Forecasting Foreign Tourist Visits to West Nusa Tenggara Using ARIMA Method

By Siti Soraya

WORD COUNT 3289
TIME SUBMITTED 09-SEP-2021 01:39PM
PAPER ID 76445272

Jurnal Varian
Vol. x, No. x, Oktober 202x, Hal. xx-xx
e-ISSN 2581-2017

Forecasting Foreign Tourist Visits to West Nusa Tenggara Using ARIMA Method

Siti Soraya[1], Maulida Nurhidayati[2], Baiq Candra Herawati[3], Anthony Anggrawan[4], Lalu Ganda Rady Putra[5], Didiharyono D[6]

[1,3,4,5]Universitas Bumigora, Mataram, NTB, Indonesia
[2]IAIN Ponorogo, Jawa Timur, Indonesia
[6]Universitas Andi Djemma, Palopo, Indonesia

Article Info

Article history:
Received :
Revised :
Accepted :

Kata Kunci:
Autoregressive Integrated Moving Average (ARIMA), Box-Jenkins, Forcasting, Pandemic Covid-19, Tourism, Tourist, NTB

ABSTRAK

West Nusa Tenggara (NTB) is one of the provinces in Indonesia which has a special attraction in the world of tourism and is known as a pioneer of halal tourism. In addition to domestic tourists, NTB tourism always has an attraction for foreign tourists. This was proven by the increasing number of foreign tourists visiting NTB from year to year before Pandemic Covid-19. This condition certainly has a positive impact on increasing NTB economic growth in the field of tourism and indirectly on the optimization of existing infrastructure. Given the importance of NTB's tourism potential, a method for predicting the number of tourist visits to NTB is urgently needed in assisting the government to prepare appropriate facilities and infrastructure in the event of a surge in tourist visits. The method used in this research is the Box-Jenkins-ARIMA Model to predict the number of foreign tourist visits to NTB. The ARIMA method is based on 3 models that are formed from the results of plot data. The data used in this study are secondary data sourced from the Central Statistics Agency (BPS) of West Nusa Tenggara (NTB), from January 2010 to June 2019. The results showed that the ARIMA model (4,1,1) is the most suitable model. to predict the number of foreign tourist visits to NTB because the model produces the lowest SSE and MSE values compared to other models.

Accredited by Kemenristekdikti, Decree No: 200/M/KPT/2020
DOI: https://doi.org/10.30812/varian.v4i1.xxxxx

Corresponding Author:

Bai Candra Herawati,
Universitas Bumigora, Mataram, NTB, Indonesia.
Email: candrah@universitasbumigora.ac.id

A. INTRODUCTION

In this millennial era, tourism has become a sector that greatly contributes to the economic development of a region. One area in Indonesia that is of sufficient interest to foreign tourists is West Nusa Tenggara (NTB). With the unavailability of natural resources and large-scale manufacturing industries in NTB [1], the tourism sector has indirectly assumed the role as one of the biggest economic contributors in NTB. With the tourism industry, certainly can open new jobs and ultimately can improve the economy of the community [2].

The development of the tourism sector must be carried out in a sustainable manner so as to provide direct benefits for the welfare of the community because the tourism sector is one component of economic development [3]. The policy direction in the development of the tourism sector includes marketing of national tourism by bringing in tourists and even foreign tourists.

As the increasing flow of tourist arrivals from foreign countries to NTB, the government needs to make good and sustainable planning so that it can optimally provide excellent service that ultimately can provide satisfaction to tourists. When tourists feel satisfied, allow these tourists to return to visit NTB. Good and

sustainable planning can be supported by the prediction of the number of tourist visits. The goal is that the direction of planning and policy in accordance with existing conditions. Among other things, it can be estimated the number of workers available, the availability of facilities and infrastructure which leads to benchmarks in improving the economy as well as the welfare of the community [4], especially NTB.

In order to support the national tourism target, NTB Provincial Tourism Office data from 2009 to 2017 show a significant increase in tourism trends. NTB's economic growth in 2017 reached 7.1 percent, exceeding national economic growth (5.6 percent).

NTB poverty rate decreased from 23.08 percent in 2008 to 15.05 percent for 2017. The unemployment rate also decreased from 6.25 percent in 2009 to 3.32 percent in 2017. Quarter I of 2018, NTB Province occupies the most position low in Indonesia in terms of economic growth. In 2019, through the branding "Halal Tourism". NTB Province is targeting 4 million tourist arrivals, 2 million for foreign tourists and 2 million for Nusantara tourists. To support this, in 2019, 18 events will be held, 4 of which will be included in the Top 100 National Calendar of Events, namely the Bau Nyale Charm, the Tambora Charm Festival, the Moyo Charm Festival and the Khazanah Ramadan Charm.

In the world of tourism, predicting the number of tourist visits is something that needs to be done [5]. What's more, NTB is one of the destinations most frequently visited by tourists after Bali, for the Nusa Tenggara region. Besides that, one of the determinants or influences on the economy is from the tourism sector [6].

However, due to the Covid-19 Pandemic in 2020, the number of tourism visits has decreased, even in a few months there were zero visits because the NTB government implemented the Large-Scale Social Restrictions (PSBB) policy and tourism sites were closed as an effort to cut the spread of Covid-19 in NTB. Therefore, in forecasting it is necessary to consider the Pandemic Covid-19 variable which has an impact on the decrease in the number of foreign tourists to NTB.

B. BOX-JENKINS METHODE

The Box-Jenkins method is a method of applying time series data popularized by George-Box and Gwilyn in 1970, by combining the moving average and autoregressive approaches [7]. Box-Jenkins recommends that whether or not a stationary time series of data is stationary, in the process one or more process differentiations can be carried out using the ARIMA Model approach [8]. A method that is able to solve various problems in forecasting time series data. Included in predicting the number of tourists visiting NTB, by looking at visiting patterns of visits in the past [9].

1. ARIMA Model

The ARIMA model is formed from 3 models, namely Autoregressive (AR), Moving Average (MA), and Autoregressive and Moving Average (ARMA), which are preceded by checking stationary data [10].

If there is order d $(d \geq 1)$ in a Z_t forecasting process then the homogeneous non-stationary model is known as the ARIMA (p, d, q) Model [5]. In general, the ARIMA Model can be seen in equation (1) [10]:

$$\emptyset_p(B)(1-B)^d Z_t = \theta_0 + \theta_q(B)_{a_t} \qquad (1)$$

where AR is represented by:

$$\emptyset_p(B) = (1 - \emptyset_1 B - \cdots - \emptyset_p B^p) \qquad (2)$$

and the MA is represented by:

$$\theta_q(B) = (1 - \theta_1 B - \cdots - \theta_q B^q) \qquad (3)$$

In the next section, the parameter θ_0 shows different roles between $d = 0$ and $d \geq 0$. When $d = 0$ implies that the data is stationary, such as: $\theta_0 = \mu\,(1 - \theta_1 - \cdots - \theta_q)$. However, if $d \geq 0$ is known as a deterministic trend. One thing that is very rarely used and even omitted in the forecasting process.

Data plots and identification of the formation of the ARIMA Model are things that need to be done [11]. This is related to the stationary in the data is a condition of the ARIMA Model, both stationary in mean and variance [12]. If the data is not stationary, transformation needs to be done [2]. When the stationary requirements have been met then the identification of the model formed can be seen in the Autocorrelation

DOI: https://doi.org/10.30812/varian.v4i1.xxxxx

Function (ACF) and Partial Autocorrelation Function (PACF) plots also need to be done [13] [14]. So as to ensure that the model that reflects the forecasting is good, the estimation of the best model that aims to ensure that residuals are white noise or not is very necessary.

2. Ljung-Box Methode

The estimation method used is Ljung-Box. The aim is to check that the model formed has fulfilled the independent residual requirements and is normally distributed [5]. Statistics for the independence test between lag residuals can be seen in equation (4) [15]:

$$Q^* = n(n+2)\sum_{k=1}^{K}\frac{\hat{\rho}_k^{\,2}}{(n-k)} \qquad (4)$$

With a hypothesis:

$H_0 : \rho_1 = \rho_2 = \cdots = \rho_k = 0$ (residual white noise)

H_1 : minimal ada satu $\rho_k \neq 0$, untuk k 1,2,3, … , n (residual not white noise)

Equation (4) explains that at an alpha significance level of 5% and the value of Q^* is greater than the value of the table $\chi^2_{[q;K-p-q]}$ or p-value < alpha, then the decision is made to fail to accept H_0, which means that residuals are not whine noise.

Therefore, the ARIMA model is very appropriate to be used to forecast foreign tourists visiting, knowing the nature of the data to come. This process is done by dividing the data into in-sample data and out-sample data. Out-sample data is used to predict or validate the accuracy of the data in an deepening process. So the emerging model is the best model from in-sample data [16]. In this study, the selection of the best model is done using the SSE and MSE values in the existing model then forecasting based on the best in-sample model.

C. METHODE

In this study the Box-Jenkins Method is used with the ARIMA Model. The ARIMA model serves to predict the number of foreign tourist arrivals to the Province of West Nusa Tenggara in January 2021 to December 2023. Data used as deepening is the monthly data of foreign tourist visits from January 2010 to June 2019. The data in this study were sourced from the Central Statistics Agency of Nusa Tenggara West through the page https://ntb.bps.go.id/. The stages of the research carried out are as follows [16]:

a. Identifying data through data plots and checking data validation, both in mean and variance
b. Identifying ARIMA models
c. Determination of the parameters p, d and q in ARIMA
d. Determination of the appropriate ARIMA model equation is used for the application of data forecasting.
e. Validate the time series data used for forecasting.
f. Forecasting.

D. RESULTS AND DISCUSSION

1. Data Plot and Identification of Stationary Models

At this stage stationarity testing is done both in mean and variance. Stationary testing in variants is carried out by Box-Cox testing. The Box-Cox test results are shown in Figure 1.

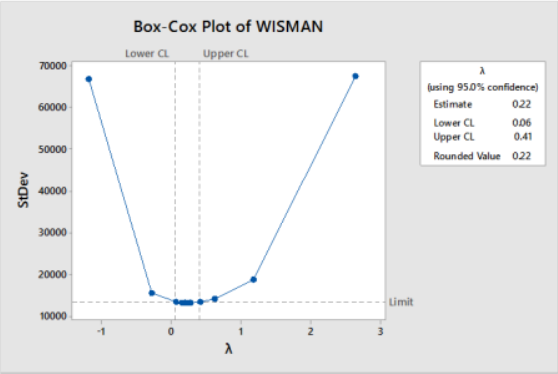

Figure 1. Box-Cox Test Results

The Box-Cox test results in Figure 1 show that the value of λ obtained is 0.22, which indicates that the data is not stationary in the variant, so the transformation is based on the value of λ obtained. The next step is testing stationarity in the mean by using ACF and PACF transformed tourist visit data as shown in Figure 2 and Figure 3.

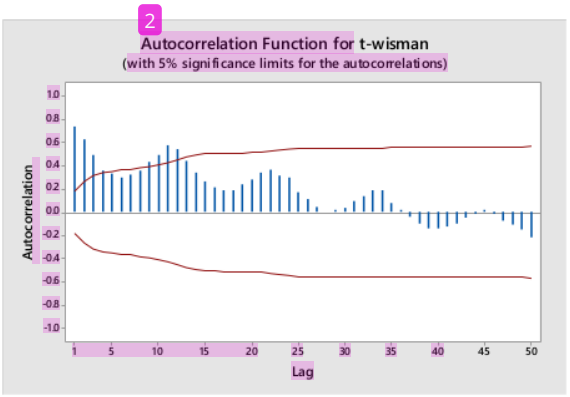

Figure 2. ACF Data Plot Transformation

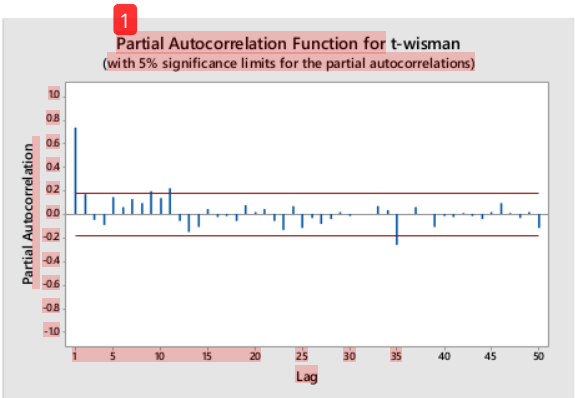

Figure 3. ACF Data Plot Transformation

Figures 2 and 3 show the results of the ACF plot falling slowly and the PACF plot cutting off in lag 1 means that the transformation data of the number of foreign tourist arrivals is not stationary in the mean so it needs to be done differencing to stationate the data. ACF and PACF plot results for differencing data are shown in Figures 4 and 5.

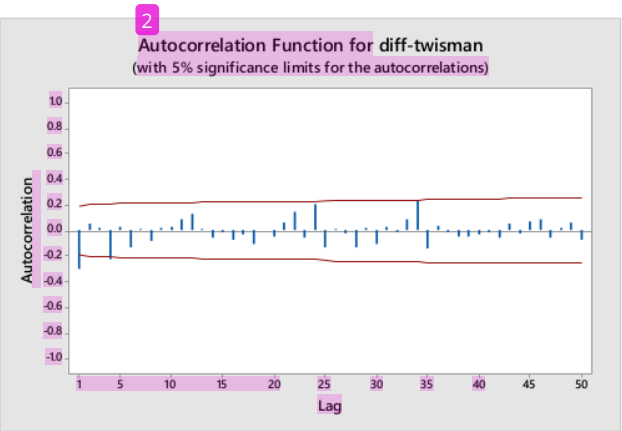

Figure 4. ACF Data plot *Differencing*

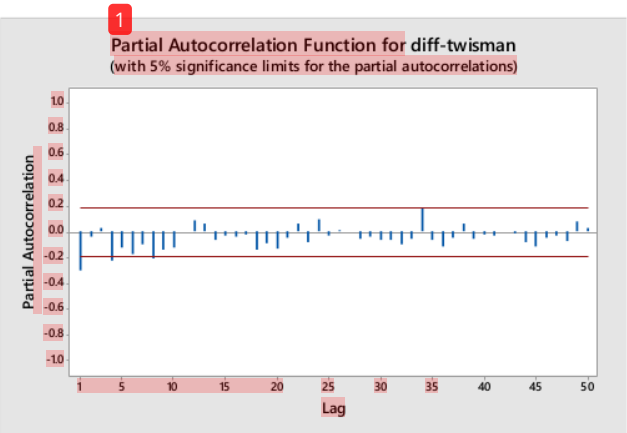

Figure 5. PACF Data plot *Differencing*

Figures 4 and 5 show that the ACF plot cuts off in lag 1 while the PACF plot cuts off in lag 1 and 4 and decays towards zero for other lags. It can be concluded that differencing data follows the ARIMA (1,1,1) and ARIMA (4,1,1) models and the overfitting models of the two models are the ARIMA (1,1,4) and ARIMA (4,1,4) models. The next model is named first model for ARIMA (1,1,1), second model for ARIMA (4,1,1), third model for ARIMA (1,1,4) and four model for ARIMA (4,1, 4).

2. Estimation of The Model and Selection of The Best Model.

The ARIMA Model is estimated using Minitab 15 with the results of the estimated ARIMA model parameters shown in Table 1.

Table 1. Estimation Results for the ARIMA Model

Model	Type	Coef	P
1	AR 1	-0,1649	0,590
	MA 1	0,1528	0,618
	Constant	0,0561	0,598
2	AR 1	0,4951	0,000
	AR 2	0,2174	0,043
	AR 3	-0,01	0,925
	AR 4	-0,2239	0,021
	MA 1	0,9746	0,000
	Constant	0,019998	0,000

DOI: https://doi.org/10.30812/varian.v4i1.xxxxx

3	AR 1	0,0747	0,791
	MA 1	0,5381	0,052
	MA 2	0,0152	0,930
	MA 3	0,1048	0,330
	MA 4	0,3008	0,016
	Constant	0,03566	0,003
4	AR 1	0,789	0,000
	AR 2	0,5219	0,015
	AR 3	-0,8731	0,000
	AR 4	-0,0108	0,934
	MA 1	1,3312	0,000
	MA 2	0,2103	0,294
	MA 3	-1,2458	0,000
	MA 4	0,5655	0,000
	Constant	0,0144	0,394

Table 1 shows that all parameters of model 1 were not significant because the resulting P value was more than 0.05. Model 2 has 1 parameter which is not significant, that is on AR 3 with a value of P = 0.925. Model 3 only has 1 significant parameter, which is MA 4. And Model 4 has 2 insignificant parameters. Because model 1 has all the parameters are insignificant, the model is excluded from the analysis and there are only 3 models which are then subjected to diagnostic check testing to ensure the model obtained from the estimation results meets the white noise assumption using Ljung-Box in Table 2.

Table 2. White Noise Test Results

Model	Lag	Chi-Square	DF	P-Value
2	12	5,4	6	0,50
	24	12,5	18	0,82
	36	29,9	30	0,47
	48	35,1	42	0,77
3	12	7,7	6	0,26
	24	18,8	18	0,41
	36	38,4	30	0,14
	48	46,6	42	0,29
4	12	9,5	3	0,02
	24	13,8	15	0,54
	36	27,5	27	0,44
	48	32,5	39	0,76

Based on Table 2 it is known that all Q statistics for lags 12, 24, 36, and 48 in models 2 and 3 are not significant, meaning that model 2 and model 3 are white noise. Model 4 has a value of P = 0.02 at lag 12 which indicates that lag 12 is significant, meaning that model 4 is not white noise. Next to determine the best model is done by looking at the performance value of each model using SSE and MSE. The results of the ARIMA model performance tests are shown in Table 3.

Table 3. ARIMA Model Performance Test Results

Uji Performa Model	Model 2	Model 3
SSE	160,740	162,117
MSE	1,502	1,515
df	107	107

Based on Table 3, it is known that the df values of model 2 and model 3 are the same, namely 107 so that to determine the best model is done by looking at SSE and MSE. SSE and MSE results show that model 2 has smaller SSE and MSE values compared to model 3 so that the ARIMA model chosen is the ARIMA Model (4,1,1).

DOI: https://doi.org/10.30812/varian.v4i1.xxxxx

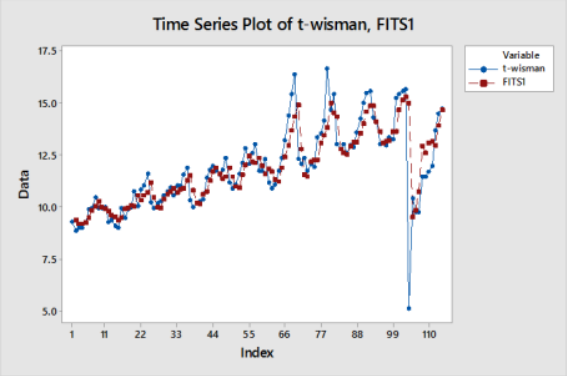

Figure 6. Data Plot of International Tourist Visits and ARIMA Models (4,1,1)

Figure 6 shows that the results of forecasting conducted with the ARIMA Model are able to follow the pattern of data possessed by data on the number of foreign tourist arrivals.

3. Forecasting Overseas Tourist Visits

The ARIMA model (4,1,1) is the best model because it has the smallest SSE and MSE values and meets the white noise assumption. This model is then used to forecast foreign tourists visiting for the next 12 months for 3 years, from January 2021 to December 2023. Forecasting results are shown in Table 4.

Table 4. Forecasting Overseas Tourist Visits 2021-2023

Bulan	2021	2022	2023
Jan	151905	174656	199645
Feb	153659	176635	201845
Mar	155509	178636	204063
Apr	157414	180657	206301
May	159336	182697	208558
Jun	161256	184755	210835
Jul	163164	186830	213130
Aug	165061	188922	215445
Sep	166955	191031	217779
Oct	168855	193157	220132
Nov	170768	195301	222505
Dec	172701	197464	224898

Based on Table 4 it is known that the largest number of tourist visits occurred in December with the number of each year that is 172701 visitors in 2021, 197464 in 2022, and continues to increase in 2023 by 224898 visitors. The results of this forecasting indicate that the number of tourist visits will always show an increase every year. This means that the development of tourism in NTB is quite good. This is supported by several tourism facilities as a support as well as adequate facilities and infrastructure that can provide comfort for foreign tourists visiting NTB.

E. CONCLUSION

Based on the results of the research that has been done it can be concluded that in forecasting the number of foreign tourist visits to NTB using the ARIMA method, the results of the study are indicated by the value of the SSE and MSE so that the ARIMA model chosen is the ARIMA model (4,1,1).

DOI: https://doi.org/10.30812/varian.v4i1.xxxxx

From the forecasting process the number of foreign tourist arrivals to NTB for the next four periods, from January 2021 to December 2023, shows that the number of tourist arrivals shows a positive trend and is increasing every month. The highest achievement in each year occurred in December with 172701 visits in 2021, 197464 in 2022 and also continued to increase in 2023 by 224898. This gave a positive signal to the NTB local government to further improve accommodation and other supporting facilities. In addition, the NTB regional government can also conduct several events by bringing up regional cultural themes or other promotions in order to increase the interest of tourists to visit NTB.

References

[1] A. A. Rizal, S. Soraya, and M. Tajuddin, "Sequence to Sequence Analysis with Long Short Term Memory for Tourist Arrivals Prediction," *J. Phys. Conf. Ser.*, vol. 1211, no. 1, 2019.

[2] D. Didiharyono and M. Syukri, "Forecasting With Arima Model in Anticipating Open Unemployment Rates in South Sulawesi," *Int. J. Sci. Technol. Res.*, vol. 9, no. 3, pp. 3838–3841, 2020.

[3] D. Fahmeyzan, S. Soraya, D. Etmy, and S. B. Mataram, "Uji Normalitas Data Omzet Bulanan Pelaku Ekonomi Mikro Desa Senggigi dengan Menggunakan Skewness dan Kurtosis," *J. Varian*, vol. 2, no. 1, pp. 31–36, 2018.

[4] S. S. Setiawan, Santi Puteri Rahayu, "Economic Growth Modelling In East Java Using Bayesian," *TEKNOMATIKA*, vol. 07, no. 02, pp. 57–69, 2017.

[5] M. S. Annisa Fitri, Ika Purnamasari, "Peramalan Jumlah Wisatawan Mancanegara Menggunakan Model Arima," *Statistika*, vol. 7, no. 1, 2019.

[6] A. T. Nguyen, "The Relationship between Tourism and Economic Growth: Evidence from Oceania," *J. Tour. Manag. Res.*, vol. 7, no. 1, pp. 32–41, 2020.

[7] S. City, H. A. Tahir, R. A. Ahmed, and A. J. Mhamad, "Forecasting for the Imported Weight of Equipment to Cargo of Sulaimani International Airport," *sjcus*, vol. 3, no. 1, pp. 62–82, 2019.

[8] D. Eni and F. J. Adeyeye, "Seasonal ARIMA Modeling and Forecasting of Rainfall in Warri Town, Nigeria," *J. Geosci. Environ. Prot.*, vol. 03, no. 06, pp. 91–98, 2015.

[9] D. Didiharyono and B. Bakhtiar, "Forecasting Model With Box-Jenkins Method To Predict Tourists Who Visit Tourism Place In Toraja," *J. Econ. Manag. Account.*, vol. 1, no. 1, pp. 34–41, 2018.

[10] A. Chuang and W. W. S. Wei, "Time Series Analysis: Univariate and Multivariate Methods," *Technometrics*, vol. 33, no. 1. p. 108, 1991.

[11] Y. Zhang, L. Luo, J. Yang, D. Liu, R. Kong, and Y. Feng, "A Hybrid ARIMA-SVR Approach for Forecasting Emergency Patient Flow," *J. Ambient Intell. Humaniz. Comput.*, vol. 10, no. 8, pp. 3315–3323, 2019.

[12] P. S. Arini and E. Nawangsih, "Peramalan Jumlah Kunjungan Wisatawan Mancanegara (Wisman) ke Bali Tahun 2019: Metode ARIMA," *J. Ekon. KUANTITATIF Terap.*, vol. 8, no. 2, pp. 136–141, 2015.

[13] W. Li and Z. G. Zhang, "Based on Time Sequence of ARIMA Model in The Application of Short-Term Electricity Load Forecasting," *ICRCCS 2009 - 2009 Int. Conf. Res. Challenges Comput. Sci.*, pp. 11–14, 2009.

[14] C. Series, "Self-Identification Deep Learning ARIMA Self-Identification Deep Learning ARIMA," *J. Phys. Conf. Ser.*, vol. 1564, 2020.

[15] N. P. Iriani and M. S. Akbar, "Estimasi Value at Risk (VaR) pada Portofolio Saham dengan Copula," *J. Sains dan Seni ITS*, vol. 2, no. 2, pp. 1–6, 2013.

[16] N. P. N. Hendayanti and M. Nurhidayat, "Perbandingan Metode Seasonal Autoregressive Integrated Moving Average (SARIMA) dengan Support Vector Regression (SVR) dalam Memprediksi Jumlah Kunjungan Wisatawan Mancanegara ke Bali," *J. Varian*, vol. 3, no. 2, pp. 149–162, 2020.

Vol. x, No. x, Oktober 202x, Hal. xx-xx
DOI: https://doi.org/10.30812/varian.v4i1.xxxxx

Forecasting Foreign Tourist Visits to West Nusa Tenggara Using ARIMA Method

ORIGINALITY REPORT

21%
SIMILARITY INDEX

PRIMARY SOURCES

1	www.imse.lsu.edu Internet	90 words — 2%
2	www.cdpr.ca.gov Internet	86 words — 2%
3	Ni Putu Nanik Hendayanti, Maulida Nurhidayati. "PEMODELAN JUMLAH UANG BEREDAR DAN INFLASI NASIONAL DENGAN VECTOR ERROR CORRECTION MODEL (VECM)", Jurnal Varian, 2017 Crossref	48 words — 1%
4	www.shef.ac.uk Internet	36 words — 1%
5	adoc.pub Internet	35 words — 1%
6	centaur.reading.ac.uk Internet	35 words — 1%
7	Joao F. L. de Oliveira, Eraylson G. Silva, Paulo S. G. de Mattos Neto. "A Hybrid System Based on Dynamic Selection for Time Series Forecasting", IEEE Transactions on Neural Networks and Learning Systems, 2021 Crossref	34 words — 1%

8	ejournal.gunadarma.ac.id Internet	31 words — 1%
9	icss.nileuniversity.edu.ng Internet	29 words — 1%
10	A A Rizal, S Soraya, M Tajuddin. "Sequence to sequence analysis with long short term memory for tourist arrivals prediction", Journal of Physics: Conference Series, 2019 Crossref	25 words — 1%
11	ojs.pnb.ac.id Internet	25 words — 1%
12	Malim Muhammad, Harjono Harjono, Lukmanul Akhsani. "Peramalan Mahasiswa Baru Ft dan Fkip Um Purwokerto dengan Model Arima", Techno (Jurnal Fakultas Teknik, Universitas Muhammadiyah Purwokerto), 2017 Crossref	23 words — 1%
13	Timina Liu, Shuangzhe Liu, Lei Shi. "Time Series Analysis Using SAS Enterprise Guide", Springer Science and Business Media LLC, 2020 Crossref	19 words — < 1%
14	ejournal.st3telkom.ac.id Internet	18 words — < 1%
15	Najamuddin Amy, Anggreni Muchali, Jian Budiarto, Adam Bachtiar Maulachela, Ahmad Ashril Rizal. "Management of issue and public trust using information technology", Journal of Physics: Conference Series, 2020 Crossref	17 words — < 1%
16	dokodoc.com	

	Internet	17 words — < 1%
17	jtsiskom.undip.ac.id Internet	17 words — < 1%
18	ejournal.undip.ac.id Internet	16 words — < 1%
19	repository.unair.ac.id Internet	16 words — < 1%
20	dspace.knust.edu.gh Internet	15 words — < 1%
21	ojs.unanda.ac.id Internet	15 words — < 1%
22	Shigeo Igarashi, Toshio Igarashi, Yumiko Abe, Shan-Guang Liang, Takashi Minegishi, Masao Igarashi. "Important Initiative Roles of CD44 and Tenascin in Sampson's Theory of the Pathogenesis and Development of Endometriosis", Journal of Endometriosis and Pelvic Pain Disorders, 2013 Crossref	14 words — < 1%
23	ejurnal.its.ac.id Internet	14 words — < 1%
24	epdf.pub Internet	13 words — < 1%
25	eprints.undip.ac.id Internet	13 words — < 1%
26	Marifatul Nur Yuniati, Agus Sugandha. "Implementation of autoregressive integrated	12 words — < 1%

moving average model to predict total electron content from GPS satellite receiver in Bandung", IOP Conference Series: Earth and Environmental Science, 2021
Crossref

27 ojs.unimal.ac.id
Internet
12 words — < 1%

28 www.science.gov
Internet
12 words — < 1%

29 Jihye Moon, Md Billal Hossain, Ki H. Chon. "AR and ARMA model order selection for time-series modeling with ImageNet classification", Signal Processing, 2021
Crossref
11 words — < 1%

30 Miller, R.B.. "Evaluation of transformations in forecasting age specific birth rates", Insurance Mathematics and Economics, 198410
Crossref
10 words — < 1%

31 Søren Bisgaard, Murat Kulahci. "Quality Quandaries*: Time Series Model Selection and Parsimony", Quality Engineering, 2009
Crossref
10 words — < 1%

32 ejurnal.ung.ac.id
Internet
10 words — < 1%

33 Eviyana Atmanegara, Suhartono, RM Atok. "Forecasting Foreign Tourist Using Intervention Analysis On Count Time Series", IOP Conference Series: Materials Science and Engineering, 2019
Crossref
9 words — < 1%

34 gatrenterprise.com
Internet
9 words — < 1%

35	docplayer.net Internet	8 words — < 1%
36	repository.its.ac.id Internet	8 words — < 1%
37	www-ist.massey.ac.nz Internet	8 words — < 1%
38	www.iunera.com Internet	8 words — < 1%
39	www.ijstr.org Internet	7 words — < 1%

EXCLUDE QUOTES	OFF	EXCLUDE SOURCES	OFF
EXCLUDE BIBLIOGRAPHY	OFF	EXCLUDE MATCHES	OFF