

EXECUTIVE SUMMARY

The Idealista project forecasts the real estate prices in three major Spanish cities: Barcelona, Madrid, and Valencia with the objective to deliver crucial valuation insights for buyers, sellers, investors, and real estate professionals. Overall correct valuations are essential for establishing fair market values, appraisals, and smooth transactions in the real estate market. The operation has been conducted on three large datasets, containing 189,923 housing units across the cities, each with over 40 well cleaned and analysed variables. Eventually, the data further supported our business case by revealing that, whereas 91% of real estate investors concur about the need to implement data analytics, only 39% are doing it effectively. The Urban Land Institute also states that adequate property valuation shall enhance investors' confidence in capital allocation, and possibly increase returns on investment. From this background, Idealista IQ puts a personal touch on the investment insights to inform better capital allocation, to provide the power to compare against historical prices and to assess potential rental income, trends in the market, and individual profile information. Collaborative filtering algorithms will be applied to provide personalised investment advice, and it will be much more intuitively friendly with reporting detail compared to current available insights tools.

Throughout the process, the EDA stage revealed that there are important relationships between property prices and several features such as constructed area, number of rooms, and proximity to metro stations. As data cleaning operations have been performed for outlier treatment, elimination of records that had the same identifier, and handling missing values with mean values, we then proceeded to build different machine learning algorithms like linear regression, random forest, XGBoost, and LightGBM on different transformations of data to achieve the best possible result. Among the four, XGBoost using Box-Cox transformation gave the most precise model with MAPE values being 0.87% for Barcelona, 0.24% for Madrid, and 0.60% for Valencia. However, Idealista IQ has several limitations: for example there is a requirement for meticulous management of data privacy concerns to ensure adherence to strict protection laws. The underlying ETL processes should be robust enough to maintain consistency and quality across all sources, and for the recommendation engine to produce impartial and open recommendations, biases must be reduced. The infrastructure should scale to the enormity of data volume and user base size, with continuous monitoring and updates toward market changes. The tool should also communicate the risks associated with real estate investment, to prevent customers from leaning too much on suggestions provided by the tool.

Future recommendations for Idealista IQ include partnering with financial institutions to ensure smooth financing options, adopting blockchain technology to enhance transactional

safety and enabling AR and VR features to allow virtual house inspection or tour. Additionally, predictive analytics on market trends and a concentration on sustainability, highlighting properties that can be considered eco-friendly. These recommendations will strengthen Idealista's position as the industry leader in real estate technology by modernising its products to provide thorough and intuitive resources. Finally this will assist users in improving their investment choices and increasing client satisfaction. In essence, Idealista IQ uses advanced machine learning techniques to enable improved property assessment and makes investment recommendations that are almost entirely tailored for each user. In addition, by addressing the issues regarding data privacy, quality and infrastructure, the analysis tool will improve investment strategies by 10-15% for an enhanced efficiency in making investment decisions, which certainly means marked profit increases for investors. Because of this, Idealista IQ can be finally set on the pedestal of a wonderful add-on that shall definitely enhance the credibility and reliability of the real estate market.