1.In the context of e-commerce industry evolution, Data Science helps to bring maximum value out of the vast amount of data available in such platforms, and helps to switch focus towards customer engagement and experience i.e.

* **Product recommendation for users.**
* **Analysis of customer trends and behaviors**
* **Forecasting sales and stock logistics.**
* **Optimizing product pricing and payment methods.**

**2.** **Recommender Systems**, which are a means of predicting the preference that users might have towards an item based on previous purchases or searches on the platform.

There are two types of recommender systems:

1. **Content-Based Recommendations**: Method that makes recommendations based on attributes or features of the product.
2. **Collaborative Recommendations**: This method makes recommendations based on the interactions displayed by multiple users.

# 3. Customer Analytics-****Customer Analytics:****helps to understand the trends and shifts in customer’s behavior in order to modify business strategies, as well as make key business decisions accordingly. It also provides a means to analyze which channels of acquisition and retention of clients are actually working and which are not.

# a. ****Customer profiling and segmentation****: Customers can be grouped based on their preferences, purchases and browsing patterns, in order to build a personal profile and provide recommendations based on it.

# b. ****Sentiment Analysis****: This is the process of determining the emotion behind a set of words or sentences, in order to identify a sentiment expressed by customers for their purchased or sold products, through product reviews or in support tickets.

# **c. **Churn Analysis****: This is the process of analyzing the likelihood of when a customer will purchase a product, based on its activity in the platform, directed towards optimizing existing acquisition and retention strategies.

# d. ****Lifetime Value Prediction****: This is the estimated total revenue that a customer will provide to the business during his or her relationship with the platform.

# 4. Exploratory Data Analysis with Python--*Exploratory Data Analysis or (EDA) is understanding the data sets by summarizing their main characteristics often plotting them visually.*

# a. Importing required libraries(Pandas, Numpy, Matplotlib) for EDA

# b. Loading the data into Dataframe

# c. We can get the total number of rows and columns from the data set using “.shape”

# d. Check Data Types

# e. Drop the duplicate rows

# f. To find out the unique value of the selected column use unique() function

# g. Remove the outlier

# h. Change Int Features into Categorical Features

# i. Use describe() to provide statistical information

# j.Data Visualization

# ShopBridge E-Commerce Approach:

# Create Inventory using Dictionary and dataframe in python.

# Modify , add , delete items from inventory

# Create tables containing inventory informations

# Build connection between table and codes

# Call APIs

# After every action, inventory should get updated.