"Application of Time Series Analysis in Forecasting the Petroleum Products Sales – A Study Conducted for Bharat Petroleum Corporation Limited"

Mallieswari R [1]

Vishal S Nayak [2]

Abstract

Forecasting future trends is very important to have plan for the supply chain activities and necessary analysis for the sales in petroleum industry. This research is to explore the use of time series analysis for forecasting the sales of the petroleum product. There are a wide variety of the petroleum products such as petrol, diesel, gas, lubricants, bitumen and many other, in this study only diesel and petrol is been taken into consideration. The companies leading in the market focus on the making new products that will act as a substitute and refining the existing products with innovations and technology. In this regard the data obtained from Bharat Petroleum Corporation Limited consists of the sales of petroleum products which includes the high speed diesel and petrol. The analysis was carried to the sales for the forth coming year. The objective of the study is to assess the effectiveness of the time series model in forecasting the petroleum products sales and to examine the impact of environmental factors on the petroleum products sales. The environmental factors like temperature, rainfall, humidity and time is been considered to evaluate. The present study explores the effectiveness of dependency model- multiple regression analysis as predictive to forecast the values for the petroleum products over three years and it studied the impact of environmental factors on petroleum products sales.

Keywords: Time series analysis, forecasting, Environmental factors, Petroleum product sales

1.Mallieswari R Asst-Professor, Ramaiah Institute of Management, Bangalore

2.Vishal S Nayak Student, Ramaiah Institute of Management, Bangalore

1. INTRODUCTION

Indian oil and gas industry is the world's fastest promising energy market and one of the eight essential industries in India. It plays a key role in persuading in finding resolution for all the other influential sectors of the economy. India's economic development is largely dependent to energy requirement, therefore there is a need for oil and gas is estimated to grow more, thus originating the industry precisely favourable for investment.

The government of India also allows 100 percent Foreign Direct Investment (FDI) in many segments of the sectors, including natural gas, petroleum products and refineries among others. It enacted various policies such as OALP and CBM policy to encourage investment in these sectors. Government of India is planning to setup around 5000 compressed Bio Gas (CBG) plants by 2023.

All are largely depended on oil and gas as the economies and the infrastructure is growing rapidly, so they depend on oil. Petroleum is primary source for manufacturing of chemical products, solvents and plastics. Therefore, it is the most integral to many industries as it acts as the foundation to production of products in many other industries.

Sales department of a company are frequently undergoing the task of predicting sales. Sales forecasting is an important component of the role of marketing manager for getting insights about the future requirements, developing promotional strategies, pricing policies and advertisement campaigns to overcome the competition. There are several methods available to forecasting sales, but often-used approach is Time series analysis to predict the sales for the future. A time series analysis uses cross-sectional historical data.

This industry is called as the oil industry, which deals with exploration of the oil sources, extracting and converting it into oil that can be further converted or refined into various petroleum products. Petroleum is very important for all industry and is needed to maintain the balance of industry civilization and it makes very crucial for many nation. Almost all the world's oil and gas is controlled by these National's oil companies. The petroleum industry is such that the fluctuations and highs and lows in the oil value keep the market at its toes, the industry's performance is one such aspect that determines whether the industry has been growing or plummeting.

The oil industry is the type of industry which does not have a constant and continuous positive performance, majorly because of reasons such as trade, government and regional and demographic policies and oil prices determine the overall salability.

After a period of major highs and lows, the petroleum industry has shown a good recovery and promising positive return with oil prices increasing in many countries due to inflation and trade prices going haywire in many markets. The crude oil price has increased, so has the refiners'. Moreover, the government regulations and policies that restrict certain areas of growth and innovation and Research and Development.

The origin of the Indian oil and gas industry can be traced back to the late 19th century, when oil was first struck at Dig boi in Assam in 1889. Petroleum is major important product that used almost by all the industry, people for transportation as fuel and also as power generation which adds to new innovation that coming up, store electrical energy is storage devices and systems, feedstock for chemical manufacturing, and feedstock for various materials, source of industry grade hydrogen gas, and most importantly as a major utility heating fuel by many people across the world.

Across this world, the countries that use petroleum products in various types and forms are produced and accomplished through the process of drilling of wells that allow geological pressure to release oil up the well to the surface with water and gas injected to the reservoir to boost pressures and sustain production.

The petroleum has many number of important market applications, in which its substitutes many others products, there are formed or during the process products like gasoline, jet fuel, heating fuel, kerosene, liquefied petroleum gas (LPG), lubricants, sulfur, sulfuric acid, wax, and petroleum coke are formed that are used for varieties of purposes. M&As and joint ventures continue in the petroleum industry at a record pace.

Moreover, most mergers are motivated by industry official’s desires to achieve synergies, which are benefits from the combined strengths of different companies, and to diversify their assets, where they can reduce costs, enhance stock values, and respond to price volatility in a much better and stronger strategy. Major players in the petroleum industry include Royal Dutch Shell, British Petroleum, Saudi Aramco, Gazprom, National Iranian Oil Co, ExxonMobil, PetroChina, Pemex, Chevron, Kuwait Petroleum Corp, Abu Dhabi National Oil

Co, Sona trach, Total, Petrobras, Iraqi Oil Ministry, Qatar Petroleum, Eni, ConocoPhillips, and Petronas.

2. Review of Literature:

Forecasting future trends is very important to have plan for the supply chain activities and necessary, it tells accurately the trend how it will be in future. Michael Ye, John Zyren 2001 focusses on a short-term monthly Forecasting model of West Texas Intermediate crude oil spot price using OECD petroleum inventory levels. The report of Avishek Choudhury describes arrival of patient in an Emergency Department (ED) entangles the administration of an ED. Over half of an emergency clinic's ED limit will in general work past its ordinary limit and in the end neglects to convey great consideration. To address the worry of stochastics ED appearances, numerous investigates has been finished utilizing yearly, month to month and week by week time series gauging. This study discovered that ARIMA was chosen as the best-fit model with least Akaike data paradigm and Schwartz Bayesian measure. The mean mistake (ME) and root mean square blunder (RMSE) were chosen as execution measures. A mean mistake and a RMSE of 1.55 were acquired. At the end, ARIMA can be utilized to give hourly conjectures to ED appearances and can be used as a choice emotionally supportive network in the medicinal services industry.

An overview of the prediction models that could accurately predict the future weather information. This study measures to address the demand for renewable energy and solutions to environmental problems to increase the production of alternative energy and clean electricity. Describes that continuous rise in the health expenditure creates pressure on government budgets, health services, and personal patient finance, so forecasting tools were introduced to identify expenditure on health in United States of America. ARIMA model was used to analyse the data and it was proved that it was better constructed and predicted by using this model. To estimate the availability of the model both dynamic and static procedure were used with statistical forecasting tools. It resulted that estimated value of health expenditure were close to the actual value. Brief overview of time series forecasting used in complex networking analysis a novel method is used to get more accurate time series prediction. The time series was transformed into network by visibility graph and Link prediction method is used to explore the two nodes. As a result, it was proved that their methods is applicable in finance, construction industry, and other fields focusses on a period arrangement demonstrating approach has been utilized to conjecture wheat generation for India. ARIMA model was seen as the best model for the present investigation. The efforts were made to estimate, the future wheat generation

for a period as long as ten years as exact as could be expected under the circumstances, by fitting ARIMA model to our time arrangement information. The estimate results have demonstrated that the yearly wheat generation will develop in 2026-27. The wheat generation will ceaselessly develop with a normal development pace of around 4% gradually.

As the year past, more and more new tools for time series were developed and briefs an overview of that issue identified with the individual family unit electric power utilization of articles in various zones – industry, ranchers, banks, medical clinics, theatre, inns, general stores, and colleges. The principle objective of the coordinated research is to evaluate the dynamic P and full S control utilizations for every contemplated structure. The characterized objective is accomplished by tackling of the accompanying three issues. The principal issue contemplates which structures increment their capacity utilization. The subsequent one discovers which articles have the best increment of intensity utilization. In addition, the third issue respects on the off chance that it is conceivable to make a momentary figure, in view of the arrangements of past two issues. The present research and taking care of the previously mentioned issues is led utilizing fragmentary Brownian movement hypothesis. The pertinence of this methodology is delineated on the model with 20 genuine articles in various territories. The paper closes with endnotes about potential outcomes to make momentary estimates about power utilization of the thought about structures. The use of forecasting tools to measure the demand of domestic air passenger. They have used two years moving averages as a forecast also used exponential smoothing with smoothing constant as 0.9. It was found that the two moving average will give a better forecast for the demand in the year 2018. Hence, the implication of the study will help to prevent problems of having excess domestic air transport over the domestic air transport supply.

A brief overview to develop an effective forecasting model for optimum production quantity. As Fruits are perishable in nature, it is important to be preserved without any loss. In this paper, they focused on selecting an effective forecasting model based on sales records by using various forecasting techniques – Moving average model, exponential smoothing model and linear regression model. All the forecasting techniques were used and the model which has minimum mean has been selected as the most efficient forecasting mode and it focussed on effectiveness of demand forecasting by using time series in auto parts remanufacturing. It is a process end-of-life product to their original working condition. The forecast was conducted on 400 types of products over a period of 12 years were used and the result is expected to provide

a benchmark for research targeting demand forecasting in auto remanufacturing. Exponential smoothing model was used for forecasting.

3. Statement of Problem:

Sales plays an integral role in any business as it brings revenue to the company, it is very important to forecast the sales for the future requirements as it gives the indication to business the amount of money to be spent on sales and marketing department. It also gives the information to production department on how much production will be needed to meet the demand. Petroleum industry is very volatile; it has very high fluctuations because the oil prices keeps fluctuating as we import oil from the global market. These uncertainties make the companies to forecast future requirements and stock the petroleum products for minimizing the loss. In order to address the issues of forecasting in the oil and gas industry, this study focuses on using time series multiple regression model in understanding the prediction of sales of petroleum products.

4. Objectives:

- To analyse the impact of environmental factors on the petroleum products sales.
- To assess the effectiveness of time series model in forecasting the petroleum products sales.

5. Methodology:

The process used to collect information and data for making the analysis and required evaluation for the decision-making process is described in this section. The methodology includes Quantitative Research approach, other research techniques which includes both present and historical data. The Empirical research considers both primary and secondary data sources for collecting information. Descriptive research is used to observe and describe how the environmental factors influence the sales of petroleum products. The research is then concentrated on past three year sales data of the company, which helps to forecast the future sales. Non-Probability Sampling technique- convenience sampling has been used to collect data from Bharath Petroleum Corporation Limited. It is the process of gathering and measuring the information on the variables of interest, in an established manner that enables to answer the stated research objective, test hypothesis and evaluate outcome.

The data is collected on the secondary basis that is the data about the sales are obtained from the company sales record. Time Series analysis is to analyse the impact of environmental factor

impact on the sales of petroleum products. The proposed Model: Time Series Model- Multiple Regression. Line graphs are used to display the data visually and to compare the items to make quick conclusions.

- The study aims at estimating the future sales of petroleum products by using Time Series analysis. The data is collected from Bharat Petroleum Corporation Limited.
- Industry: Oil and Gas
- Company: Bharat Petroleum Corporation Limited.

6. Limitation of the study:

- The environmental factor like humidity, temperature, rainfall is only taken into consideration
- This study is limited to only Bharat Petroleum Corporation Limited, Hyderabad.

7. Data Analysis:

The study is been examined by using Predictive Analytics: Time series analysis- Multiple regression is used. A time series is a chronological sequence of observations on a particular variable. Usually the observations are taken at regular intervals (days, months, years), but the sampling could be irregular. Common examples of time series are the Dow Jones Industrial Average, Gross Domestic Product, unemployment rate, and airline passenger loads. A time series analysis consists of two steps: (1) building a model that represents a time series, and (2) using the model to predict (forecast) future values.

- H_o: Environmental factors does not have positive impact the sales of petroleum products.
- H_1: Environmental factors does have positive impact the sales of petroleum products.

Predictive Analytics: Time series forecasting for Petroleum products: Diesel

General Regression Analysis: Petroleum versus Temp©, Rainfall(mm), Humidity(%), Time.

Regression Equation : $Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4$

Constant 403838.936 + -11735.497(Time) + 77.348(Humidity) + 13414.645(Temperature) + 372.272(Rainfall).

Table 13: Regression Testing

Coefficients[a]								
		Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B	
Model		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound
1	(Constant)	403838.936	136212.773		2.965	.006	124819.720	682858.152
	Time	-11735.497	1555.387	-1.002	-7.545	.000	-14921.562	-8549.431
	Humidity	77.348	1243.783	.011	.062	.951	-2470.426	2625.121
	Temperature	13414.645	3782.824	.468	3.546	.001	5665.880	21163.410
	Rainfall	372.272	179.489	.368	2.074	.047	4.604	739.939
a. Dependent Variable: HSDiesel								

INTERPRETATION:

H_o: Environmental factors does not have positive impact the sales of petroleum products.

H_1: Environmental factors does have positive impact the sales of petroleum products

It can be observed that significance value for temperature is 0.001 and for rainfall is .047 which is less than 0.05 , so we reject the null hypothesis and accept the alternate hypothesis, It can observed that humidity is not having any impact on the sales of the petroleum products sales. It tells that the environmental factors does have an positive impact on the sales of petroleum products and can observed that humidity is not having any impact on the sales of the petroleum products sales .

Predictive Analytics: Time series forecasting for Petroleum products: Motor Sprit

General Regression Analysis: Petroleum versus Temp©, Rainfall (mm), Humidity (%), Time.

Regression Equation: Regression Equation: $Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4$

Constant 17612.194 + 1258.860(Time) + 115.104(Humidity) + 565.393(Temperature) + -45.23(Rainfall).

Table 14: Regression Testing

Coefficients[a]								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	17612.194	11061.275		1.592	.123	-5045.800	40270.188
	Time	1258.860	126.307	.983	9.967	.000	1000.133	1517.587
	Humidity	115.104	101.002	.154	1.140	.264	-91.790	321.998
	Temperature	565.393	307.187	.181	1.841	.046	-63.852	1194.638
	Rainfall	-45.253	14.576	-.409	-3.105	.004	-75.110	-15.396
a. Dependent Variable: Motorspirit								

INTERPRETATION:

H_o: Environmental factors does not have positive impact the sales of petroleum products.

H_1: Environmental factors does have positive impact the sales of petroleum products

It can be observed that significance value for temperature is 0.046 and for rainfall is .004 which is less than 0.05 , so we reject the null hypothesis and accept the alternate hypothesis, It can observed that humidity is not having any impact on the sales of the petroleum products sales and tells that the environmental factors does have an positive impact on the sales of petroleum products.

BPCL PETROLEUM SALES							
						Petroleum sales	
Year	Month	Time	Humidity(%)	Rainfall(mm)	Temp©	High speed Diesel	Motor Sprit
2020	Jan	37	17.2	24	54	704281.0206	53805.505
	Feb	38	17.2	24	54	692545.5236	53934.365
	Mar	39	17.2	24	54	680810.0266	54063.225
	Apr	40	17.2	24	54	669074.5296	54192.085
	May	41	17.2	24	54	657339.0326	54320.945
	Jun	42	17.2	24	54	645603.5356	54449.805
	Jul	43	17.2	24	54	633868.0386	54578.665
	Aug	44	17.2	24	54	622132.5416	54707.525
	Sept	45	17.2	24	54	610397.0446	54836.385
	Oct	46	17.2	24	54	598661.5476	54965.245
	Nov	47	17.2	24	54	586926.0506	55094.105
	Dec	48	17.2	24	54	575190.5536	55222.965

Chart 1: Presentation of Forecasted Petroleum Product sale's Data of Diesel for 2020

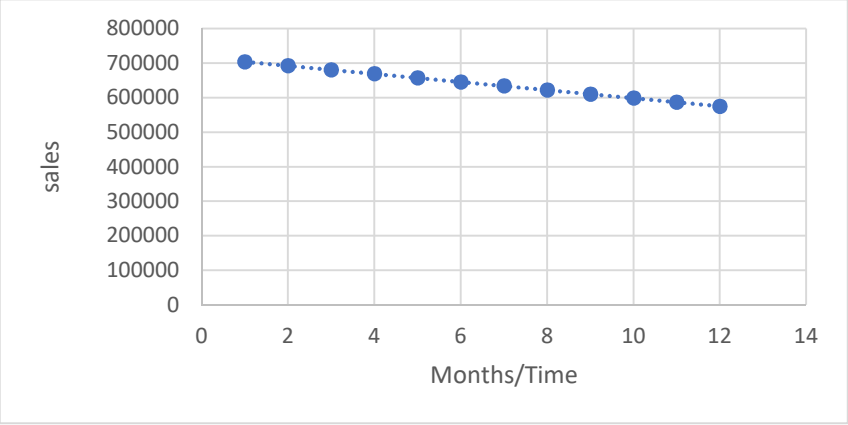
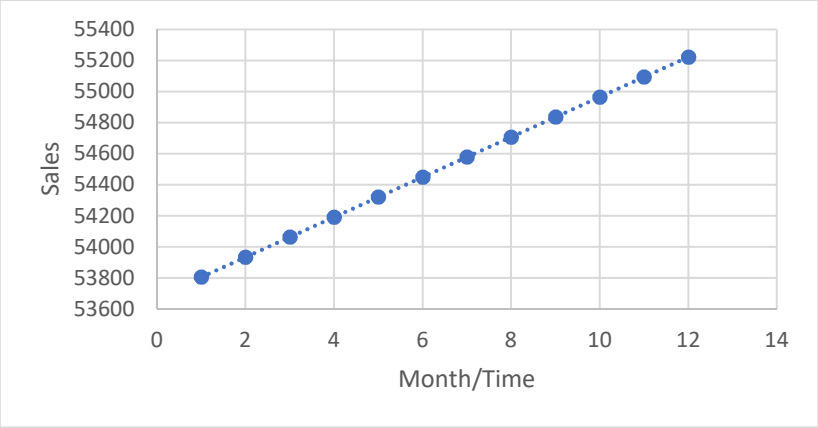


Chart 2: Presentation of Forecasted Petroleum Product sale's Data of Petrol for 2020



INTERPRETATION

According to the above table, the forecasted data of sales in the month of January is 704281.0206, which is the highest, and December being the lowest 434364.5896 during the year 2020. Here the humidity, temperature, rainfall are kept constant. From the above table the forecasted data of sales in the month of October is 54965.245, which is the highest, and January being 53805.505 the lowest during the year 2020. Here the humidity, temperature, rainfall is kept constant. Observation shows that there is downward trend in the sales of the diesel products. The sales have reduced from January to December. It is observed that there is slight upward trend in the sales of the motor sprit products. The sales have increased at the end of the month.

BPCL PETROLEUM SALES							
						Petroleum sales	
Year	Month	Time	Humidity (%)	Rainfall(mm)	Temp©	High speed Diesel	Motor Sprit
2021	Jan	49	17.2	24	54	563455.0566	55351.825
	Feb	50	17.2	24	54	551719.5596	55480.685
	Mar	51	17.2	24	54	539984.0626	55609.545
	Apr	52	17.2	24	54	528248.5656	55738.405
	May	53	17.2	24	54	516513.0686	55867.265
	Jun	54	17.2	24	54	504777.5716	55996.125
	Jul	55	17.2	24	54	493042.0746	56124.985
	Aug	56	17.2	24	54	481306.5776	56253.845
	Sept	57	17.2	24	54	469571.0806	56382.705
	Oct	58	17.2	24	54	457835.5836	56511.565
	Nov	59	17.2	24	54	446100.0866	56640.425
	Dec	60	17.2	24	54	434364.5896	56769.285

Chart 3: Presentation of Forecasted Petroleum Product sale's Data of Diesel for 2021

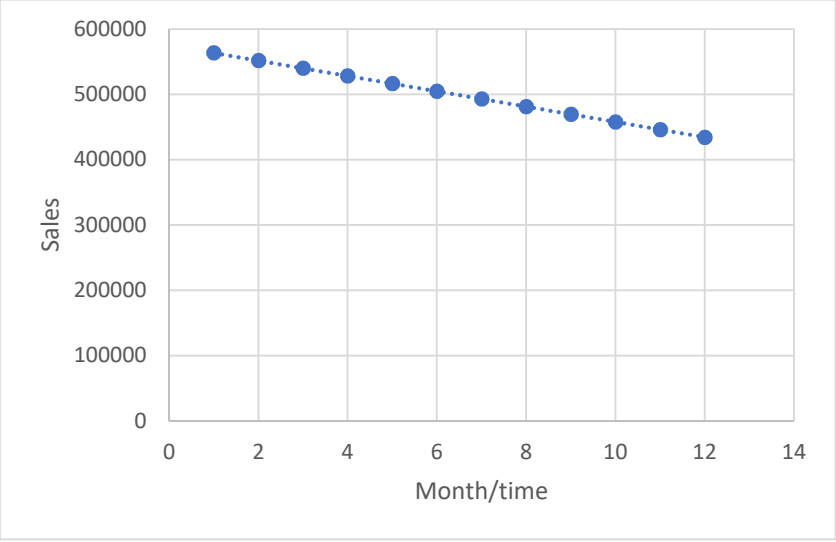
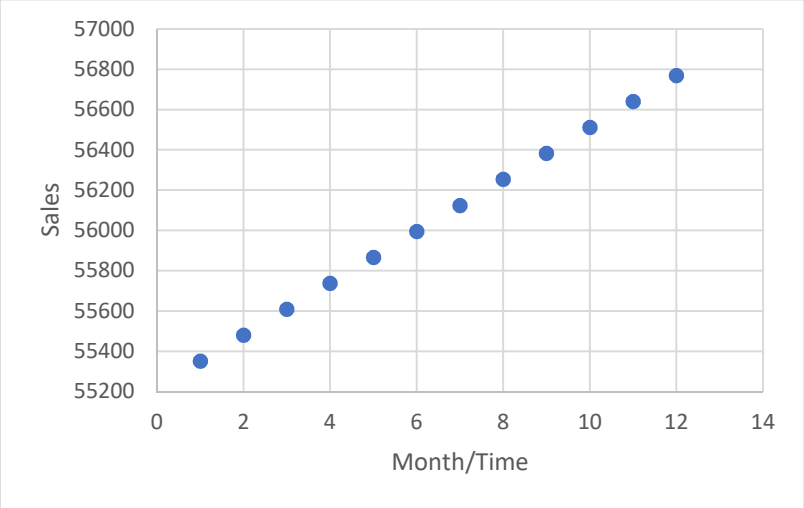


Chart 4: Presentation of Forecasted Petroleum Product sale's Data of Petrol for 2021



INTERPRETATION

According to the above table, the forecasted data of sales in the month of January is 563455.066, which is the highest, and December being the lowest434364.896 during the year 2020. Here the humidity, temperature, rainfall are kept constant. The standard deviation is high so there is high deviation from the mean. From the above table the forecasted data of sales in the month of December is 56769.285, which is the highest, and January being the lowest 55351.825 during the year 2020. Here the humidity, temperature, rainfall are kept constant. It can be observed that there is downward trend in the sales of the diesel products. The sales have reduced from January to December and that there is slight upward trend in the sales of the motor sprit products. The sales have increased slowly by the end of the year.

BPCL PETROLEUM SALES							
						Petroleum sales	
Year	Month	Time	Humidity(%)	Rainfall(mm)	Temp©	High speed Diesel	Motor Sprit
2022	Jan	61	17.2	24	54	422629.0926	56898.145
	Feb	62	17.2	24	54	410893.5956	57027.005
	Mar	63	17.2	24	54	399158.0986	57155.865
	Apr	64	17.2	24	54	387422.6016	57284.725
	May	65	17.2	24	54	375687.1046	57413.585
	Jun	66	17.2	24	54	363951.6076	57542.445
	Jul	67	17.2	24	54	352216.1106	57671.305
	Aug	68	17.2	24	54	340480.6136	57800.165
	Sept	69	17.2	24	54	328745.1166	57929.025
	Oct	70	17.2	24	54	317009.6196	58057.885
	Nov	71	17.2	24	54	305274.1226	58186.745
	Dec	72	17.2	24	54	293538.6256	58315.605

Chart 5: Presentation of Forecasted Petroleum Product sale's Data of Diesel for 2022

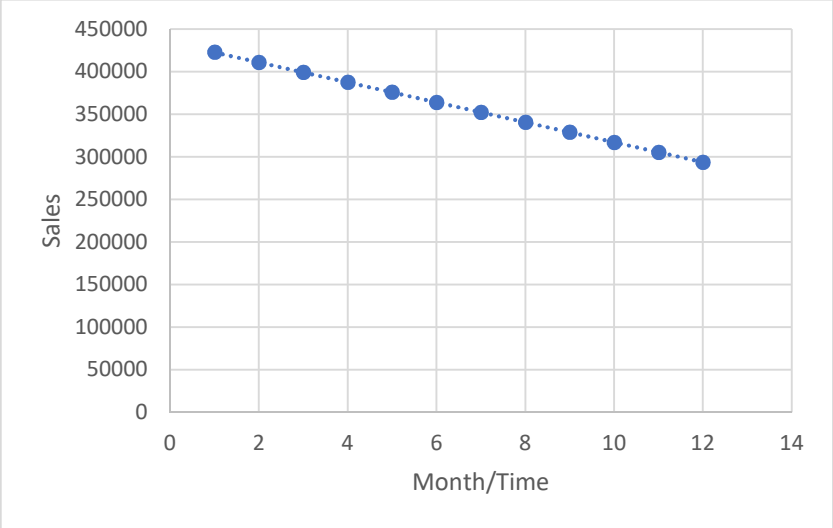
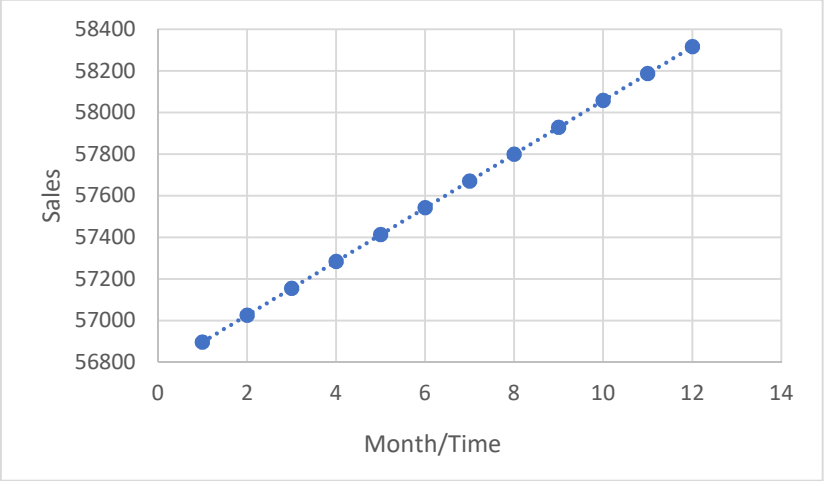


Chart 6: Presentation of Forecasted Petroleum Product sale's Data of Petrol for 2022



INTERPRETATION

According to the above table, the forecasted data of sales in the month of January is 422629.0926, which is the highest, and December being the lowest 29338.626 during the year 2020. Here the humidity, temperature, rainfall are kept constant. The standard deviation is 42312.9318 so there is high deviation from the mean. From the above table the forecasted data of sales in the month of December is 58315.605, which is the highest, and January being the lowest 56898.145 during the year 2020. Here the humidity, temperature, rainfall is kept constant. It can be observed that there is downward trend in the sales of the diesel products. The sales have reduced from for the last twelve months. In addition, there is slight upward trend in the sales of the motor sprit products. The sales have increased slowly by the end of the year.

8. CONCLUSION

In this project, we examine the sales forecast for the petroleum sales based on the past three year and try to estimate sales that will likely to occur. The literature review suggests the use of time series analysis in the prediction of the sales by using regression analysis. Our empirical results show the forecasted sales for High speed diesel and motor sprit for next three years that is for 2020, 2021, 2022. It can be concluded sales of diesel shows a downward trend and were as upward trend for the motor sprit. From the above study it can be concluded that since the significance value is below 0.05 so environmental factors or variable does have an impact on the sales of the petroleum products. The environmental factor will influence the prices of the crude oil , but since the fuel is necessity for all nation so the influence of the factor does not affect mush on the sales, it may rise in the prices of the petroleum products that does not have an influences on the sales of the products as it is needed by all the countries. Since our study indicates that these models can forecast the future sales, in fact provide with accurate forecasts these model can be easily implemented by the software's, so with the help of these the forecasting become easy to estimate.

REFERENCES:

1. Adeniran Adetayo Olaniyi1 Kanyio Olufunto Adedotun, Owoeye Adelanke Samuel[2018], Forecasting Methods for Domestic Air Passenger Demand in Nigeria J. Appl. Res. Ind. Eng. Vol. 5, No. 2 (2018) 146–155.
2. Avishek Choudhury[2019] Hourly Forecasting of Emergency Department Arrivals– Time Series Analysis.
3. Bhola Nath, DS Dhakre and Debasis Bhattacharya[2019] Forecasting wheat production in India: An ARIMA modelling approach Journal of Pharmacognosy and Phytochemistry 2019; 8(1): 2158-2165.
4. JabarH.Yousifa ,Haitham Al-Balushib, HusseinA.Kazemc, MiqdamT.Chaichand [2019] Analysis and forecasting of weather conditions in Oman for renewable energy applications journal homepage: www.elsevier.com/locate/csite.
5. Micheal ye, John Zyren and Joanne shore[2001], Forecasting Crude Oil Spot Price Using OECD Petroleum Inventory Levels IAER: november 2002, vol. 8~ no. 4
6. Mitsutaka Matsumoto and Akira Ikeda[2015] “Examination of demand forecasting by time series analysis for auto parts remanufacturing”, Matsumoto and Ikeda journal of remanufacturing(2015) 5:1 DOI 10.1186/s13243-015-0010-y.
7. Nikolaos drintsakis, paraskevi kiazoglou[2019] “time series analysis using ARIMA models: an approach to forecasting health expenditure in USA, economia internationale/ international economics, Volume 72, Issue 1 – February, 77-106 .
8. R.A. Kazeem, E.S.Orsarh, N.C. Ehumadu, S.Igbinoba[2016] “demand forecasting of a fruit juice manufacturing company, International Journal of Scientific & Engineering Research, Volume 7, Issue 8, August-2016
9. Shengzhong Maoi and Fuyuan xiao[2019], “Time Series Forecasting Based on Complex Network Analysis”, Received March 2, 2019, accepted March 16, 2019, date of publication March 19, 2019, date of current version April 9, 2019.
10. Valeria Bondarenko, Simona Filipova-Petrakieva, Ina Taralova, Desislav Andreev[2018], Forecasting time series for power consumption data in different buildings using the fractional Brownian motion International Journal of circuit , systems and signal processing volume 12, 2018.

APPENDIX

Bharat Petroleum Corporation Limited Sales Data

BPCL PETROLEUM SALES							
						Petroleum sales	
Year	Month	Time	Humidity(%)	Rainfall(mm)	Temp©	High speed Diesel	Motor Sprit
2016	Jan	1	47	4.17	23	662000	35000
	Feb	2	41	0.02	27	790000	30000
	Mar	3	37	3.41	30	780000	45000
	Apr	4	27	0.96	33	715000	45000
	May	5	36	42.45	33	865000	35000
	Jun	6	65	151.52	28	762000	30000
	Jul	7	75	78.46	26	749000	35000
	Aug	8	74	18.72	26	830000	50000
	Sept	9	84	83.92	24	635000	25000
	Oct	10	69	14.5	23	890000	50000
	Nov	11	51	0.17	21	665000	35000
	Dec	12	48	0.33	21	675000	45000

BPCL PETROLEUM SALES							
						Petroleum sales	
Year	Month	Time	Humidity(%)	Rainfall(mm)	Temp©	High speed Diesel	Motor Sprit
2017	Jan	1	46	0.13	21	642000	30000
	Feb	2	35	0	24	700000	40000
	Mar	3	34	6.7	28	737000	40000
	Apr	4	24	2.59	32	810000	50000
	May	5	30	7.26	34	1018000	50000
	Jun	6	63	111.61	28	836000	40000
	Jul	7	31	28.56	28	715000	50000
	Aug	8	66	78.34	27	635000	45000
	Sept	9	63	45.32	28	650000	50000
	Oct	10	56	72.29	27	570000	50000
	Nov	11	49	0.96	25	610000	50000
	Dec	12	40	0.02	23	630000	50000

BPCL PETROLEUM SALES							
						Petroleum sales	
Year	Month	Time	Humidity(%)	Rainfall(mm)	Temp©	High speed Diesel	Motor Sprit
2018	Jan	13	34	0	24	570000	50000
	Feb	14	31	0.52	26	555000	45000
	Mar	15	25	2.9	31	625000	55000
	Apr	16	29	3.48	33	565000	55000
	May	17	33	14.39	35	595000	65000
	Jun	18	56	75.99	30	620000	60000
	Jul	19	67	106.2	27	600000	60000
	Aug	20	70	95.76	26	640000	60000
	Sept	21	62	75.35	27	515000	65000
	Oct	22	54	130.2	28	555000	65000
	Nov	23	51	11.1	27	480000	60000
	Dec	24	54	17.2	24	520000	80000

BPCL PETROLEUM SALES							
						Petroleum sales	
Year	Month	Time	Humidity(%)	Rainfall(mm)	Temp©	High speed Diesel	Motor Sprit
2019	Jan	25	44	35.1	25	485000	75000
	Feb	26	43	5.5	28	515000	65000
	Mar	27	32	0.2	32	557000	75000
	Apr	28	29	8.2	36	495000	65000
	May	29	24	24.4	38	600000	80000
	Jun	30	50	165.2	32	579000	75000
	Jul	31	73	322.7	27	575000	65000
	Aug	32	77	371	26	550000	70000
	Sept	33	78	459.7	25	465000	55000
	Oct	34	78	602.6	26	500000	60000
	Nov	35	70	59.8	25	460000	66000
	Dec	36	54	17.2	24	525000	50000