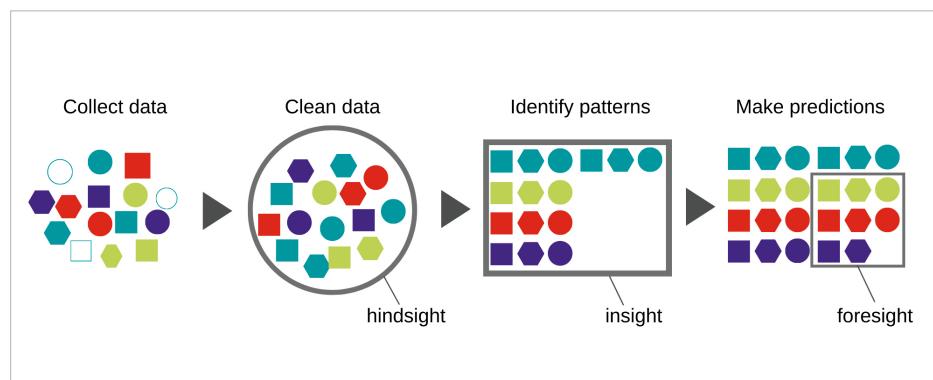


Predictive analytics

What exactly is predictive analytics? Those who do not learn from history are doomed to repeat it - predictive analytics is there to learn all the patterns from history, so that the positive outcomes can be repeated and the mistakes are avoided.



Phases describing processes within a predictive analytics project

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Predictive analytics is a branch of data science, which, by using and processing historical data, tries to predict future trends and behavior patterns. As such, it attempts to identify correlations between variables using various statistical analyses and machine learning algorithms. In order for this whole process to work better, we need large amounts of quality data, i.e. adequate data is a prerequisite for good results of predictive models.

As data storage becomes more cost-efficient companies today own more data than ever before. The data is becoming

more and more complex and it is possible to access not only structured data, but also images and sound files, as well as various documents. At the same time, we have more and more computing power at our disposal that can handle the scope and complexity of this data.

Better software design allows for a simpler and more reliable testing and implementation process and use of predictive analytics.

HOW DOES PREDICTIVE ANALYTICS HELP BUSINESS?

As already mentioned, predictive analytics has the ability to predict patterns

based on past data and there are many of its applications in the business world. Companies are given the opportunity to apply state-of-the-art statistical analysis and machine learning algorithms to their data, and to draw useful conclusions that will help them make smart business decisions. These conclusions can be used to predict the future values of certain variables, allowing companies to reduce risks and costs.

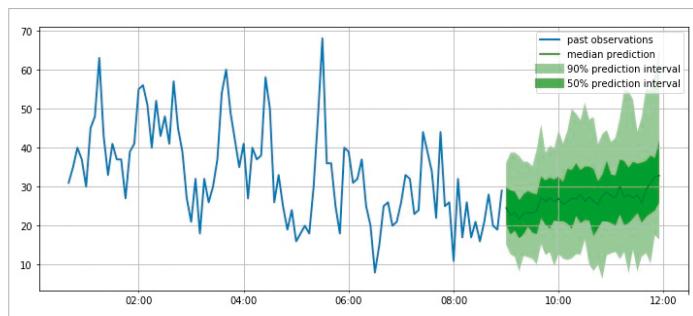
Using predictive analytics, a huge amount of data is analyzed, and such analyzes provide key points of business, which helps organizations understand their strengths and weaknesses. Also, predictive analytics helps identify future patterns of behavior that may be useful to a company in understanding customer needs, improving marketing strategy or optimizing various business processes. For a company, it is one of the main ways to increase growth and development.

DEMAND FORECASTING

One of the most widespread applications of predictive analytics in the business world is demand forecasting. It is a process of forecasting the future that involves processing historical data to assess a demand for a particular product and/or service. Accurate assessment can bring significant improvements in supply chain management and can help increase margins, improve cash flow and increase customer satisfaction - or increase profitability.

In an ideal world, companies would be able to meet the demand for their products without creating excessive inventories. However, in the real world demand varies constantly and rapidly. Consequently, many other factors that affect product availability (procurement time, supply chain imperfections, human errors, etc.) should not be overlooked.

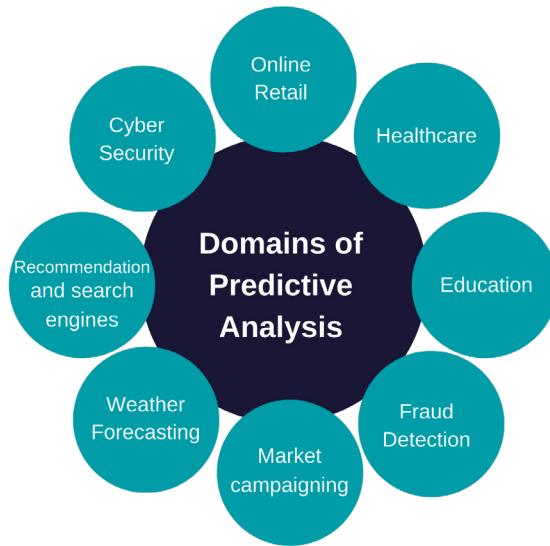
On the one hand, the traditional model of demand forecasting includes estimating the demand based on the experience of the seller or some kind of collective "brainstorming" in the company, or as-



Example of predicting future values based on the analysis of past values

sessment based on customer opinion (market research, surveys, etc.). On the other hand, modern methods are based on machine learning algorithms and various models for estimating the demand. If we have enough quality data at our disposal, it is almost certain that the model based on machine learning will be more accurate than human analysts and experts.

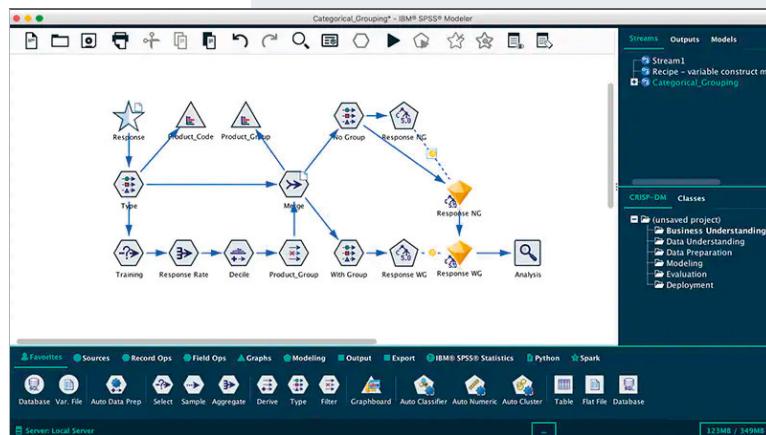
Some of the other applications of predictive analytics are predicting risky events and then taking necessary steps to prevent them, monitoring customer behavior which leads to a personalized approach to customers and taking steps to prevent customers from leaving (customer churn). Furthermore, it is important to mention fraud detection, i.e. the detection of actions related to fraud and data misuse. Fraud detection includes money laundering, cybersecurity threats, tax evasion, fraudulent insurance claims, the use of stolen credit cards and identity theft and is prevalent in financial institutions, government, healthcare, the public and insurance sectors. Predictive analytics can help identify these anomalies in real time, minimize security threats, and enable companies to respond quickly to fraud attempts. There are still many applications of predictive analytics in the business world and as we can see, data has a value, and predictive analytics unlocks and leverages their potential. □



A wide range of applications of predictive analytics

IBM SPSS Modeler

IBM SPSS Modeler is a platform for predictive analytics used to build predictive models and to perform various analyses on data. IBM SPSS Modeler helps to detect patterns and trends in structured and unstructured data, using a unique visual interface that incorporates advanced analytical techniques. Such a visual interface allows users to use statistical and data mining algorithms without the need for programming knowledge. Also, an easy access to numerical, tabular and textual data is provided from such an interface.



The interface of IBM SPSS Modeler, more precisely Stream Modeler, where data flows are built and modeled

IBM SPSS Modeler is a leading solution designed to help businesses accelerate operational tasks for data scientists to gain business value as quickly as possible. It is also available within IBM Cloud Pak for Data, a container platform for data and artificial intelligence that allows you to build and run predictive models anywhere - either in the cloud or locally.

One of the features of IBM SPSS Modeler is automated data modeling that enables building predictive models without having the specialized skills. With the help of IBM SPSS Modeler, it is possible to use machine learning techniques, from algorithms for classification, segmentation, time series analysis to ready-made algorithms written in Python and R programming languages.

Moreover, IBM SPSS Modeler offers geospatial analysis, which can be used to investigate the relationship between location-related data and then perform geographic spatial analysis.

Among other things, it offers text analysis itself, which, using advanced linguistic technologies and natural language processing (NLP), has the ability to quickly process unstructured textual data.

Undoubtedly, IBM SPSS Modeler enables users of various levels of prior knowledge to address a wide range of business challenges. □