.08	0.26	0.70
2016	1.22	-0.08	0.08	-0.39	-0.03	0.45	1.04	-0.44	0.32	0.00	0.45	0.30
2017	1.12	0.75	-0.18	0.33	-0.24	0.97	0.93	-0.26	-0.07	-0.31	0.28	1.04
2018	0.81	0.23	-0.06	0.18	0.37	0.94	0.56	-0.10	-0.86	0.27	0.28	0.86
2019	0.53	-0.19	0.22	0.42	0.76	0.20	-0.05	0.36	-0.15	0.07	0.11	0.04
2020	0.63	0.44	-0.10	0.42	0.50	0.06	-0.40	-0.10	0.02	-0.09	0.15	0.50
2021	0.29	0.33	0.36	0.33	0.34	-0.25	0.09	-0.31	-0.14	0.04	0.37	0.92
2022	0.57	-0.04	0.54	1.21	0.28	0.33	1.12	-0.27	1.12	-0.18	0.25	0.71

```
> plot.ts(inflasi1)
> datacomponents = decompose(inflasi1)
> plot(datacomponents)
```

Augmented *Dickey-Fuller* Test

data: inflasi1

Dickey-Fuller = -4.6364, Lag order = 5, p-value = 0.01

alternative hypothesis: stationary

```
> acf(inflasi1,lag.max = 56)
```

```
> pacf(inflasi1,lag.max = 56)
```

ARIMA(0,0,1)(0,0,1)[12] with non-zero mean

Coefficients:

ma1	sma1	mean
0.2758	0.3396	0.3455
s.e. 0.0824	0.0775	0.0717

sigma² = 0.2704: log likelihood = -109.41

AIC=226.82 AICc=227.11 BIC=238.7

Training set error measures:

	ME	RMSE	MAE	MPE	MAPE	MASE
Training set	0.0002096019	0.514513	0.3783626	-Inf	Inf	0.8743675

ACF1

Training set -0.02283488

	Estimate	Std. Error	z value	Pr(> z)
ma1	0.275767	0.082415	3.3461	0.0008197 ***
sma1	0.339602	0.077490	4.3825	1.173e-05 ***
intercept	0.345500	0.071677	4.8202	1.434e-06 ***

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Box-Ljung test

data: model1\$residuals

X-squared = 90.204, df = 48, p-value = 0.0002183

ARIMA(2,0,2)(1,0,0)[12] with non-zero mean

Coefficients:

	ar1	ar2	ma1	ma2	sar1	mean
	0.8891	-0.8445	-0.7450	0.5966	0.2572	0.3434
s.e.	0.0984	0.1185	0.1511	0.1788	0.1032	0.0465

sigma^2 = 0.2374: log likelihood = -98.59

AIC=211.17 AICc=211.99 BIC=231.96

Training set error measures:

	ME	RMSE	MAE	MPE	MAPE
Training set	0.002557845	0.4769628	0.344845	-Inf	Inf

	MASE	ACF1
Training set	0.7969108	0.002286152

	Estimate	Std. Error	z value	Pr(> z)
ar1	0.889114	0.098424	9.0335	< 2.2e-16 ***
ar2	-0.844514	0.118494	-7.1271	1.025e-12 ***

```

ma1    -0.745010  0.151074 -4.9314 8.163e-07 ***
ma2     0.596636  0.178764  3.3376 0.0008452 ***
sar1    0.257222  0.103194  2.4926 0.0126804 *
intercept 0.343375  0.046506  7.3835 1.541e-13 ***

```

Signif. codes:

```
0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

Box-Ljung test

data: model12\$residuals

X-squared = 30.142, df = 48, p-value = 0.9796

Shapiro-Wilk normality test

data: model12\$residuals

W = 0.90324, p-value = 3.37e-08

Jarque Bera Test

data: residuals(model12)

X-squared = 219.09, df = 2, p-value < 2.2e-16

```
> #data residual model
```

```
> res12
```

	Jan	Feb	Mar	Apr
2011	0.796582921	-0.641424909	-0.243542845	-0.097401467
2012	0.192308216	0.143498951	0.401426415	0.365162189
2013	0.309302846	0.102570633	0.001107347	-0.160890109
2014	-0.179869436	-0.539450145	0.012453095	0.610234610
2015	-0.828869185	0.093518071	0.736792620	-0.244037927

2016 0.892806876 -0.515558256 -0.132447467 -0.475322399
 2017 0.489267445 0.473081608 -0.388011462 0.444411227
 2018 -0.034881241 -0.150481409 0.059115239 0.028762835
 2019 -0.043162630 -0.332330087 0.263091072 0.104562098
 2020 0.273609464 0.120023248 -0.491841698 0.182338407
 2021 -0.175052361 0.025756286 0.180953179 -0.062106317
 2022 0.169415530 -0.277816301 0.425081222 0.860629961

May Jun Jul Aug

2011 -0.308993543 -0.183761579 0.075224182 0.628159928
 2012 -0.730680624 0.259269276 -0.033618319 0.547960533
 2013 -0.160277811 0.075621118 2.323795214 0.480376156
 2014 -0.268266401 -0.238780811 -0.093346029 -0.388187902
 2015 -0.309263581 0.212624836 0.704411760 0.182229306
 2016 -0.247339327 -0.185599663 0.173700792 -0.969774858
 2017 -0.465358617 0.568660371 0.164427591 -0.474883226
 2018 0.078076066 0.184291935 -0.081499882 -0.149552293
 2019 0.208646699 -0.467919472 -0.312199647 0.325868129
 2020 0.080513729 -0.291211525 -0.646250765 -0.392556196
 2021 -0.058126001 -0.515853900 0.014098003 -0.605336358
 2022 -0.286094007 0.202987017 0.987119039 -0.461861280

Sep Oct Nov Dec

2011 -0.740257192 -0.368762119 -0.027381722 -0.084938134
 2012 -0.366177353 0.049632633 -0.224704671 0.139119359
 2013 -0.080016137 -0.103935128 -0.403720672 0.121962984
 2014 0.150350635 0.426284588 1.287573252 2.108955933
 2015 0.460826845 -0.391908732 -0.346654330 -0.340798762
 2016 0.206918827 -0.103318527 0.073663086 -0.330469627

```
2017 -0.157860269 -0.376522755 -0.118757793 0.447491942
2018 -0.848107206 0.284099705 -0.340064332 0.036400851
2019 -0.250244966 -0.361552623 -0.266103761 -0.440724050
2020 -0.247675672 -0.516730196 -0.213663812 0.195730683
2021 -0.432560744 -0.252649516 -0.021128772 0.441375172
2022 1.074762526 -0.546197385 0.008443809 0.263489802
```

Lilliefors (Kolmogorov-Smirnov) normality test

data: res12

D = 0.10814, p-value = 0.0002943

Menyimpan data input untuk model ANFIS dalam format .csv

write.csv(res12, "input_anfis_data12.csv", row.names = FALSE)

Lampiran 3 ANFIS Menggunakan Software Matlab

Parameter Nonlinier Fungsi *Trapezoidal* pada Residual

```
'in1mf1' 'trapmf' [-0.700000000000000,0.300000000000000,0.269425149629939,0.693037228383615]
'in1mf2' 'trapmf' [0.247196816653245,0.670154051256278,1.300000000000000,1.700000000000000]
'in2mf1' 'trapmf' [-0.700000000000000,0.300000000000000,0.278027053768264,0.696412962916014]
'in2mf2' 'trapmf' [0.266720035681002,0.678742730725701,1.300000000000000,1.700000000000000]
'in3mf1' 'trapmf' [-0.700000000000000,0.300000000000000,0.267844193004614,0.694544698132808]
'in3mf2' 'trapmf' [0.260954149051758,0.668494247603019,1.300000000000000,1.700000000000000]
'in4mf1' 'trapmf' [-0.700000000000000,0.300000000000000,0.258316173660295,0.691959049420262]
'in4mf2' 'trapmf' [0.250455981379316,0.654643715436323,1.300000000000000,1.700000000000000]
'in5mf1' 'trapmf' [-0.700000000000000,0.300000000000000,0.263428680687411,0.693452411667680]
'in5mf2' 'trapmf' [0.247114066835106,0.659970117758360,1.300000000000000,1.700000000000000]
'in6mf1' 'trapmf' [-0.700000000000000,0.300000000000000,0.260067104227639,0.677965978819276]
'in6mf2' 'trapmf' [0.248009069201326,0.660539850995610,1.300000000000000,1.700000000000000]
```

Rule (aturan) yang tertentu

[1,1,1,1,1,1]	1	1	1
[1,1,1,1,1,2]	2	1	1
[1,1,1,1,2,1]	3	1	1
[1,1,1,1,2,2]	4	1	1
[1,1,1,2,1,1]	5	1	1
[1,1,1,2,1,2]	6	1	1
[1,1,1,2,2,1]	7	1	1
[1,1,1,2,2,2]	8	1	1
[1,1,2,1,1,1]	9	1	1
[1,1,2,1,1,2]	10	1	1
[1,1,2,1,2,1]	11	1	1
[1,1,2,1,2,2]	12	1	1
[1,1,2,2,1,1]	13	1	1
[1,1,2,2,1,2]	14	1	1

[1,1,2,2,2,1]	15	1	1
[1,1,2,2,2,2]	16	1	1
[1,2,1,1,1,1]	17	1	1
[1,2,1,1,1,2]	18	1	1
[1,2,1,1,2,1]	19	1	1
[1,2,1,1,2,2]	20	1	1
[1,2,1,2,1,1]	21	1	1
[1,2,1,2,1,2]	22	1	1
[1,2,1,2,2,1]	23	1	1
[1,2,1,2,2,2]	24	1	1
[1,2,2,1,1,1]	25	1	1
[1,2,2,1,1,2]	26	1	1
[1,2,2,1,2,1]	27	1	1
[1,2,2,1,2,2]	28	1	1
[1,2,2,2,1,1]	29	1	1
[1,2,2,2,1,2]	30	1	1
[1,2,2,2,2,1]	31	1	1
[1,2,2,2,2,2]	32	1	1
[2,1,1,1,1,1]	33	1	1
[2,1,1,1,1,2]	34	1	1
[2,1,1,1,2,1]	35	1	1
[2,1,1,1,2,2]	36	1	1
[2,1,1,2,1,1]	37	1	1
[2,1,1,2,1,2]	38	1	1
[2,1,1,2,2,1]	39	1	1
[2,1,1,2,2,2]	40	1	1
[2,1,2,1,1,1]	41	1	1

[2,1,2,1,1,2]	42	1	1
[2,1,2,1,2,1]	43	1	1
[2,1,2,1,2,2]	44	1	1
[2,1,2,2,1,1]	45	1	1
[2,1,2,2,1,2]	46	1	1
[2,1,2,2,2,1]	47	1	1
[2,1,2,2,2,2]	48	1	1
[2,2,1,1,1,1]	49	1	1
[2,2,1,1,1,2]	50	1	1
[2,2,1,1,2,1]	51	1	1
[2,2,1,1,2,2]	52	1	1
[2,2,1,2,1,1]	53	1	1
[2,2,1,2,1,2]	54	1	1
[2,2,1,2,2,1]	55	1	1
[2,2,1,2,2,2]	56	1	1
[2,2,2,1,1,1]	57	1	1
[2,2,2,1,1,2]	58	1	1
[2,2,2,1,2,1]	59	1	1
[2,2,2,1,2,2]	60	1	1
[2,2,2,2,1,1]	61	1	1
[2,2,2,2,1,2]	62	1	1
[2,2,2,2,2,1]	63	1	1
[2,2,2,2,2,2]	64	1	1

Parameter Linier untuk Fungsi *Trapezoidal*

'out1mf1'	'linear'	[3.23808698534037,0.0332168969081580,1.75979507565528,0.847689560943950,1.18201870330372,0.847008980758371,-1.16626072523334]
'out1mf2'	'linear'	[-8.71910210559123,5.13070071680258,17.3299631262919,-2.51624645199080,1.23856087081700,-5.93863373082685,-1.41664329147793]
'out1mf3'	'linear'	[-13.9630975731698,9.93308799355499,-8.39788570668799,-8.91307741192827,0.925387228262081,-9.40126232519936,5.20323492622655]
'out1mf4'	'linear'	[-5.49485200448538,-5.80640202372273,24.8872521539567,-1.23524410190765,0.613936160227456,27.5994247606156,-7.57390546777345]
'out1mf5'	'linear'	[9.17269251472782,-10.5375878978791,-9.87482797111556,-1.06245826841030,-10.0719798570991,-1.85894432783546,4.68584340902612]
'out1mf6'	'linear'	[-6.69555290884394,15.2687324734036,-1.44501995279505,4.54677085891156,0.158464515202226,-6.12006206115318,0.237002448364709]

'out1mf7'	'linear'	[11.767070006777,3.57250056745032,15.7420864603038,-13.9499569421479,-17.3023769046231,24.4105364942723,11.0667098525738]
'out1mf8'	'linear'	[-3.14430418386879,0.506394093684954,0.0566161802908934,-6.99600992044820,-2.94560188570317,-12.1440207376084,-5.78523914130900]
'out1mf9'	'linear'	[4.84769018661692,-3.26657141430871,3.39510523713188,1.55751257346708,-0.927479887120448,-2.30958635663339,-1.90709861738722]
'out1mf10'	'linear'	[-15.9772129802187,0.964141660815657,19.2154461208776,14.3162344707097,4.99455638499444,-22.7237164152111,-4.93607151846445]
'out1mf11'	'linear'	[13.5452533771874,-6.48500449484508,-6.55829179177454,-11.2048649429816,-2.72622374523678,2.13595329769887,3.86343817522904]
'out1mf12'	'linear'	[0.155538595631374,-3.54719767127340,-1.79873253654306,-2.83853038079417,-6.22239221724937,-10.4393191665104,-12.0171387119152]
'out1mf13'	'linear'	[-8.82538227163835,8.40493025749204,-7.33300132133586,4.95103001361644,-8.15981236599597,-9.52358303042110,6.80392174791870]
'out1mf14'	'linear'	[4.46650831162457,5.84330333846414,1.79200375576143,-0.778070690253183,2.65470306725570,0.864623282788603,4.25830186296466]
'out1mf15'	'linear'	[5.50742652506669,1.61434128406174,-0.506722762829916,-0.804381874690952,-0.884107134348610,3.15716930511828,10.5750780004246]
'out1mf16'	'linear'	[0.403399885591569,0.654184702040048,0.0384812867243107,-1.08302074461073,-1.35957709839352,-3.1301417837629,-0.208571288284015]
'out1mf17'	'linear'	[-5.18910310974132,-4.53001256159121,-7.28676312036680,9.59240384718877,3.83543737045328,-5.75013041736028,3.01193946663922]
'out1mf18'	'linear'	[8.79759935670997,10.2318543866369,0.960831306492098,15.2881071031159,6.87102238369922,-5.76357402462514,-10.9655814439310]
'out1mf19'	'linear'	[4.61228907171729,8.53267149481894,13.3798327062982,1.37062243182616,-10.490698985560,3.13900125380460,-8.19174968464344]
'out1mf20'	'linear'	[1.14949013235667,0.553913527473307,1.51446326775714,0.274394916262797,-0.670517682227751,-3.24073053155696,-3.86783518399549]
'out1mf21'	'linear'	[-11.8212355375198,8.58156471415718,5.71522797950168,18.1217404897805,-19.5644185852608,-0.07461713872517,-1.06679490668782]
'out1mf22'	'linear'	[-3.01402376375492,0.372206643481042,7.51786323291332,4.59617021147529,-5.47887815535230,-0.296040075598964,4.9007602293512]
'out1mf23'	'linear'	[-0.147485060769238,-1.94267719972101,1.23438541032498,-2.39219268476939,-1.2655720026996,-3.41068155014685,-3.26176541151216]
'out1mf24'	'linear'	[-1.78204838684618,-1.62834471035707,-0.110366992896117,-1.47630205678215,-1.0392794225853,-1.85406991380371,-3.78549570404913]
'out1mf25'	'linear'	[-1.49239948879463,-4.76138729865953,1.61280478711018,-1.57830058630397,-3.50013753656485,-3.94383057308208,10.5156408900263]
'out1mf26'	'linear'	[-3.18359698824363,0.846666326273210,1.21401564400265,3.82049417406730,0.881044675113567,-2.31113076925302,0.123968789129976]
'out1mf27'	'linear'	[5.72523804715975,1.55007070783609,-2.32734982144643,-3.61967081207862,-0.676965275710192,2.67948321508242,3.2931702115912]
'out1mf28'	'linear'	[0.955435541868647,0.887131745810127,0.748077634491730,0.259982397602639,0.740465525746666,0.508377948074516,2.01917209739587]
'out1mf29'	'linear'	[-0.364005494004129,2.39876149277535,-6.07556403105809,-3.66902840379330,-1.85804540466487,-2.46603361564611,-0.0264312847170398]
'out1mf30'	'linear'	[0.608291918980166,0.481552191048337,-0.0162437956097228,-0.603145968467492,0.314247448372485,0.901238100428610,2.08436165917409]
'out1mf31'	'linear'	[-0.283018605419853,-1.01550517575125,-2.19616797093215,-1.17375474590721,-2.01393773085975,-0.860846663450432,-2.83939680259820]
'out1mf32'	'linear'	[0.0154531943938646,0.0165195408785493,0.0161504992985546,0.0197182750254273,0.0243645017668101,0.0241843833837909,0.0600719020289]
'out1mf33'	'linear'	[2.08515446445887,-3.96660718023157,-5.89951020295640,-0.215842511436495,15.6149401880300,14.6274214611769,-6.20486504722642]
'out1mf34'	'linear'	[-19.3453410396506,34.1087786737749,-1.07085950730415,17.4466755270192,7.00108573316913,-1.664286780651969,-1.03408315623995]
'out1mf35'	'linear'	[2.27441553599622,-15.2163729319497,-7.71311702849350,-6.21313522340594,19.7121586520238,-8.96255103154282,-2.59237080251585]
'out1mf36'	'linear'	[5.10352005123136,-4.89339724757051,4.29764989776429,-0.0708880614390111,-7.49456374278037,-2.61420457680025,-3.63715666687392]
'out1mf37'	'linear'	[4.87293016035106,-13.3339723572041,-0.417306366047656,13.9508714631520,-3.10283865505247,-3.95140114851939,-9.61282302779957]
'out1mf38'	'linear'	[-3.86536839902512,-1.51085065246047,11.4751877901585,1.31121753888598,-7.24993453808473,-6.29416827090959,-6.72357575931804]
'out1mf39'	'linear'	[2.71718774621452,4.13387270205961,4.72933927523226,3.59355205692989,1.66625674062010,2.51594450907833,11.2171594291575]
'out1mf40'	'linear'	[-2.71350394158134,-1.95293413099361,0.490908823007474,-2.34683339130097,-2.25575434265847,-3.37809248197180,-5.49285706055195]
'out1mf41'	'linear'	[16.5507492731492,-11.7756305013844,-4.26758852178181,5.92727314993280,-1.43078005828832,-1.68137408218736,-1.22631134035662]
'out1mf42'	'linear'	[0.824471204200386,-7.80990145643490,-3.65725758975206,8.08019971435297,2.51995012936798,-7.22837152987713,-6.51704104589798]
'out1mf43'	'linear'	[2.35114462919406,4.16680936862063,2.28975266742483,-2.41737512283350,0.491435229957769,5.86927275590775,4.09070223332405]
'out1mf44'	'linear'	[3.78160316334940,0.69293068748106,3.24004391227568,1.47393851180673,2.16243014519193,1.31654381136260,6.76375774076439]
'out1mf45'	'linear'	[-0.303796603514413,-1.98858398848898,-0.00865950851600292,-1.51001075635544,-2.5389332295074,2.00158934344107,-3.45666991268429]
'out1mf46'	'linear'	[3.14536940271287,2.54136241425406,3.32710438778077,3.06684037467800,1.61611276347344,3.40981941152243,9.20099387663202]
'out1mf47'	'linear'	[0.286216257871502,0.937616744270001,0.722050473283245,1.2155031733436,0.614250594617074,0.829845879104925,2.15301976608474]
'out1mf48'	'linear'	[0.278278833736442,0.245951911148031,0.324192334629760,0.324354516768342,0.284688164166245,0.183798539452151,0.901036167819404]
'out1mf49'	'linear'	[-4.32421480153861,-8.83288457636415,5.21388454262389,-2.45184295696367,5.17010336933852,1.73085874859813,6.81954971376837]
'out1mf50'	'linear'	[-6.51800723185901,1.76619298734218,7.13029822613496,-0.276562251350422,0.723677308013306,3.70039539386462,4.26691382866239]

'out1mf51'	'linear'	[1.72718135379878,4.38470902550011,3.22820739037717,-2.2274072724361,0.0790191616955537,-0.15927496437324,-2.14519824664632]
'out1mf52'	'linear'	[-1.22373131467278,-1.01015172275309,0.931444767984218,-1.68021606442319,-0.372636806886678,-1.10154839889446,-2.17203461658553]
'out1mf53'	'linear'	[-0.334854906508023,2.65096076209941,3.47023670957743,3.01944171310977,-7.32893209104419,-4.27899042932279,-5.78352027884700]
'out1mf54'	'linear'	[-0.581866546222567,-0.588337932056271,3.41615934182377,0.570699810471737,-4.63976719709324,-1.27953974551395,-2.69676320108771]
'out1mf55'	'linear'	[0.246500382398193,0.557710877014810,0.127363477868109,-0.267851645172935,0.387067733775160,-0.939519644139120,-0.458189175499444]
'out1mf56'	'linear'	[-1.15987774976435,-1.16345544410799,-0.168614605620499,-1.06991474636079,-0.800003001278169,-1.32669990158829,-2.82210955216374]
'out1mf57'	'linear'	[3.24031406209220,0.756177501453793,2.41649862879417,0.00218878618081235,2.39176285916619,-1.79740681799287,4.38357073796308]
'out1mf58'	'linear'	[-2.28784170018673,-1.75957052917420,-2.25060755122226,0.0924983778954944,-0.762859767796863,-2.82427580254212,-5.41643741677994]
'out1mf59'	'linear'	[2.41950214397858,3.06017852915983,2.89814542999164,0.444733247221527,2.86272314928935,2.06457688861053,7.32963919851746]
'out1mf60'	'linear'	[0.230346718304363,0.271051260748903,0.235920682206468,0.0642399883955914,0.270387382635619,0.184081260726057,0.715191563503100]
'out1mf61'	'linear'	[0.677539174754971,1.29999219363176,-0.310043836487926,-0.474213516602939,-0.113566958152989,-0.123066239946486,1.29464113096420]
'out1mf62'	'linear'	[0.211266653036413,0.135825779501009,0.0513993211773459,-0.145583850407073,0.0641742421506095,0.258819004785278,0.590593281676905]
'out1mf63'	'linear'	[0.0100821429878105,0.0282440652319872,0.0270100969934175,0.043000265971183,0.056602640162164,-0.0281619814059134,0.070768224474937]
'out1mf64'	'linear'	[0.0010347739453372,0.000969975571253306,0.00130888260198108,0.0012325906060120,0.001596165223794,0.00155766490283,0.0036670328418]

Hasil Perhitungan Lapisan Kelima

0.0753810189326717

0.629793214768019

-0.730115984063089

-0.362418824605602

-0.0325857177315670

-0.0853515452696806

0.189756282701241

0.144699399701295

0.405947861343026

0.362488633848158

-0.735700520100623

0.255844736700459

-0.0363861244982595

0.543852939285266

-0.359860142303033

0.0524936697634800

-0.226478646235618

0.141799126265041

0.312295288504440
0.0954634796153054
0.00120937021563960
-0.172618886441365
-0.162159928781358
0.0874169843311007
2.29396808387780
0.478900188478979
-0.0803211125357405
-0.103566390736961
-0.403548120433588
0.122216865847569
-0.179267578182920
-0.527171274720596
0.0184219717766236
0.598699780372987
-0.261758575896681
-0.242116764524674
-0.0913560473301029
-0.387263820357844
0.154332705087937
0.445952500373548
1.25320272612728
2.10849144234756
-0.828615878513099
0.0935926786601794
0.736973786362804

-0.244030771045955
-0.309311584963189
0.212638428440849
0.702719254410389
0.182100833665994
0.461617776075467
-0.391089785769914
-0.345077407498234
-0.342813592022413
0.891994590856201
-0.517471679966578
-0.134004143611156
-0.470778968877597
-0.246666483748533
-0.185737805671147
0.170831373971658
-0.967304552918205
0.201918719227433
-0.102402980892347
0.0706589720609231
-0.335239278689507
0.486652704655174
0.472424928549082
-0.381645690443041
0.445053834479147
-0.465591560950726
0.569224094522978

0.162120441500825
-0.476221928641076
-0.157056895472652
-0.377072052448200
-0.118531194683051
0.445088767885453
-0.0200836101952406
-0.157996466055921
0.0494295545363185
0.0180176618644151
0.0679538350678582
0.167783809908591
-0.0604440463327240
-0.151259254523946
-0.818098740704171
0.278301047380060
-0.333662349114045
0.0307635172655517
-0.0482098629074969
-0.335001250121773
0.264401726772979
0.102360238882673
0.210828638058402
-0.461806645002388
-0.314979920087713
0.324141183955402
-0.235762808615638

-0.354599918190780
-0.269877019756931
-0.433512634805515
0.272204642387682
0.0978780128165478
-0.469907025958983
0.183819288735388
0.0897865807058841
-0.287127898024325
-0.646619489847697
-0.388559920515141
-0.250480870851783
-0.514692530832053
-0.210096134820337
0.200899896214204
-0.182957577218741
0.0216468435858374
0.180020849827944
-0.0560721412474435
-0.0591635850840415
-0.517861096753921

Lampiran 4. Daftar riwayat hidup**CURRICULUM VITAE****A. Data Pribadi**

1. Nama : Sitti Hadijah
2. Tempat, Tanggal Lahir : Pinrang, 26 Mei 1997
3. Alamat :

4. Kewarganegaraan : Indonesia
5. Nomor HP :
6. Email : hadijahsk037@gmail.com
7. Bidang Ketertarikan :

B. Riwayat Pendidikan

1. Tamat SMA tahun 2015 di SMA Negeri 11 Unggulan Pinrang
2. Sarjana (S1) tahun 2021 di Universitas Negeri Makassar, Program Studi Statistika.
3. Magister (S2) tahun 2021 di Universitas Hasanuddin, Departemen Statistika, Program Studi Magister Statistika.

C. Pekerjaan dan Riwayat Pekerjaan

-

D. Karya Ilmiah

Sitti, Hadijah., Herdiani, E. T., & Tinungki, G. M. (2023). Peramalan dengan *Hybrid Autoregressive Integrated Moving Average - Adaptive Neuro Fuzzy Inference System* pada Data Inflasi Provinsi Sulawesi Selatan Tahun 2023. *ESTIMASI: Journal of Statistics and Its Application*, 78-88.