Using data science in retail

In the modern industry people say that data is the new oil, but where is the engine? The engine is a data science which focuses on collecting , processing , analyzing and data vizualitation. The method or data science applications usually depend on the specific business domain. Every industry including retail realizes that they need data science for making precise business decisions and optimize the processes.

Data science applications in retail undoubtedly boosts operations such as assortment; recommendation; logistics, supply chain management, demand forecasting, etc. Besides, it also plays a significant role in optimizing prices for products/services, predictive maintenance, churn prediction, and data-driven product management. As per the IBM study, 62% of retailers acknowledged having gained a significant competitive advantage due to data science applications.

Example of data science use case in retail industry is target. The analytics team of ***Target*** started analyzing the buying trends of its customers with the help of customized data science applications. It allowed them to know the pregnancy status of their customer in advance before the customer knew it. Furthermore, the predictive analytics model they created was so powerful that it could predict the likely due date. This overwhelming information helped the retail company target these customers for selling their fetal items along with regular products and coupons.

Let’s get into how data science is helping the retail organizations get the best out of accurate data:

1. Recommendation Engines
   Recommendation engines can be considered one of the best data science use cases in retail. It works by filtering information and providing retailers with consumer behavior patterns. Based on this information, retailers can customize their offers for target customers interested in buying products or services. The above mentioned data science example of Target, precisely represents the best way to use recommendation engines for better outcomes.Collaborative, content-based, and hybrid are the three major filters used in recommendation engines. The collaborative filter offers recommendations based on user preferences, while the content-based filter takes a product-centric approach, and the hybrid recommendation uses both these filters. If retailers can recommend products/services based on customer preferences, it will boost sales and revenues. Therefore, retailers need to get detailed data science knowledge for the retail industry if they intend to adopt data sciences.

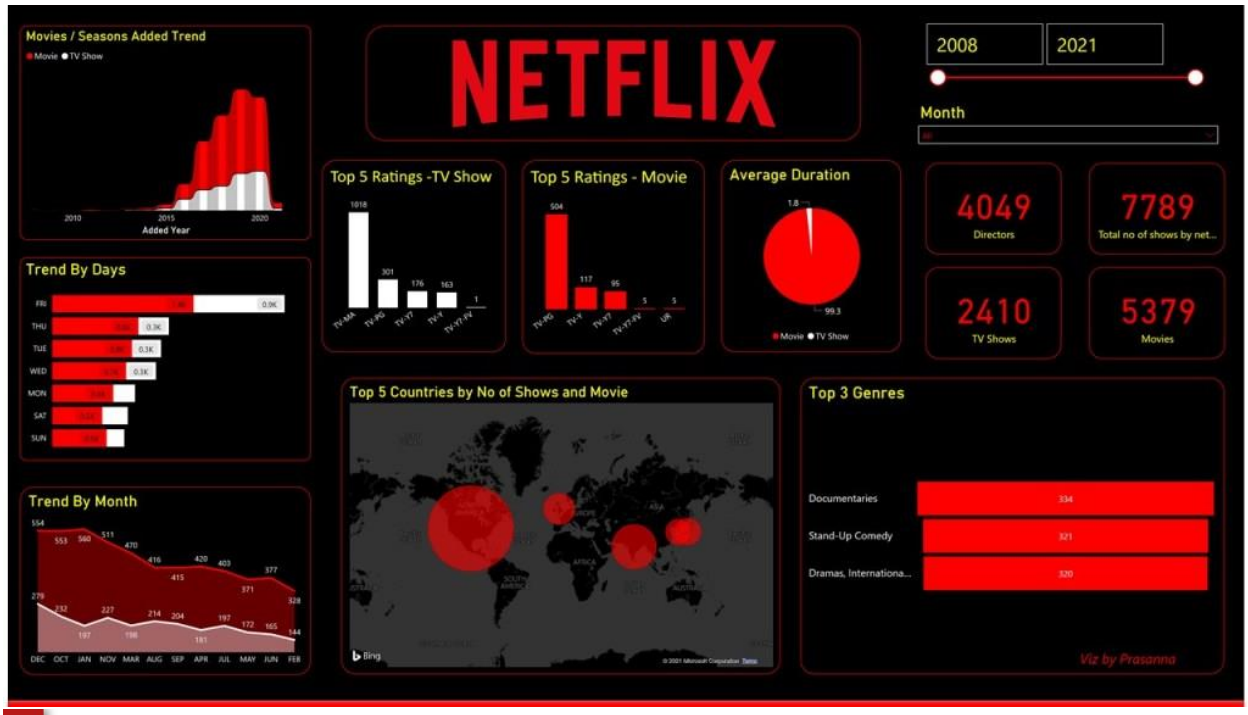
2. Fraud Detection

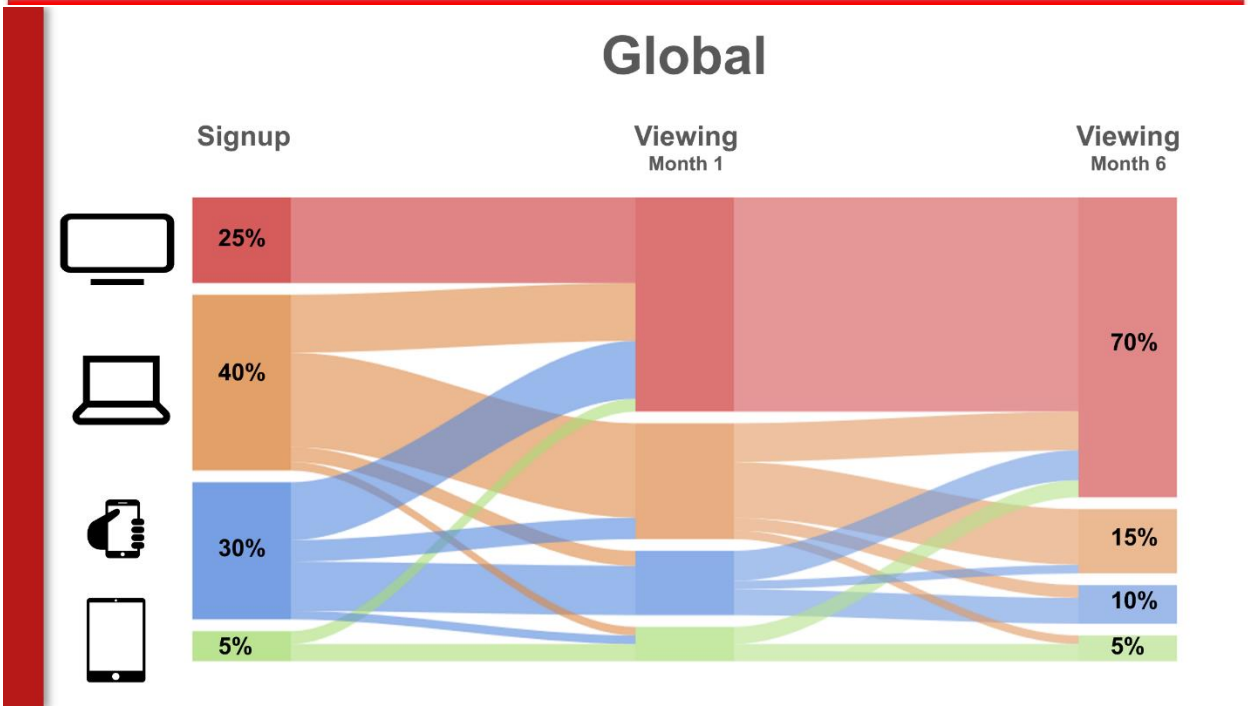
   The immense growth in online transactions across the industries has resulted in serious fraud. The rule-based approach to fraud detection no longer works when so much data is involved, even for committing the crime. The data science applications are customized to predict fraud by using data generated during online transactions. Data Science and Machine Learning techniques such as Deep Neural Networks (DNNs) are also used to detect business transaction fraud.

3. Personalized Marketing

   As per the Accenture study, 73% of consumers want to buy from retailers that use their information to give them the shopping experience they desire. Retailers need to cater to this consumer demand by using various data science tactics. One of such tactics is the integration of personalized recommendations. These personalized recommendations take into consideration users browsing history, past purchases, likes, and dislikes. Many eCommerce giants are using this one data science use case in retail.

   The example of data science use case in retail is Netflix.
   Have you ever wondered how you get recommendations for your favorite shows without doing anything? The truth is Netflix has one of the best data science applications. It accesses and collects all the data related to the viewing habits and content preferences of its audiences across the globe. Using ML algorithms and AI models, they developed data sciences techniques such as ranking algorithms and interleaving to recommend the most relevant content to its target audience.





Using the data from user in Netflix platform they can get some insight and make a decision which can profit the company worth to billion. Here is some reference about how Netflix can be a mega company using data science (https://medium.com/analytics-vidhya/how-netflix-used-data-science-to-form-into-a-100-billion-company-6f61cf68c4fb)

4. Price Optimization
   Price optimization is another significant data science use case involving various online tricks and customer approaches. The data is obtained through multiple sources and

analyzed to pinpoint the customer demographics, such as age, gender, place, buying attitude, buying season, and price expectations (it involves comparing prices of the same product on different platforms). All the data insights help them develop an ideal price for the product or run a personalized marketing campaign for independent customers.

Let's take the example of Netflix again. Do you remember how Netflix changed its pricing plans in India to increase its subscriber base? Well, Netflix used data science application to identify the customer behavior patterns and optimize the pricing plans suitable to attract more customers and be more profitable in terms of absolute revenue in India than its competitors.

5. Cross – selling and Upselling
   Cross-selling is about recommending complementary products to customers for their purchases, while upselling is about recommending better products than the ones they want to buy. Many retailers and eCommerce giants have already adopted this data science use case to increase their revenue and enhance customer experience.
   Another example in retail is amazon.
   It gives you recommendations to buy the chair while buying a table; it is cross-selling. But, it is upselling when it shows you a better table than the one you considered buying. Amazon made it possible by accessing all of its customers' information, such as their names, search histories, buying intent, modes of payment, and addresses. This data allows Amazon to provide customized recommendations and to cross-sell and upsell.
6. Customer Sentiment Analysis
   Sentiment Analysis is one of the latest and most advanced data science use cases. It has replaced the time-consuming traditional approach of focus groups and customer pools to analyze customer experience with the product. The retailers now get data from social media, and the feedback consumers leave on online portals. They analyze this data to retrieve actionable insights into customer sentiments, like what they think of the product, their satisfaction level, the possibility of recommending it to others, will they buy again? This typical data science use case in retail depends on natural language processing and text analysis to perform data analysis. The ratings and reviews derived from this technique help retailers customize their products and services according to consumer expectations and sentiments. It results in better customer retention and gratification.

Conclusion.
As we heard before data is the new oil and data science is the combustion engine. So this new oil won't be useful if we don't know how to extract it. That's was the data science job to help people solving problem using the information that we get after the extraction from the oil (data)