

**FORECASTING TECHNIQUES FOR AIR POLLUTION:  
UTILIZING EXPONENTIAL SMOOTHING AND ARIMA  
METHODS**

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## ABSTRACT

Air pollution poses a significant threat to public health and the environment, necessitating the development of effective forecasting techniques to aid in pollution management and mitigation efforts. This study conducts a comparative analysis of two prominent time series forecasting methods, namely Exponential Smoothing and Autoregressive Integrated Moving Average (ARIMA), to predict air pollution levels. The primary objective is to evaluate the performance and accuracy of these methods in capturing the dynamic and complex patterns inherent in air quality data. The findings reveal that, in this specific context, the Exponential Smoothing method, particularly Holt-Winters, consistently demonstrates a lower Root Mean Squared Error (RMSE) compared to ARIMA. This suggests that Holt-Winters Exponential Smoothing provides more accurate predictions for air pollution levels.

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## TABLE OF CONTENT

DECLARATION OF THE SUPERVISORS .....	i
DECLARATION OF THE CANDIDATE .....	iii
ABSTRACT .....	iv
ACKNOWLEDGEMENT .....	v
TABLE OF CONTENT .....	vi
LIST OF TABLES .....	viii
LIST OF FIGURES .....	ix
CHAPTER ONE .....	1
INTRODUCTION OF RESEARCH .....	1
1.1 Introduction .....	1
1.2 Background of study .....	1
1.3 Problem Statement .....	3
1.4 Objectives .....	4
1.5 Significance of The Project .....	4
1.6 Scope of the Project .....	5
1.7 Project Benefits .....	5
1.8 Definition of Terms and Concept .....	6
1.9 Organization of Report .....	7
CHAPTER TWO .....	8
LITERATURE REVIEW .....	8
2.1 Introduction .....	8
2.2 Literature Review .....	8
2.2.1 Air Pollution .....	8
2.2.2 Exponential Smoothing .....	11
2.2.4 Arima .....	17
2.3 Conclusion .....	24
CHAPTER THREE .....	25
METHODOLOGY .....	25
3.1 Introduction .....	25
3.2 Research Step .....	25
CHAPTER FOUR .....	29
IMPLEMENTATION .....	29
4.1 Introduction .....	29

4.2	Implementation of Method.....	29
4.2.1	Exponential Smoothing .....	29
4.2.2	ARIMA .....	41
4.3	Conclusion.....	48
CHAPTER FIVE .....		49
RESULT AND DISCUSSION .....		49
5.1	Introduction .....	49
5.2	Calculating error and RMSE.....	49
5.2.1	RMSE for Holt Winter.....	50
5.2.2	RMSE for ARIMA.....	51
5.3	Comparison RMSE .....	53
5.4	Graph Visualization.....	53
5.4.1	Exponential Smoothing .....	53
5.4.2	Arima .....	54
5.5	Conclusion.....	54
CHAPTER SIX.....		55
CONCLUSION AND RECOMMENDATION .....		55
6.1	Introduction .....	55
6.2	Conclusion.....	55
6.3	Recommendations .....	56
REFERENCES .....		57
APPENDICES .....		60
APPENDIX A1 : Command integrate data in Python.....		60
APPENDIX A2: Command integrate data in Python.....		61
APPENDIX A3: Command to fit the ARIMA model in Python.....		62