**Machine Learning models**

For our project, we will be using Unsupervised learning algorithms like K-means for customer segmentation and product segmentation. For Predictive analytics, we will be using deep learning Neural Networks.

**K-Means for Customer Segmentation –**

To help boost sales, companies often employ effective marketing strategies targeting specific customer groups and predict purchasing patterns. Customer segmentation is a method of segregating customers into those target groups for the marketing team to study. Machine Learning algorithms such as K-means would be the best approach for this study.

Our customers and Orders dataset would be merged for this analysis to group the customers into clusters based on characteristics of

* Gender
* Age
* Income
* member\_since\_date

**K-Means for Product Segmentation –**

Another way to help boost sales is to study the Products offered by companies and employ effective marketing strategies like promotions, discounts on them. Product segmentation is a method of segregating products into clusters or groups for the marketing team to study.

Machine Learning algorithms such as K-means would be the best approach for this study.

We will be joining the product and orders dataset for this purpose, which would include characteristics such as-

* product\_id
* dept\_id
* aisle\_id
* add\_to\_card\_order
* reordered\_status

**Predictive analysis using Deep learning Neural network models.**

Understanding retail industry can be tricky and evolving hence we will be using Deep Neural Networks for this purpose as many of the relationships between inputs and outputs are non-linear as well as complex.

Using Neural networks, we can train and try to answer questions such as –

* Which products are likely to be reordered?
* Which products are likely to not be reordered?
* Which type customer is likely to reorder the product, based on customer groups.