# Predictive performance Estimation:

The term predictive analytics refers to the use of statistics and modeling techniques to make predictions about future outcomes and performance. Predictive analytics looks at current and historical data patterns to determine if those patterns are likely to emerge again. This allows businesses and investors to adjust where they use their resources to take advantage of possible future events. Predictive analysis can also be used to improve operational efficiencies and reduce risk.
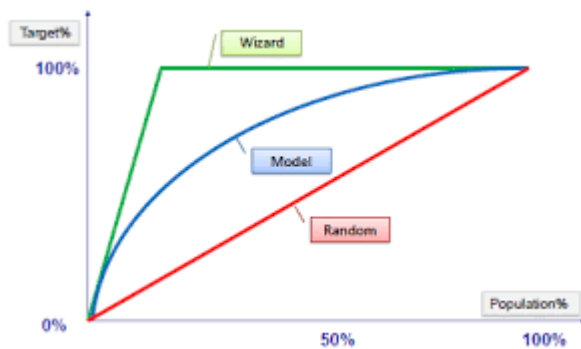
Uses of Predictive Analytics

Predictive analytics is a decision-making tool in a variety of industries.
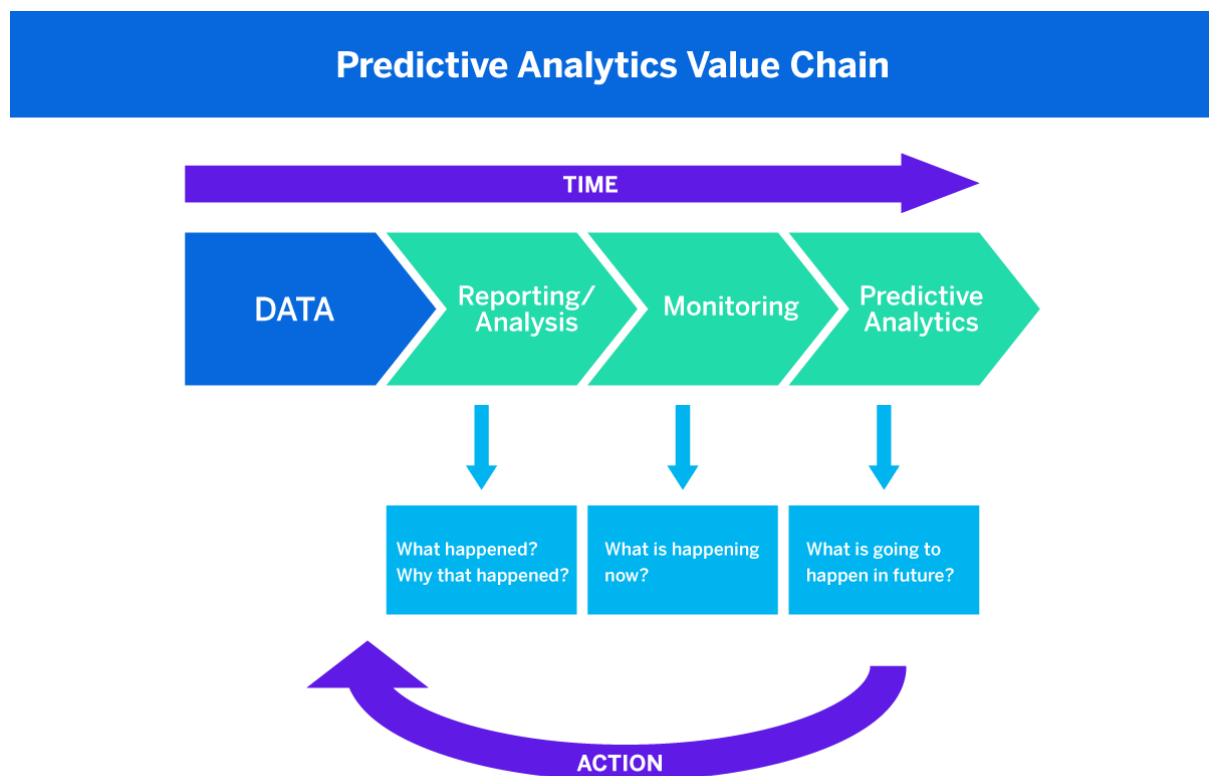
Forecasting

Forecasting is essential in manufacturing because it ensures the optimal utilization of resources in a supply chain. Critical spokes of the supply chain wheel, whether it is inventory management or the shop floor, require accurate forecasts for functioning.

Predictive modeling is often used to clean and optimize the quality of data used for such forecasts. Modeling ensures that more data can be ingested by the system, including from customer-facing operations, to ensure a more accurate forecast.

Credit

Credit scoring makes extensive use of predictive analytics. When a consumer or business applies for credit, data on the applicant's credit history and the credit record of borrowers with similar characteristics are used to predict the risk that the applicant might fail to perform on any credit extended.

Underwriting

Data and predictive analytics play an important role in underwriting. Insurance companies examine policy applicants to determine the likelihood of having to pay out for a future claim based on the current risk pool of similar policyholders, as well as past events that have resulted in payouts. Predictive models that consider characteristics in comparison to data about past policyholders and claims are routinely used by actuaries.

Marketing

Individuals who work in this field look at how consumers have reacted to the overall economy when planning on a new campaign. They can use these shifts in demographics to determine if the current mix of products will entice consumers to make a purchase.

Active traders, meanwhile, look at a variety of metrics based on past events when deciding whether to buy or sell a security. Moving averages, bands, and breakpoints are based on historical data and are used to forecast future price movements.

Fraud Detection

Financial services can use predictive analytics to examine transactions, trends, and patterns. If any of this activity appears irregular, an institution can investigate it for fraudulent activity. This may be done by analyzing activity between bank accounts or analyzing when certain transactions occur.

Supply Chain

Supply chain analytics is used to predict and manage inventory levels and pricing strategies. Supply chain predictive analytics use historical data and statistical models to forecast future supply chain performance, demand, and potential disruptions. This helps businesses proactively identify and address risks, optimize resources and processes, and improve decision-making. These steps allow companies to forecast what materials will be on hand at any given moment and whether there will be any shortages.

Human Resources

Human resources uses predictive analytics to improve various processes, such as forecasting future workforce needs and skills requirements or analyzing employee data to identify factors that contribute to high turnover rates. Predictive analytics can also analyze an employee's performance, skills, and preferences to predict their career progression and help with career development planning in addition to forecasting diversity or inclusion initiatives.

Cluster Models

Clustering describes the method of aggregating data that share similar attributes. Consider a large online retailer like Amazon. Amazon can cluster sales based on the quantity purchased or it can cluster sales based on the average account age of its consumer. By separating data into similar groups based on shared features, analysts may be able to identify other characteristics that define future activity.

Time Series Modeling

Sometimes, data relates to time, and specific predictive analytics rely on the relationship between what happens when. These types of models assess inputs at specific frequencies such as daily, weekly, or monthly iterations. Then, analytical models seek seasonality, trends, or behavioral patterns based on timing. This type of predictive model can be useful to predict when peak customer service periods are needed or when specific sales will be made.

How Businesses Can Use Predictive Analytics

As noted above, predictive analysis can be used in a number of different applications. Businesses can capitalize on models to help advance their interests and improve their operations. Predictive models are frequently used by businesses to help improve their customer service and outreach.

Executives and business owners can take advantage of this kind of statistical analysis to determine customer behavior. For instance, the owner of a business can use predictive techniques to identify and target regular customers who could defect and go to a competitor.

Predictive analytics plays a key role in advertising and marketing. Companies can use models to determine which customers are likely to respond positively to marketing and sales campaigns. Business owners can save money by targeting customers who will respond positively rather than doing blanket campaigns.