Prediction Analysis on E-Commerce Market Value in India Using Artificial Intelligence

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Abstract

As a businessman, it is very important for an organization to know your audience well, to know the current trend in the market, to analyze the future using historical data, to know how to make business decisions in an effective way, to use current technology which is very much needed for the survival of the business among their competitors and all these ultimately should lead to satisfaction of the customers and make them buy their products again and again without any diversion. So, every time businessmen need to be on the top of the rock to see every nook and corner and know the current trend in the market and make changes accordingly by not bogged down in conventional morality. To know all the aforesaid factors it is very important for a business man to have a business analyst in a company and get the help of them to analyze the historical data. To help the Business analyst AI plays a vital role for the prediction purpose. AI is an emerging field in all sectors especially for data analysis to predict the future here in his study machine learning is used which is said as the subset of AI. The aim of the paper is to make the job of the businessman easier. For this in this paper we have taken initiative to find out the future growth and scope in the field of E-commerce. To explain this clearly we have taken secondary data on E-Commerce

market value with following factors e-commerce revenue and online shoppers. And tried to find out the prediction for the years 2024 to 2026 using python. And the research is going to enhance the accuracy on the prediction of Market value factors.

I. INTRODUCTION

Business analyst is the person who takes in all the historical data and analyzes the data to find out the trends, new patterns and root cause and then make business decisions accordingly. A business analyst is the person who is indeed for the business to handle historical data, to analyze and give them the suggestions for the entire change or recommendation for the alterations in the business according to the trend or to improve business performance.

If we talk about E-commerce IT information Technology included in it. E-Commerce is doing business using IT Information Technology. Which is otherwise known as computer technology or Electronic communication. Where, buying and selling of goods and services occurs using web electronic communication and digital technology. Past days i.e, When E-commerce was introduced initially it was named as Electronic Data Interchange (EDI) which means business is done electronically. Later, it has been said that E-Commerce is spread worldwide with the help of an influential tool called the Internet. The potential of the Internet is known only after the introduction of WWW. World Wide Web. This made every business connect globally. Not only connecting every business globally but also they help the business people to share information internally or externally automatically, all kinds of information to its customer, suppliers, financial users and so on which paves way to maintain transparency among its stakeholders. Though E-commerce is followed in every part of the world, if we talk about India it can be said that E-Commerce has proved to be the top successful in the past decade. This is the increase in the internet users, technology updation, improvisation in business model, innovation in various fields, needs of the Indian consumers, comfortable payment options which is offered by the E-Commerce companies. Moreover, undoubtedly the growth of E-Commerce increases abruptly in the future too.

E-Commerce is the current trend which is going in the Business world. And business analyst is the job which is needed in every business so by combining these two this paper has taken the study to know the future trend in the E-Commerce field and suggests the business to concentrate on them more.

Objectives of the Study
1. The main objective of the study is to find out the E-Commerce Market value in India.
2. Create awareness on the importance of E-commerce in India.
   The main objective of the study is to take out past year data on E-Commerce sales and predict them for the upcoming 3 years sales to know the future scope of E-commerce business.

Review of Literature

Understanding the concept and role of Business analyst is an important aspect in the field of E-Commerce. Among total revenue of India E-commerce plays a vital role in generating revenue for the country. To understand this even more clear the researcher has taken and studied various topics related to the prediction using machine learning and found the gap to continue with the study.

Dr.J.Dhilipan, D.B.Shanmugam, et.al, in their paper they have explained the prediction made on stock price using machine learning. Machine learning is the current trend used for prediction purposes and this paper includes all the previous data from Jan 2012 to Dec 2016 and then training is made to produce the results in future with perfect accuracy rate. For this purpose they have used Regression and LSTM based machine learning to give high accuracy. They also taken various factors like re open, close, high and volume[i].

Bhojraj Yashwant Shewale in his research has adopted the qualitative research approach and provides a review of existing literature in order to understand the scope, growth and development of E-commerce in India with the current trends that derives industry growth. Findings of this study further indicate that E-commerce will see rapid and continuous growth in India. These works also find out, E-commerce delivers the several kinds of opportunities to the Retailers, Producers, the People and Wholesalers[ii].

Basheer K.T, the research is based on secondary data which are collected from several sources i.e. research papers, www.statista, publications from Ministry Of Commerce, Govt. of India etc which is available on the internet and suggestions has been provided in the paper stating e commerce is an emerging field and it is in the process of growing stage and in future if any needed due to the usage of innovations the ecommerce society can even more grown[iii].

Chaithralaxmi.T1and Shruthi. N2 in their paper the authors have taken all the research papers related to E-Commerce, various other sources for the data and came to a conclusion on the trends in E-Commerce in India and challenges and opportunities in the E-Commerce field. They have collected purely secondary data and analyzed the data and predicted the trend in India by taking Retail and online retail sales in India. The challenges and opportunities in the field of E-Commerce are justified using Internet users in the world and the penetration percentage of population in the world[iv].

Shahid Amin, Keshav Kansana, et.al, The research has been undertaken to describe the scenario of E-Commerce, analyze the trends of E-Commerce. The study further examines the key variables imperative for the success ofE-commerce business models[v].

Research Methodology

For the purpose of the study we have collected the secondary data from various sources especially from statista.com, for analysis purposes we have used python jupyter notebook and AI for the prediction purposes. Pandas, numpy, sklearn, matplotlib are imported and data are trained from the base and then AI is imported using Linear Regression prediction according to the study.

Analysis and Findings

In this study keeping ecommerce market value as the base, analysis is made to predict the upcoming years in the ecommerce industry in India. The following factors are taken for analysis and findings

1.   Year and Online shoppers
2.   Year and Revenue
3.   Year and Market value

Year and Online Shoppers

Here, in this study data have been collected from 2007 to 2022 from statista website to predict the e-commerce industry in India and online shoppers flow in India. Thereby helps to find out the strength and usage of online shopping in the ecommerce industry in India. It is helpful to find out or create awareness to the merchandiser by forecasting and recommending them to know the strength of the online shoppers.

The following are the steps used for the analysis and prediction on online shoppers in India

Step 1. Here the data set is having two fields one is year started from 2007 to 2022 and then the online shoppers Percentage. The data is collected from statista website and this data set is used for my research for the prediction purpose and the following are the few sample set follows:

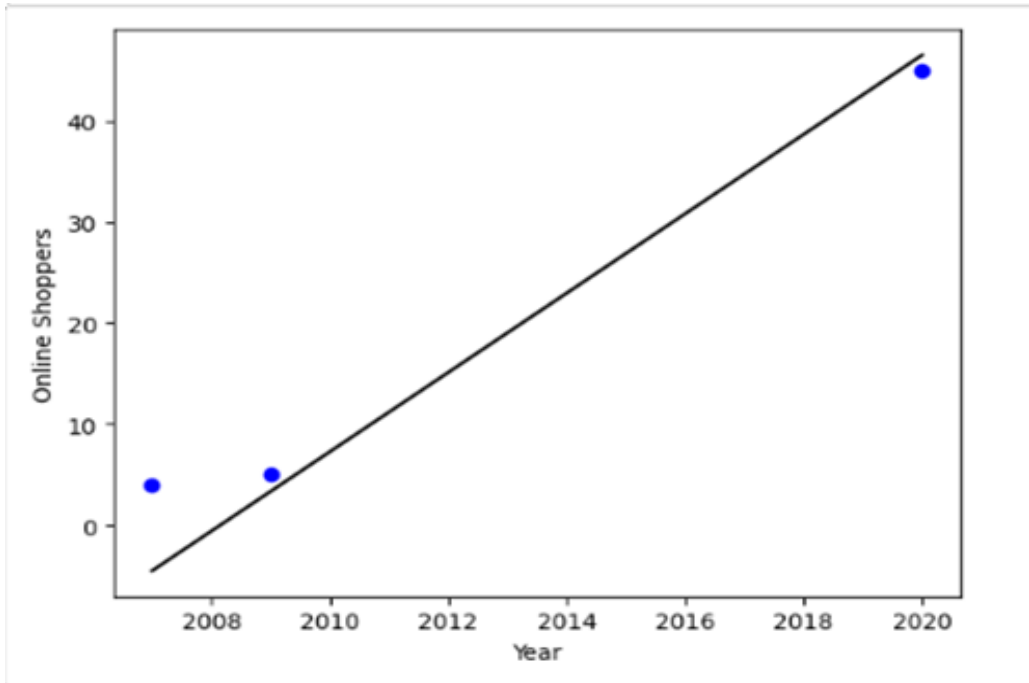|	Year	online_shoppers
0	2007	4.00
1	2008	4.40
2	2009	5.10

Step 2. For analysis purposes python and jupyter notebook used under and necessary libraries are imported the following are the sample few libraries.

```python
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import sklearn
```

Step 2: After importing all the data, data are plotted in a simple way as it is in a graphical manner using year and Online shoppers as x and y axis respectively.
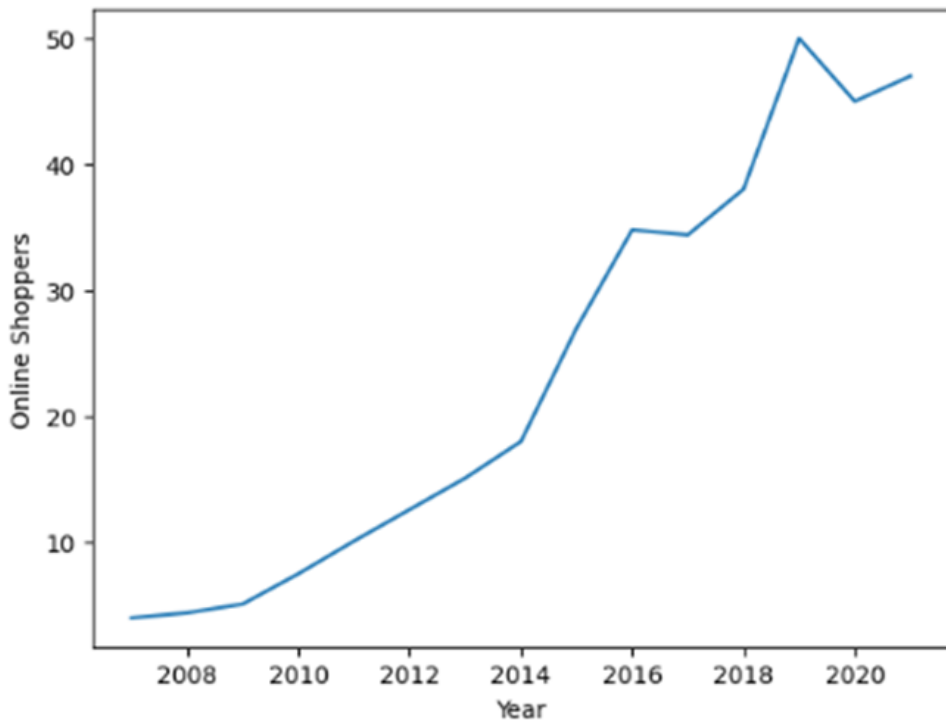
Step 3: After reading the data model to be trained and test the data set and get ready to find the prediction for the years given. With the same trained and tested data the accuracy will also be plotted in the following figures.


```
lm.score(X_test,y_test) # Accuracy
0.929367047661095
```

Step 4: after training the model by using AI the model is going to find the prediction for the following years

```
#lm.predict([2024])

lm.predict(X_test)
print("2024 year prediction for online shoppers ",res,"percent ")
```

```
2024 year prediction for online shoppers  [[64.99290548]] percent
```

```
#lm.predict([2025])
p=[[2025]]
res=lm.predict(p)
print("2025 year prediction for online shoppers ",res,"percent ")
```

```
2025 year prediction for online shoppers  [[61.49010502]] percent
```

```
p=[[2026]]
res=lm.predict(p)
print("2026 year prediction for online shoppers ",res,"percent ")
```

```
2026 year prediction for online shoppers  [[64.99290548]] percent
```

Here, in the year 2024 it is predicted that the percentage of Online shoppers will increase to 64%, in the year 2025 there is a chance of a little bit decrease in the percentage to 61% and in 2026 again chances of reaching to the same 64% as it was in 2024. Since it has a high accuracy rate of 93% it is said that that prediction is reliable.

Year and E Commerce Revenue

For analysis and prediction purposes a few years and ecommerce revenue has been taken to find out the next factor. Below are some of the sample data sets which are imported for analysis purposes.

```
     year  E-Commerce revenue
0    2015               12.19
1    2016               16.08
2    2017               20.01
3    2018               24.94
4    2019               31.19
5    2020               38.09
6    2021               45.17
```

By using the model trained by the tested data set and once it is trained it is said that the data can be used for the prediction purposes. This prediction can be made for how many every year using a matching algorithm. Here the test data will be plotted between year as x axis and e-commerce revenue as y axis. The following is the plotting sample shown.
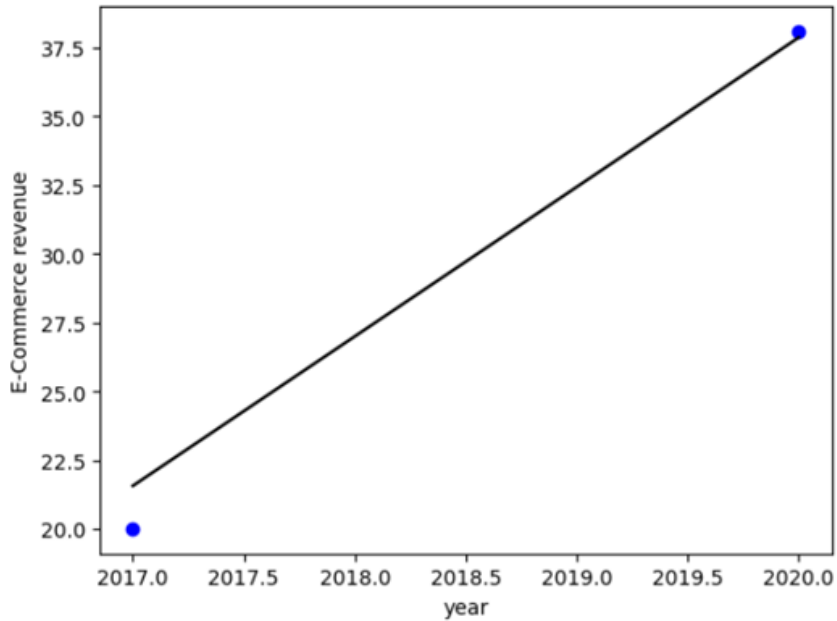
The model predicted the upcoming years from 2024 to 2026 and the accuracy rate was also good compared with the previous factor.

```
lm.score(X_test,y_test) # Accuracy
0.9848616602282382
```

And here comes the prediction for the three years with a good accuracy rate.

```
#lm.predict([2024])
ys=[[2024]]
res=lm.predict(ys)
print("2024 year prediction forecommerce ",res,"percent ")
```

```
2024 year prediction forecommerce  [[59.60175439]] percent
```

```
#lm.predict([2025])
ys=[[2025]]
res=lm.predict(ys)
print("2025 year prediction forecommerce ",res,"percent ")
```

```
2025 year prediction forecommerce  [[65.03526316]] percent
```

```
#lm.predict([2026])
ys=[[2026]]
res=lm.predict(ys)
print("2026 year prediction forecommerce ",res,"percent ")
```

```
2026 year prediction forecommerce  [[70.46877193]] percent
```

So it is said that the upcoming years in 2024 will be 59%, in 2025 will be 65% and in 2026 will be 70%. With a good accuracy percentage of 98%. Hence, e commerce revenue in India will be on an increasing state and gives a good sign to the merchandiser to go on online mode to grab the customers according to their convenience.

Year and Market Value

To analyze year and Market value and to find the market value for upcoming years in the ecommerce industry in India. Below are the few data used for the findigs.

	year	marketvalue
0	2014	14.0
1	2015	20.0
2	2016	23.0
3	2017	25.0
4	2018	27.0

Once the model is trained by the data and tested by the test data set, plotting is made using all the trained data which is helpful to know the accuracy of the predicted data.
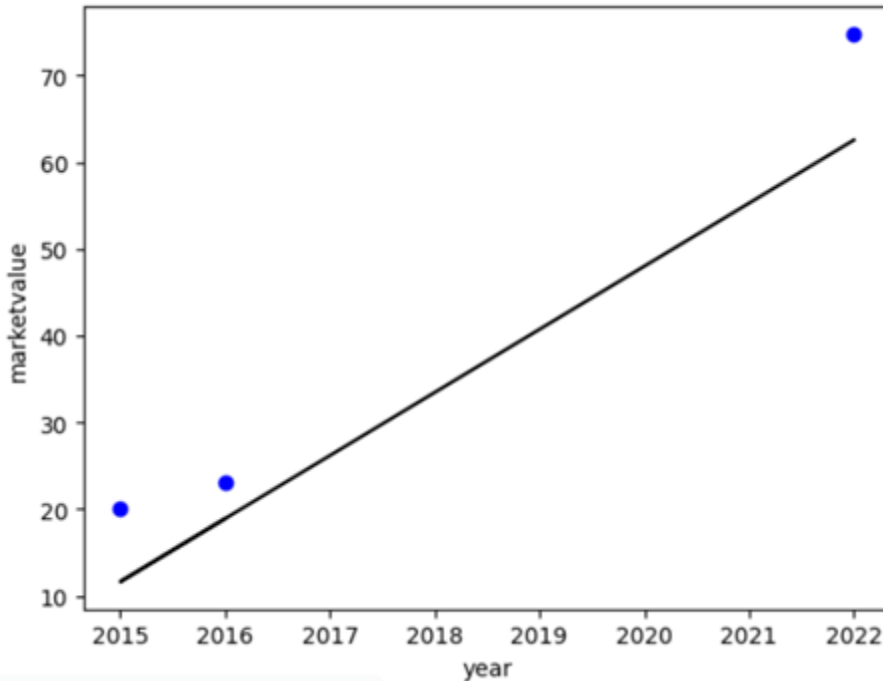

```
lm.score(X_test,y_test) # Accuracy
```

0.9085752184135393

```
#lm.predict([2024])
ys=[[2024]]
res=lm.predict(ys)
print("2024 year prediction for ecommerce market value ",res,"percent ")
```

2024 year prediction for ecommerce market value [[67.67391304]] percent

```
#lm.predict([2025])
ys=[[2025]]
res=lm.predict(ys)
print("2025 year prediction for ecommerce market value ",res,"percent ")
```

2025 year prediction for ecommerce market value [[73.56956522]] percent

```
#lm.predict([2026])
ys=[[2026]]
res=lm.predict(ys)
print("2026 year prediction for ecommerce market value ",res,"percent ")
```

2026 year prediction for ecommerce market value [[79.46521739]] percent

And the final factor Market value for Ecommerce in India prediction says that there is always an increase in the percentage for the upcoming years till 2026. For 2024 it is 67%, for 2025 it is 73% and for 2026 it is 79% with an accuracy percentage of 91%. Hence, it is advisable for the merchandiser to move their business through ecommerce.

II. CONCLUSION

Business analytics is the emerging field and in need of the industry for analysis purposes and alerting the management on future trends. To make this job easy AI is used for the analysis and prediction purposes. There are so many sectors which have high market value in India. This study concentrated only on e-commerce which is said to be the emerging industry now and in the future. To know the particular market value in the ecommerce industry in India we added two more other factors to support the recommendations on future scope in the field of ecommerce to the merchandising industry. This paper clearly predicted the future scope and importance of the ecommerce industry and its contribution to society in a large manner. Going online helps not only the consumers but also for the sellers to make them easily reach their customers. So, it is recommended to the merchandising industry to move towards online retailing which is one of the upcoming trends in India with all the innovations for their survival and contribute more the India's revenue.

III. REFERENCES

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