

## **P1. Price Optimization**

Estimating the optimal prices for their products is one of the most important tasks for any modern company. This regards both new companies that just appeared on the market and already-existing ones that are trying to adapt to changing economic conditions — or are planning to grow their business geographically or by market segment. To solve the price optimization problem successfully, a business analyst needs to investigate historical prices, crucial price factors, the markets where the company operates (and their economic contexts), the profiles of potential clients, etc.

For this project, you can take a dataset of price data for a retail company (<https://www.kaggle.com/datasets/suddharshan/retail-price-optimization>) containing such information as product names, historical prices, product categories and characteristics, volume of sales, and time and geographic notations. The task here is to select and analyze relevant price-forming factors and the degree of their influence on the prices. Your main goal should be to calculate the optimal selling prices for the products to create efficient, data-driven recommendations for the company.

## **P2. Stock Market Data Analysis**

Stock Market Data Analysis involves exploration of the stock market in general, a particular investment sector, or a specific trading instrument. Traders and investors need this analysis to understand past and current trends in the market — and, hence, make better buying and selling decisions. The stock market generates a huge amount of data every day on the price values and trading volumes of a company. Consider answering the following questions:

- How often did the company increase (or decrease) in price on a given day?
- What is the general trend of average monthly closing prices over the year?
- Are there any seasonal patterns in trading volumes?
- Is there a relationship between the daily maximum and minimum prices for the company?
- Do large differences in the daily maximum and minimum prices coincide with higher or lower trading volumes?
- Do the patterns in the most recent year match previous years?

In order to build the project, you can select a specific dataset, such as

Microsoft Stock Data: <https://www.kaggle.com/datasets/varpit94/microsoft-stock-data/versions/5>

Amazon Stock Data: <https://www.kaggle.com/datasets/varpit94/amazon-stock-data>

or INTEL Stock Data: <https://www.kaggle.com/datasets/varpit94/intel-stock-data>

to explore the company's historical stock performance and find insights into the future.

### **P3. Customer Review Sentiment Analysis**

Customer review sentiment analysis is a process of detecting customers' feelings after they have purchased a company's products. The company can gather this information from product reviews, feedback forms, tickets to their help center, online surveys, etc.

Every company is interested in conducting customer feedback sentiment analysis since it's a secure way to determine possible reasons for customers' complaints, and to strengthen the product features that make customers happy. As a result, the business can take measures to fix the issues in a timely manner, improve the customer experience, reduce the customer churn rate, adjust marketing campaigns, and maximize profits.

To build a project on customer review sentiment analysis, you need to find an available dataset (e.g., Sentiment analysis with hotel reviews - <https://www.kaggle.com/code/jonathanoheix/sentiment-analysis-with-hotel-reviews/data>) with text data extracted from customer reviews of a certain company. Alternatively, consider parsing such data from the internet by yourself. Your task in this project is to preprocess the text data and explore it using specialized statistical and linguistic tools to identify positive, negative, and neutral experiences and, ideally, their strength and subjectivity. Be aware of some intrinsic weaknesses of text analysis techniques. For example, they aren't always able to interpret slang words or rarely used abbreviations — or detect sarcasm.

### **P4. Sales Data Analysis**

As a business analyst, you'll likely work with sales data because it plays a crucial role in the commercial success of your company. Whether that means understanding current sales or forecasting future sales, this is a key skill that employers look for. Sales records usually contain information on a company's customers, customers' sales orders, payment history, product categories, etc. This data allows you to analyze your customers' demographics, which products they buy, when they buy, how much revenue they generate, how well they respond to promotions, and more.

You can take an available dataset (like this one: Sales Product Data - <https://www.kaggle.com/datasets/knightbearr/sales-product-data>) and analyze sales data from various aspects. The main objective here is to extract key performance indicators (KPIs) that will enable you to make data-driven decisions and improve your company's business. Below are some questions you can try to answer in a project on sales data analysis::

- What is the total number of sales?
- What is the average sales per month?
- What is the monthly revenue?
- What are the key demographics of the customers?
- Which market (country) generated the most sales on average?
- What were the profits by segment?
- When were the best- and worst-selling periods?
- Which products sell best?

- Which products should the company order more or less of?
- How should the company adjust its marketing strategies to VIP customers and less-engaged ones?
- Should the company acquire new customers, and how much money should they spend on it?

## **P5. Sales Conversion Optimization**

A company does a lot of marketing to get sales, and various kinds of campaigns are initiated to market products. Campaigns such as email blasting and social media marketing are among the most popular ways of marketing a product.

The aim of this project is to understand what the most effective ways are in terms of ROI (return on investment) and which campaign generates more leads and then suggest the ways of going about this marketing campaign in the most optimized manner based on a provided budget.

For this Business analytics project, you can use the following dataset to get information on a company's [marketing campaign data](#).

## **P6. Predicting Sales in Tourism for the Next 4 Years**

Tourism is one of the fastest-growing industries in the world. With the introduction of hashtags like '#wanderlust', there has been an increasing amount of interest among people of different demographics to explore new places. However, this industry has very fluctuating numbers in terms of sales, and different places have different feelings according to the time of the year.

Hence, tourism forecasting has become an increasingly important task in planning, improving, and managing the industry. There is a lot of information and insights that are hidden in the data retrieved from the tourism industry. You can use techniques like data clustering to understand when and where tourists prefer to go, what they like at each location, the mode of transportation of tourists while travelling between spots, etc.

Using insights like the above, you need to forecast the sales for the upcoming 4 years. You can use this [dataset](#) for your evaluations and then compare them with the actual data.

## **P7. Fraud Detection**

Fraud is a widespread problem in many industries, like banking, sales, and insurance. The most common form of fraudulent activity is credit card fraud, but there are others, such as identity theft or cyber-attack. This problem is especially challenging because fraudsters' strategies are constantly adapting and becoming more sophisticated. This means that there is no one-size-fits-all solution for detecting fraud.

A project on fraud detection would be an asset for your business analyst portfolio. What you need to do is to take a dataset with the data on online transactions (e.g., this one: Credit Card Fraud Detection - <https://www.kaggle.com/datasets/mishra5001/credit-card>) and analyze it for suspicious operations using statistical methods. Are there any features that the fraud transactions

have in common? Knowing such features (or combinations of features) in advance would help the company identify fraudulent actions timely and take preventive measures.

### **P8. Life Expectancy Analysis**

Life expectancy is a critical indicator of health in a certain country (or region). This metric depends not only on the level of medicine in that country but also on its environmental conditions, economic and political context, and social tendencies. Analyzing the correlation between gross domestic product (GDP) per capita and life expectancy is a good idea for your next business analyst project.

Find a suitable dataset (e.g., Life Expectancy (WHO) - <https://www.kaggle.com/datasets/kumarajarshi/life-expectancy-who>) that provides information on both life expectancy and GDP per capita by year for different countries and regions, explore and visualize the data using appropriate plots, and develop meaningful insights. You may notice some trends for each country or region, as well as an overall tendency. Think about the following questions:

- For each geographic unit, is there a clear correlation between GDP per capita and life expectancy?
- What are the geographic units with the highest and lowest life expectancy? What about their GDP?
- What other potential issues could take place in the geographic units with a lower life expectancy?
- In general, is life expectancy in the modern world growing? And GDP?