



Paper Name: Prediction of Literacy Rate of Female Youth in Pakistan Using Time Series Modelling

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Objective:

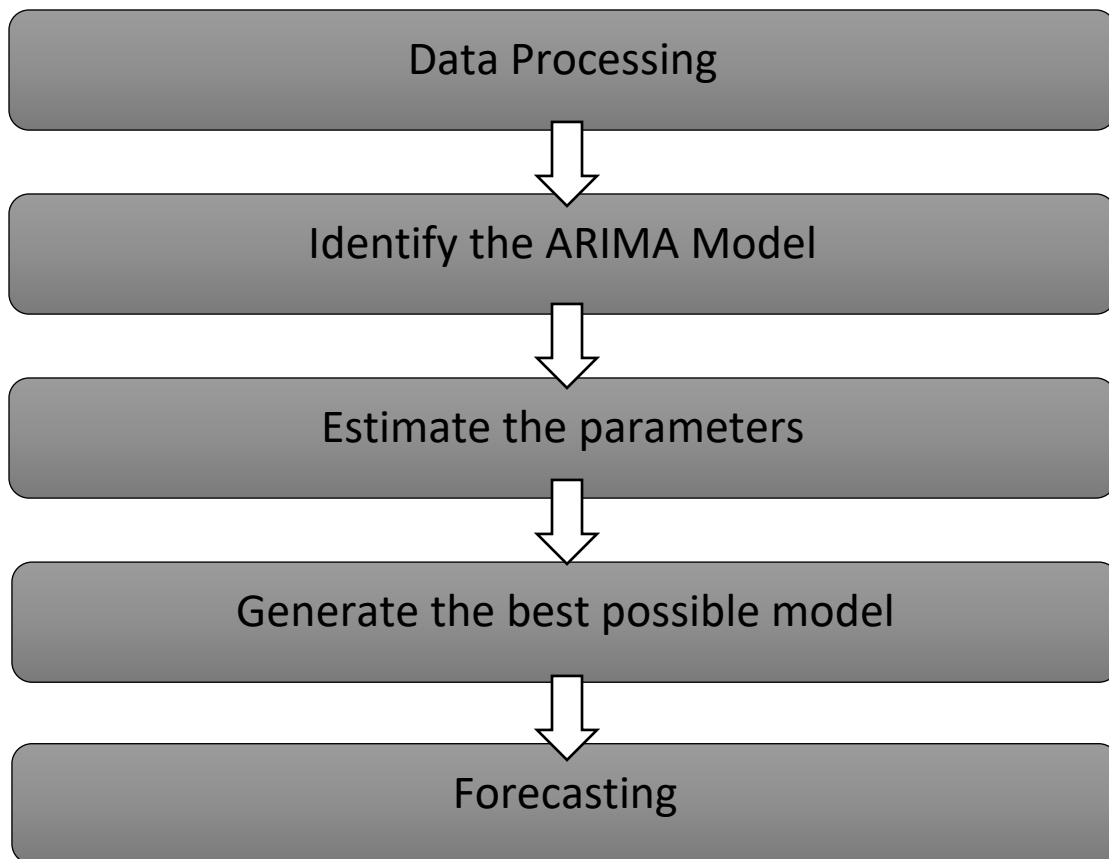
The aim of the study is to predict the year for which we will anticipate 100% literacy rate of female youth in Pakistan.

Introduction:

- Pakistan has a population of approx. 230 million people.
- It is the fifth thickly populated country having higher female proportion
- Pakistan spent 1.7% of its GDP in Education sector for the fiscal year 2021-2022.
- According to UNESCO statistics of 2019, Pakistan's female literacy youth rate is 65%.

Methodology used:

1. Implementation flow diagram:

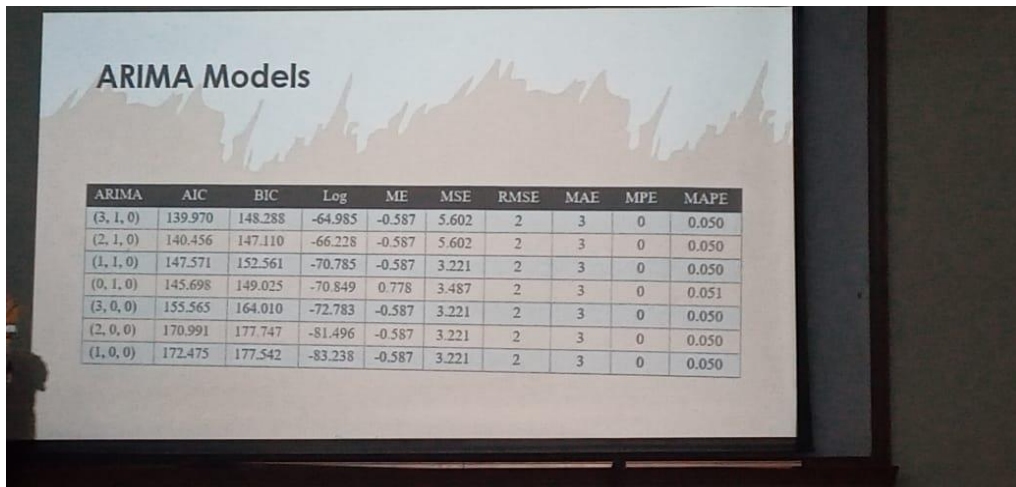


2. More about ARIMA:

ARIMA, short for 'Auto Regressive Integrated Moving Average', explain a given time series based on its own past value (its own lags) and lagged forecast errors, so that equation can be used to forecast future values.

$$Y_t = \beta_1 Y_{t-1} + \beta_2 Y_{t-2} + \dots + \beta_0 Y_0 + \epsilon_t$$

$$Y_{t-1} = \beta_1 Y_{t-2} + \beta_2 Y_{t-3} + \dots + \beta_0 Y_0 + \epsilon_{t-1}$$



ARIMA Models

ARIMA	AIC	BIC	Log	ME	MSE	RMSE	MAE	MPE	MAPE
(3, 1, 0)	139.970	148.288	-64.985	-0.587	5.602	2	3	0	0.050
(2, 1, 0)	140.456	147.110	-66.228	-0.587	5.602	2	3	0	0.050
(1, 1, 0)	147.571	152.561	-70.785	-0.587	3.221	2	3	0	0.050
(0, 1, 0)	145.698	149.025	-70.849	0.778	3.487	2	3	0	0.051
(3, 0, 0)	155.565	164.010	-72.783	-0.587	3.221	2	3	0	0.050
(2, 0, 0)	170.991	177.747	-81.496	-0.587	3.221	2	3	0	0.050
(1, 0, 0)	172.475	177.542	-83.238	-0.587	3.221	2	3	0	0.050

Figure 1 ARIMA Model findings

3. Conclusion:

Based on the findings, the goal of having a fully literate female population can be achieved by 2057. Pakistan will accomplish female literacy at 100% by pro-active planning and appropriate government initiatives in the aforementioned year.