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PROBABILITY SURVEY ON E-COMMERCE MARKET PRICE IN INDIA USING ARTIFICIAL INTELLIGENCE

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Abstract
As an entrepreneur, it is vital for a company to have a deep comprehension of its intended consumers, remain updated on current market dynamics, and analyze the future based on historical information. Making informed business decisions is key, utilizing contemporary technology essential for preserving a competitive advantage, and ultimately ensuring customer contentment, which leads to repeat sales without interruptions. Therefore, business owners must always monitor every facet and stay conscious of market developments, modifying tactics as necessary without being restricted by conventional morals. To understand all these previous points, a businessman should bring in a business analyst within the organization to help review past data. Business analysts rely heavily on Artificial Intelligence to enhance their forecasting capabilities. This growing field, particularly in data examination, employs machine learning, which is considered a segment of AI. The goal of this document is to aid business individuals in their responsibilities. As a result, this paper seeks to examine future opportunities and growth within the E-commerce industry. To elaborate on this, we collected secondary data about the E-Commerce market's valuation, including vital aspects like e-commerce income and the count of online consumers. Furthermore, we aimed to project trends for the years 2024 to 2026 by using Python. This study is designed to enhance the accuracy in anticipating elements of market value.

Introduction

A business analyst plays a vital role in gathering and evaluating historical data to recognize trends, discover new patterns, identify underlying causes, and make educated business choices grounded in these insights. This position is essential for a company to handle previous data, conduct analyses, and provide suggestions for crucial alterations or adjustments based on existing trends to boost business efficiency.

In the field of online commerce, technology is fundamental. E-commerce is defined as the execution of business activities through technological means, which may also be called IT or digital communication. This involves the exchange of goods and services using web-based digital communication and online tools. Initially, e-commerce began as Electronic Data Interchange (EDI), signifying that transactions occurred digitally. Later, it became clear that e-commerce grew internationally, driven by a powerful resource known as the Internet. The full capabilities of the Internet were truly revealed with the introduction of the World Wide Web (WWW), which connected companies worldwide. This development not only united global businesses but also allowed professionals to automatically share various information types with clients, suppliers, financial stakeholders, and others, promoting transparency among all involved parties. While e-commerce operates globally, it can be claimed that in India, it has seen tremendous success over the previous decade. This achievement is linked to a rise in internet users, technological progress, improvements in business strategies, and innovation across numerous sectors, changing demands of Indian consumers, and the introduction of easy payment options by e-commerce companies. Moreover, the expansion of e-commerce is expected to continue to flourish significantly in the coming years.

Objectives of The Study

1. To determine the value of the E-Commerce sector in India.
2. To raise understanding of the significance of E-commerce within India.

Review of Literature

Dr. J. Dhilipan, D. B. Shanmugam, and others, in their article, have detailed the forecasting of stock prices utilizing machine learning techniques. Machine learning has become a popular method for making predictions, and their study incorporates all historical data from January 2012 to December 2016, followed by training to achieve accurate future results. For their analysis, they employed Regression and LSTM-based machine learning to ensure high precision. They also considered various variables such as opening, closing, high prices, and trading volume.

Bhojraj Yashwant Shewale, in his study, has utilized a qualitative research methodology and presents a review of current literature to explore the extent, growth, and evolution of E-commerce in India, along with the prevailing trends propelling industry expansion. The results of this research suggest that E-commerce is poised for rapid and sustained growth in the Indian market. Additionally, these findings reveal that E-commerce offers numerous opportunities to Retailers, Producers, and Wholesalers.

Basheer K. T's research relies on secondary data obtained from various sources, including research publications, www.statista, and reports from the Ministry of Commerce, Government of India, among others accessible online. The paper offers recommendations stating that E-commerce is an emerging sector currently in a growth phase, and in the future, advancements in technology may facilitate even further development of the E-commerce landscape.

Research Methodology

For this research, we gathered secondary information from multiple sources, primarily from statista.com. To conduct the analysis, we utilized Python Jupyter Notebook along with AI for making predictions. We imported Pandas, numpy, sklearn, and matplotlib, and the data is first trained from the foundation before integrating AI through Linear Regression prediction as per the research.

Analysis and Findings

In this research, the value of the e-commerce market serves as a foundation for evaluating future trends within India's e-commerce sector. The analysis and results encompass the following elements:

1. Year and Online consumers.
2. Year and Income.
3. Year and Market worth.

Year and Online Shoppers

In this research, information has been gathered from the Statista website spanning from 2007 to 2022 to anticipate the evolution of the e-commerce sector in India and the behavior of its online consumers. This analysis aids in identifying the impact and prevalence of online shopping within India's e-commerce realm. It also serves to inform and enlighten retailers by offering forecasts and insights into the characteristics of online shoppers.The subsequent steps outline the approach taken for analyzing and forecasting the online consumer base in India.

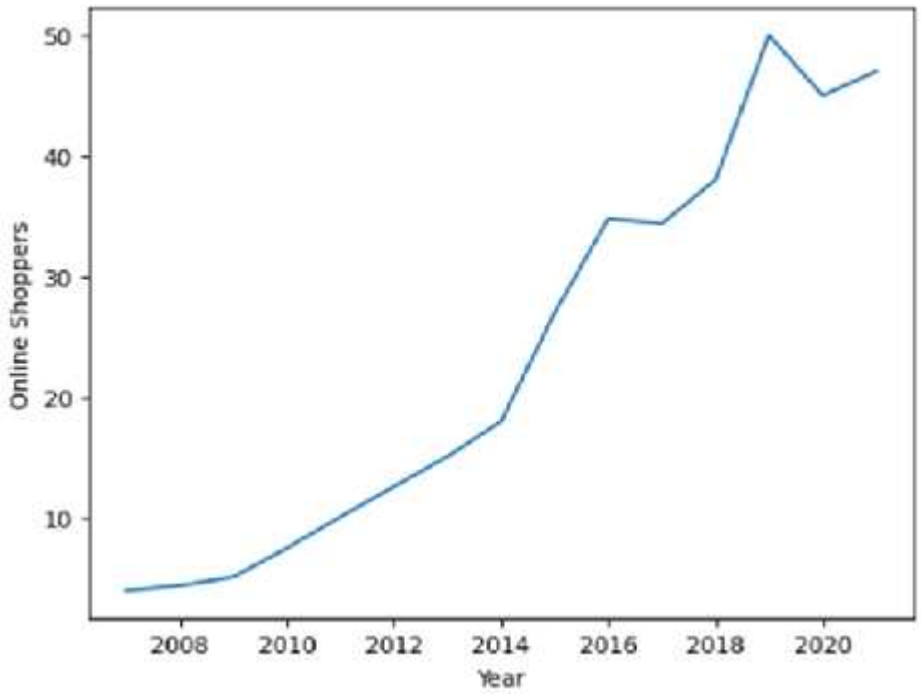
Step 1. The dataset encompasses two components: the year, ranging from 2007 to 2022, and the percentage of online shoppers. This data is sourced from the Statista website and is utilized for my predictive research, with the following being a few examples from the dataset:

	Year	online_shoppers
0	2007	4.00
1	2008	4.40
2	2009	5.10

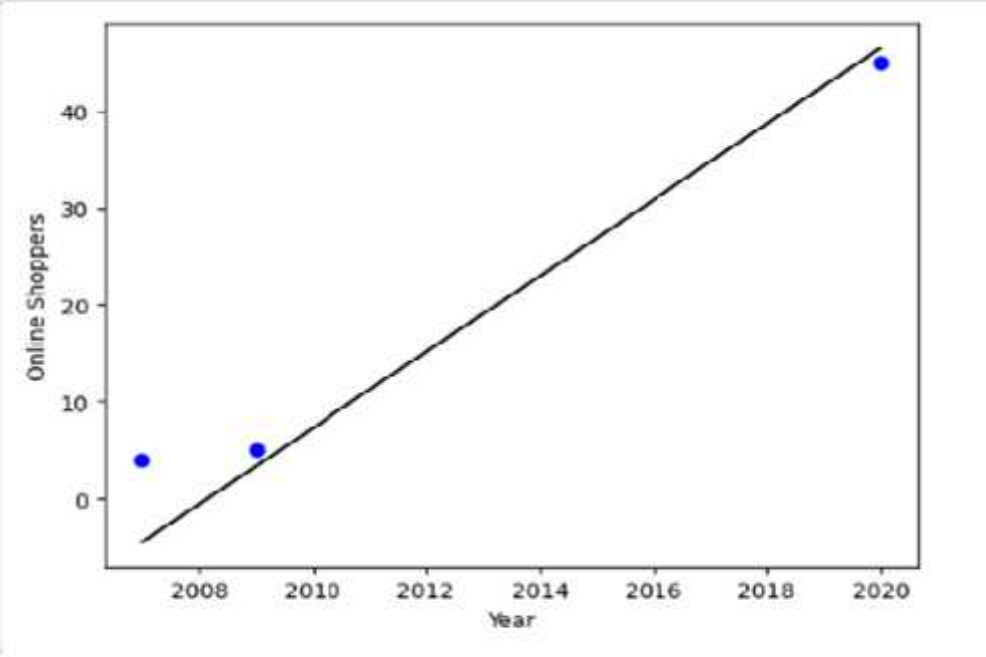
Step 2. For analysis purposes python and jupyter notebook used under and necessary libraries are imported the following are the sample few libraries.

```
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
```

```
0.9293670476610095
```

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
```

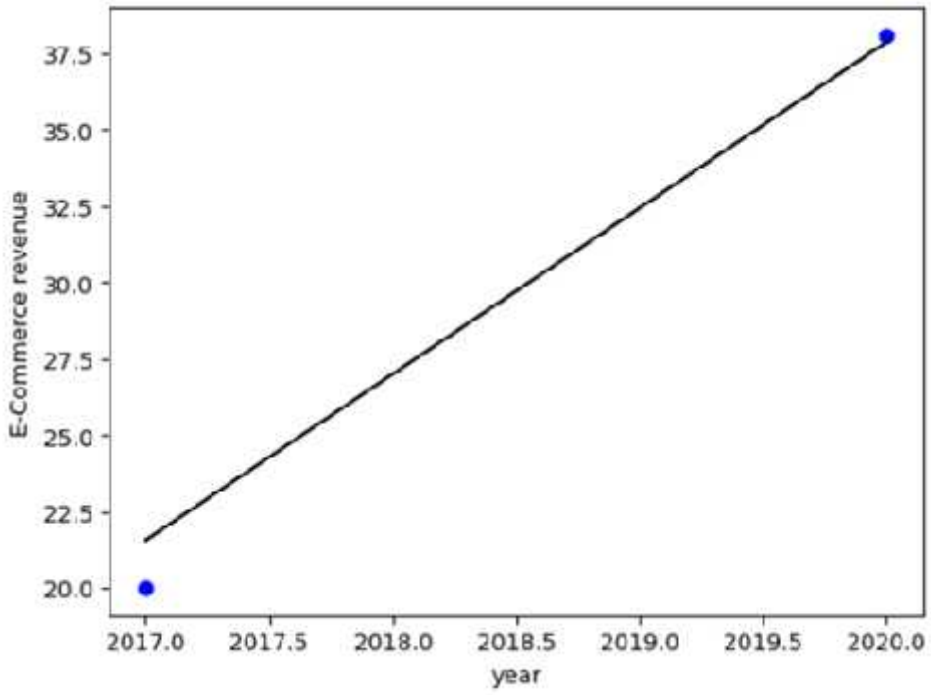
In the year 2024, it is expected that the portion of individuals purchasing goods online will rise to 64%. In 2025, it is possible that there will be a minor reduction in this figure, bringing it down to 61%. However, in 2026, there may be a likelihood of returning to the same 64% level observed in 2024. With a high precision rate of 93%, this forecast is considered dependable.

Year and E Commerce Revenue

For the aim of evaluation and forecasting, a selection of previous years and online sales revenue has been utilized to determine the subsequent element. Presented below are several example data sets that have been gathered for the intent of analysis.

	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  [[59.60176449]] percent
```

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

```
2025 year prediction forecommerce  [[65.08926116]] percent
```

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

```
2026 year prediction forecommerce  [[70.46677193]] percent
```

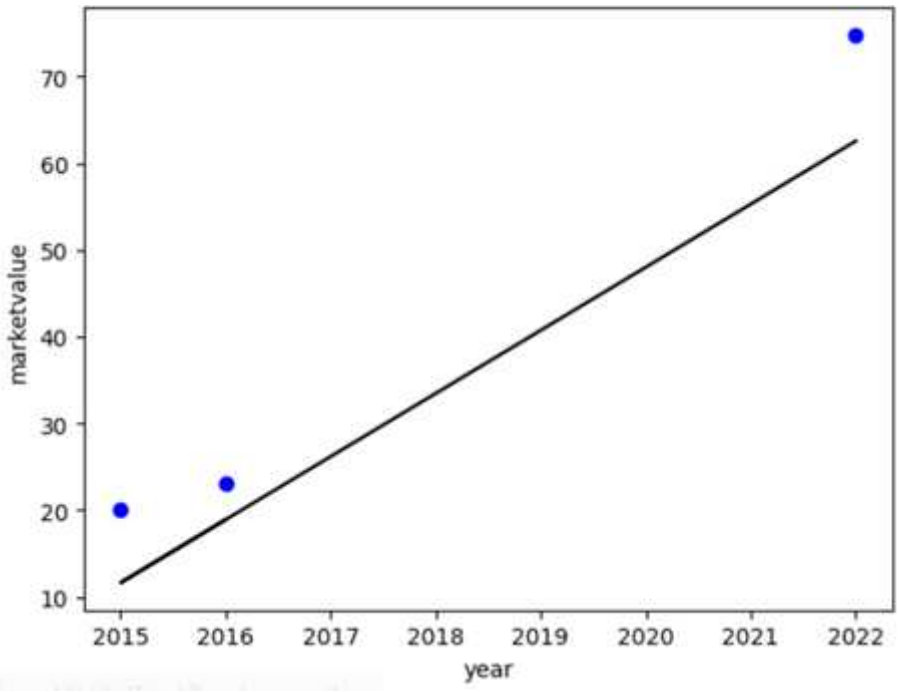
It is projected that the years ahead will see figures of 59% in 2024, 65% in 2025, and 70% in 2026. This comes with a high accuracy rate of 98%. Therefore, the revenue generated from e-commerce in India is expected to rise, indicating a positive opportunity for retailers to adopt online platforms to attract customers based on their preferences.

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 and the last element Market worth of online shopping in India, forecasts indicate that there will consistently be a rise in the rate for the forthcoming years until 2026. For the year 2024, it is projected at 67%, for 2025, it stands at 73%, and for 2026, it is expected to reach 79%, with a precision rate of 91%. Therefore, the retailer ought to shift their enterprise into the realm of online commerce.




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

```
0.9085752184135393
```

Conclusion

Business analytics is a developing sector that is increasingly required by industries for evaluation and informing management about upcoming trends. Artificial intelligence is employed to facilitate the tasks of analysis and forecasting. Numerous industries possess significant market potential in India. This research focused solely on e-commerce, currently recognized as a rising sector both now and in the future. To understand the specific market value within the e-commerce industry in India, we incorporated two additional elements to bolster the recommendations regarding future opportunities in the e-commerce merchandising field. This document effectively forecasts the future potential and significance of the e-commerce sector and its substantial impact on society. Transitioning online benefits both consumers and sellers, enabling easier access to customers. Therefore, it is advisable for the merchandising sector to shift towards online retail, which is a developing trend in India, embracing innovations for their continued success and enhancing the revenue contribution to India.