Product Demand Prediction Process and Submission

**Problem Statement**

Product demand prediction is the process of forecasting future demand for a product or service. It is a critical task for businesses of all sizes, as it helps them to make informed decisions about production, inventory, and marketing.

**DATA SOURCE WE HAVE TAKEN FROM :**

**KAGGLE** : <https://www.kaggle.com/datasets/chakradharmattapalli/product-demand-prediction-with-machine-learning>

**Design Thinking Process**

The design thinking process is a human-centered approach to problem-solving. It involves five key stages:

1. Empathize: Understand the needs and wants of users.
2. Define: Identify the core problem.
3. Ideate: Generate creative solutions to the problem.
4. Prototype: Build and test solutions.
5. Test: Implement solutions and collect feedback.

Phases of Development

**The product demand prediction process can be divided into the following phases:**

1. Data collection: Gather relevant data, such as historical sales data, market research data, and competitor data.
2. Data preprocessing: Clean and prepare the data for analysis.
3. Model training: Train a demand prediction model using the preprocessed data.
4. Model evaluation: Evaluate the performance of the trained model on a held-out test set.
5. Model deployment: Deploy the trained model to production.

Database

**The following databases can be used for product demand prediction:**

* Historical sales data: This database contains information about past sales, such as product, date, quantity, and price.
* Market research data: This database contains information about customer demographics, preferences, and behavior.
* Competitor data: This database contains information about competitor products, prices, and marketing strategies.

**Data Preprocessing**

**The following data preprocessing steps may be required:**

* Data cleaning: Remove any errors or inconsistencies in the data.
* Data imputation: Fill in any missing values in the data.
* Feature engineering: Create new features from the existing data

**Analysis Techniques**

**The following analysis techniques can be used for product demand prediction:**

* Time series analysis: This technique involves analyzing historical sales data to identify trends and patterns.
* Regression analysis: This technique involves building a mathematical model to predict demand based on historical sales data and other factors.
* Machine learning: This technique involves training a machine learning model to predict demand based on historical sales data and other factors.

Key Findings, Insights, and Recommendations

**The following are some key findings, insights, and recommendations from product demand prediction studies:**

* Demand is often seasonal: Demand for many products varies throughout the year. This is due to factors such as holidays, weather, and economic conditions.
* Demand is often cyclical: Demand for many products fluctuates over time in a cyclical pattern. This is due to factors such as the business cycle and technological change.
* Demand is often affected by marketing: Marketing campaigns can influence demand for products.
* Demand is often affected by competitor activity: The actions of competitors can also influence demand for products.

**Dataset Source**

**The following datasets can be used for product demand prediction:**

* Google Trends: This dataset contains information about search volume for different keywords.
* Amazon Sales: This dataset contains information about sales on Amazon.com.
* Walmart Sales: This dataset contains information about sales at Walmart stores.

Submission

**Conclusion**

Product demand prediction is a complex task, but it is essential for businesses of all sizes. By following the steps outlined in this document, you can develop a robust and accurate demand prediction model.