# **FUTURE SALES PREDICTION**

#### **PROBLEM STATEMENT:**

Predicting sales of a company needs time series data of that company and based on that data the model can predict the future sales of that company or product.

### **DATASET:** Future sales dataset

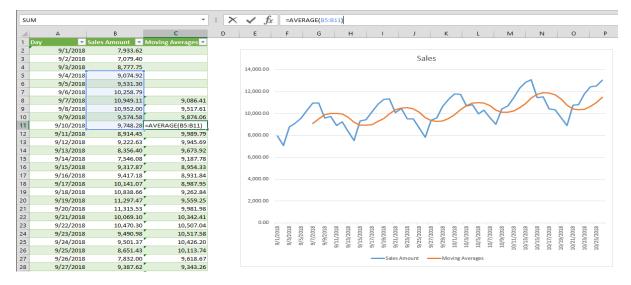
 $\pmb{\text{Link:}} \ \text{https://www.kaggle.com/datasets/chakradharmattapal}$ 

li/product-demand-prediction-with-machine-learning

## some of the screenshot of product demand Exel sheet of dataset are:

SALES			orecast Ten	nplate				
PRODUCT NAME		Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16	Jan-17
ITEM 1	PRICE PER UNIT	\$100.00	\$100.00	\$100.00	\$100.00	\$100.00	\$100.00	\$100.00
	UNITS SOLD	500	400	500	400	500	400	500
	TOTAL	\$50,000.00	\$40,000.00	\$50,000.00	\$40,000.00	\$50,000.00	\$40,000.00	\$50,000.00
ITEM 2	PRICE PER UNIT	\$50.00	\$50.00	\$50.00	\$50.00	\$50.00	\$50.00	\$50.00
	UNITS SOLD	1000	800	1000	800	1000	800	1000
	TOTAL	\$50,000.00	\$40,000.00	\$50,000.00	\$40,000.00	\$50,000.00	\$40,000.00	\$50,000.00
ITEM 3	PRICE PER UNIT	\$25.00	\$25.00	\$25.00	\$25.00	\$25.00	\$25.00	\$25.00
ITEM 3	UNITS SOLD	2000	1600	2000	1600	2000	1600	2000
ITEM 3	UNITS SOLD TOTAL	\$50,000.00	1600 <b>\$40,000.00</b>	2000 \$50,000.00	1600 <b>\$40,000.00</b>	2000 \$50,000.00	1600 <b>\$40,000.00</b>	2000 \$50,000.00
ITEM 3								
ITEM 3	TOTAL							
	PRICE PER UNIT							
	PRICE PER UNIT UNITS SOLD	\$50,000.00	\$40,000.00	\$50,000.00	\$40,000.00	\$50,000.00	\$40,000.00	\$50,000.00
	TOTAL  PRICE PER UNIT UNITS SOLD TOTAL	\$50,000.00	\$40,000.00	\$50,000.00	\$40,000.00	\$50,000.00	\$40,000.00	\$50,000.00

					REVENU	E FOR	EC.	<u>ASTING</u>				
Revenue Forecasting For					Sales Growth projection				Percentage	•	\$ AMOUNT	
2022								2023	5%		\$ 44,100.00	
								2024	5%		\$ 46,305.00	
Product A (Specify) Selling Price	\$	10.00						2025	5%		\$ 48,620.25	
								2026	5%		\$ 51,051.26	
Product B (Specify) Selling Price	\$	8.00						2027	5%		\$ 53,603.83	
Product C (Specify) Selling Price	\$	3.00										
TOTAL REVENUE FOR THE YEAR	\$	42,000.00						l				
		Jan-22	F	Feb-22	Mar-22	Apı	r-22	May-22	Jun-22	Jul-22	Aug-22	Sep-2
Unit sold for product A		100		100	100		100	100	100	100	100	10
Total Revenue For Product A	\$	1,000.00	\$ 1,0	00.00	\$ 1,000.00	\$ 1,000.	00	\$ 1,000.00	\$ 1,000.00	\$ 1,000.00	\$ 1,000.00	\$ 1,000.00
Unit Sold for Product B	F	200		200	200		200	200	200	200	200	20
Total Revenue For Product B	\$	1,600.00	\$ 1,6	00.00	\$ 1,600.00	\$ 1,600.	00	\$ 1,600.00	\$ 1,600.00	\$ 1,600.00	\$ 1,600.00	\$ 1,600.00
Unit Sold For Product C		300		300	300		300	300	300	300	300	30
	_							-		-		
Total Revenue For Product C	\$	900.00	\$ 9	00.00	\$ 900.00	\$ 900.	00	\$ 900.00	\$ 900.00	\$ 900.00	\$ 900.00	\$ 900.00
TOTAL REVENUES	s	3,500.00	\$ 3,5	00.00	\$ 3,500.00	\$ 3,500.		\$ 3,500.00	\$ 3,500.00	\$ 3,500.00	\$ 3,500.00	\$ 3,500.00



# **Project steps:**

- > Problem definition.
- > Gathering information.
- Preliminary exploratory analysis.
- Choosing and fitting models.
- Using and evaluating a forecasting model.

#### **Problem definition:**

There are many definitions of sales forecasting. However, the approaches are the same. Sales forecasting is a business practice in which future sales are estimated, with varying degrees of accuracy, using predictive models or an adapted sales forecasting method.

#### **Gathering information:**

The process of sales forecasting involves several essential steps, like defining objectives, data collection, data analysis, etc. Following these steps is essential to creating a robust sales forecast. Sales forecasting means the scientific assumption of the future sales of an organisation.

#### **Preliminary exploratory analysis:**

Exploratory Data Analysis refers to the critical process of performing initial investigations on data so as to discover patterns, to spot anomalies, to test hypothesis and to check assumptions with the help of summary statistics and graphical representations.

#### **Choosing and fitting models:**

The main models are trend analysis, regression analysis, and causal analysis. These are different methods that you should review for their fit with your specific circumstances. Each method has its own strengths and weaknesses, so it's important to choose the right one based on your specific needs.

#### Using and evaluating a forecasting model:

Sales and marketing leaders should use common criteria to evaluate and compare different sales forecasting methods and models, such as how well the method or model fits the data, market, and business context; how much it deviates from the actual sales; how much it differs from the actual sales regardless of direction.

#### Example:

from sklearn.preprocessing import MinMaxScaler from sklearn.linear\_model import LinearRegression from sklearn.metrics import mean\_squared\_error, mean\_absolute\_error, r2\_score from sklearn.ensemble import RandomForestRegressor from xgboost.sklearn import XGBRegressor from sklearn.model\_selection import KFold, cross\_val\_score, train\_test\_split

# THANK YOU