In [1]:

```
import yfinance as yf
import pandas as pd

#import the income statement#
#change the Ticker to chosse the company that you want to analyse#


variable = yf.Ticker("MDB")
df = variable.financials

#correct the df#
df2 = pd.DataFrame()
df2[["2023","2022","2021","2020"]] = df

#create skull dataframe#
skull = {
    "index": ["revenues", "EBITDA", "EBIT", "i_e", "NE"],  # FC= financial charges#
    "2020": ["1", "1", "1", "1", "1"],
    "2021": ["1", "1", "1", "1", "1"],
    "2022": ["1", "1", "1", "1", "1"],
    "2023": ["1", "1", "1", "1", "1"]
}

income_statement = pd.DataFrame(skull)

#now insert revenues in the df called income_statement#

revenues = [0,0,0,0]
x=0
year= 2020

while x <= 3:
        revenues[x] = df2[str(year)]["Total Revenue"]
        x=x + 1
        year = year + 1


x=0
year = 2020

while x <= 3:
        income_statement[str(year)][0] = revenues[x]
        x= x + 1
        year = year + 1


#make the same operation with the othets variables of the df income_statement#

#EBTDA#

ebitda = [0,0,0,0]
x=0
year = 2020

while x <= 3:
        ebitda[x] = df2[str(year)]["EBITDA"]
        x=x + 1
        year = year + 1


x=0
year = 2020
```

```
        income_statement[str(year)][1] = ebitda[x]
        x= x + 1
        year = year + 1



#EBIT#
ebit = [0,0,0,0]
x=0
year = 2020

while x <= 3:
        ebit[x] = df2[str(year)]["EBIT"]
        x=x + 1
        year = year + 1


x=0
year = 2020
while x <= 3:
        income_statement[str(year)][2] = ebit[x]
        x= x + 1
        year = year + 1


#i_e = interest expense#

i_e = [0,0,0,0]
x=0
year = 2020

while x <= 3:
        i_e[x] = df2[str(year)]["Interest Expense"]
        x=x + 1
        year = year + 1


x=0
year = 2020
while x <= 3:
        income_statement[str(year)][3] = i_e[x]
        x= x + 1
        year = year + 1

#NE = net income#

NE = [0,0,0,0]
x=0
year = 2020

while x <= 3:
        NE[x] = df2[str(year)]["Net Income"]
        x=x + 1
        year = year + 1


x=0
year = 2020
while x <= 3:
        income_statement[str(year)][4] = NE[x]
        x= x + 1
        year = year + 1
```

```
#################################################################################
#now analyze the balance sheet#

df3 = variable.balance_sheet

#correct the df#
df4 = pd.DataFrame()
df4[["2023","2022","2021","2020"]] = df3

#create skull dataframe#

#PPE = property plan equipment#

skull2 = {
    "index": ["PPE", "Good will",  "Net Recivables", "CL", "CA","WC", "invested capital"
    "2020": [ "1", "1", "1", "1", "1", "1", "1","1", "1"],
    "2021": [  "1", "1", "1", "1", "1", "1", "1","1", "1"],
    "2022": [ "1", "1", "1", "1", "1", "1", "1","1", "1"],
    "2023": [  "1", "1", "1", "1", "1", "1", "1","1", "1"]
}
balance_sheet = pd.DataFrame(skull2)

#PPE#
PPE = [0,0,0,0]
x=0
year = 2020

while x <= 3:
        PPE[x] = df4[str(year)]["Net PPE"]
        x=x + 1
        year = year + 1


x=0
year = 2020
while x <= 3:
        balance_sheet[str(year)][0] = PPE[x]
        x= x + 1
        year = year + 1



#goodwill#
Goodwill = [0,0,0,0]
x=0
year = 2020

while x <= 3:
        Goodwill[x] = df4[str(year)]["Goodwill"]
        x=x + 1
        year = year + 1


x=0
year = 2020
while x <= 3:
        balance_sheet[str(year)][2] = Goodwill[x]
        x= x + 1
        year = year + 1
```

```
#Net Recivables#
Net_Recivables= [0,0,0,0]
x=0
year = 2020

while x <= 3:
        Net_Recivables[x] = df4[str(year)]["Accounts Receivable"]
        x=x + 1
        year = year + 1


x=0
year = 2020
while x <= 3:
        balance_sheet[str(year)][4] = Net_Recivables[x]
        x= x + 1
        year = year + 1

#current liabilites(CL)#
CL= [0,0,0,0]
x=0
year = 2020

while x <= 3:
        CL[x] = df4[str(year)]["Current Liabilities"]
        x=x + 1
        year = year + 1


x=0
year = 2020
while x <= 3:
        balance_sheet[str(year)][5] = CL[x]
        x= x + 1
        year = year + 1

#current assets#

CA= [0,0,0,0]
x=0
year = 2020

while x <= 3:
        CA[x] = df4[str(year)]["Current Assets"]
        x=x + 1
        year = year + 1


x=0
year = 2020
while x <= 3:
        balance_sheet[str(year)][6] = CA[x]
        x= x + 1
        year = year + 1

#Working capital (WC) = Current assets-current liabilities#

WC= [0,0,0,0]
x=0
year = 2020

while x <= 3:
        WC[x] = CA[x] - CL[x]
```

```
        x=x + 1
        year = year + 1


x=0
year = 2020
while x <= 3:
        balance_sheet[str(year)][7] = WC[x]
        x= x + 1
        year = year + 1


#invested capial#


Invested_Capital = [0,0,0,0]
x=0
year = 2020

while x <= 3:
        Invested_Capital[x] = df4[str(year)]["Invested Capital"]
        x=x + 1
        year = year + 1


x=0
year = 2020
while x <= 3:
        balance_sheet[str(year)][8] = Invested_Capital[x]
        x= x + 1
        year = year + 1

#net debt#
Net_debt = [0,0,0,0]
x=0
year = 2020

while x <= 3:
        Net_debt[x] = df4[str(year)]["Net Debt"]
        x=x + 1
        year = year + 1


x=0
year = 2020
while x <= 3:
        balance_sheet[str(year)][9] = Net_debt[x]
        x= x + 1
        year = year + 1

#total stockholder equity#
Stockholders_Equity = [0,0,0,0]
x=0
year = 2020

while x <= 3:
        Stockholders_Equity[x] = df4[str(year)]["Stockholders Equity"]
        x=x + 1
        year = year + 1


x=0
year = 2020
while x <= 3:
```

```
        balance_sheet[str(year)][10] = Stockholders_Equity[x]
        x= x + 1
        year = year + 1




#########################################################################
#ratio#

skull3 = {
    "index": ["ROI", "ROS", "capital turnover", "EBITDA ANALYSIS", "WC/revenues", "Days
    "2020": ["1", "1", "1", "1", "1", "1", "1", "1", "1"],
    "2021": ["1", "1", "1", "1", "1", "1", "1", "1", "1"],
    "2022": ["1", "1", "1", "1", "1", "1", "1", "1", "1"],
    "2023": ["1", "1", "1", "1", "1", "1", "1", "1", "1"]
}

ratio = pd.DataFrame(skull3)

#ROI#
ROI= [0,0,0,0]
x=0
year = 2020

while x <= 3:
        ROI[x] = ebit[x]/Invested_Capital[x]
        x=x + 1
        year = year + 1


x=0
year = 2020
while x <= 3:
        ratio[str(year)][0] = ROI[x]
        x= x + 1
        year = year + 1

#ROS#
ROS= [0,0,0,0]
x=0
year = 2020

while x <= 3:
        ROS[x] = ebit[x]/revenues[x]
        x=x + 1
        year = year + 1


x=0
year = 2020
while x <= 3:
        ratio[str(year)][1] = ROS[x]
        x= x + 1
        year = year + 1


#capital turnover#
capital_turnover = [0,0,0,0]
x=0
year = 2020

while x <= 3:
        capital_turnover[x] = revenues[x]/Invested_Capital[x]
```

```
        x=x + 1
        year = year + 1


x=0
year = 2020
while x <= 3:
        ratio[str(year)][2] = capital_turnover[x]
        x= x + 1
        year = year + 1



#ebitda analysis (ebitda/revenues)#
ebitda_analysis= [0,0,0,0]
x=0
year = 2020

while x <= 3:
        ebitda_analysis[x] = ebitda[x]/revenues[x]
        x=x + 1
        year = year + 1


x=0
year = 2020
while x <= 3:
        ratio[str(year)][3] = ebitda_analysis[x]
        x= x + 1
        year = year + 1

#wc/revenues#
wc_revenues= [0,0,0,0]
x=0
year = 2020

while x <= 3:
        wc_revenues[x] = WC[x]/revenues[x]
        x=x + 1
        year = year + 1


x=0
year = 2020
while x <= 3:
        ratio[str(year)][4] = wc_revenues[x]
        x= x + 1
        year = year + 1

#Days Sales Outstanding(DSO)#

DSO= [0,0,0,0]
x=0
year = 2020

while x <= 3:
        DSO[x] = Net_Recivables[x]/(revenues[x]/360)
        x=x + 1
        year = year + 1


x=0
year = 2020
while x <= 3:
```

```
        ratio[str(year)][5] = DSO[x]
        x= x + 1
        year = year + 1


#Debt Sustainability Ratio (DSR)#

DSR= [0,0,0,0]
x=0
year = 2020

while x <= 3:
        DSR[x] = Net_debt[x]/ebitda[x]
        x=x + 1
        year = year + 1


x=0
year = 2020
while x <= 3:
        ratio[str(year)][6] = DSR[x]
        x= x + 1
        year = year + 1



#leverage#
leverage= [0,0,0,0]
x=0
year = 2020

while x <= 3:
        leverage[x] = Net_debt[x]/Stockholders_Equity[x]
        x=x + 1
        year = year + 1


x=0
year = 2020
while x <= 3:
        ratio[str(year)][7] = leverage[x]
        x= x + 1
        year = year + 1


#ebitda/interest expense#


ebitda_interest_exp = [0,0,0,0]
x=0
year = 2020

while x <= 3:
        ebitda_interest_exp[x] = ebitda[x]/i_e[x]
        x=x + 1
        year = year + 1


x=0
year = 2020
while x <= 3:
        ratio[str(year)][8] = ebitda_interest_exp[x]
        x= x + 1
        year = year + 1
```

```
#verify#

print(balance_sheet)
print(df4)
print(income_statement)
print(df2)

print(ratio)



#export in excel#

#file_path = "/Users/pedrocchiedoardo/Desktop/redige/bilancio/analisi.xlsx"
#path = pd.ExcelWriter(file_path)
#income_statement.to_excel(path, sheet_name="income", index=False)
#balance_sheet.to_excel(path, sheet_name="balance", index=False)
#ratio.to_excel(path, sheet_name="ratio", index=False)
#path.close()

#data visualization#
import matplotlib.pyplot as plt
#visualize the income statement#

income_statement.set_index('index', inplace=True)

for index, row in income_statement.iterrows():
    plt.figure(figsize=(10, 6))
    plt.bar(income_statement.columns, row, color='skyblue', alpha=0.7, label='Bar')
    plt.plot(income_statement.columns, row, marker='o', color='red', label='Line')
    plt.title(f' {index}')
    plt.xlabel('Year')
    plt.ylabel('Value')
    plt.legend()
    plt.show()

#visualize the balance seet#

balance_sheet.set_index('index', inplace=True)

for index, row in balance_sheet.iterrows():
    plt.figure(figsize=(10, 6))
    plt.bar(balance_sheet.columns, row, color='skyblue', alpha=0.7, label='Bar')
    plt.plot(balance_sheet.columns, row, marker='o', color='red', label='Line')
    plt.title(f'{index}')
    plt.xlabel('Year')
    plt.ylabel('Value')
    plt.legend()
    plt.show()
#visualize the ratio#

ratio.set_index('index', inplace=True)

for index, row in ratio.iterrows():
    plt.figure(figsize=(10, 6))
    plt.bar(ratio.columns, row, color='skyblue', alpha=0.7, label='Bar')
    plt.plot(ratio.columns, row, marker='o', color='red', label='Line')
    plt.title(f'{index}')
    plt.xlabel('Year')
```

```
    plt.ylabel('Value')
    plt.legend()
    plt.show()
```

```
                index          2020          2021          2022          2023
0                 PPE    69463000.0    96951000.0   104370000.0    99035000.0
1           Good will             1             1             1             1
2       Net Recivables    55830000.0    55830000.0    57775000.0    57779000.0
3                   CL             1             1             1             1
4                   CA    85554000.0   135176000.0   195383000.0   285192000.0
5                   WC   242384000.0   354541000.0   526735000.0   588512000.0
6     invested capital  1113196000.0  1141887000.0  2117402000.0  2236584000.0
7             net debt   870812000.0   787346000.0  1590667000.0  1648072000.0
8  Stockholders Equity   993933000.0   932696000.0  1803221000.0  1879388000.0
                                                          2023          2022  \
Treasury Shares Number                                    99371.0       99371.0
Ordinary Shares Number                                 69906586.0    67444360.0
Share Issued                                           70005957.0    67543731.0
Net Debt                                              684054000.0   662617000.0
Total Debt                                           1184830000.0  1183312000.0
...                                                           ...           ...
Allowance For Doubtful Accounts Receivable            -6362000.0    -4966000.0
Gross Accounts Receivable                            291554000.0   200349000.0
Cash Cash Equivalents And Short Term Investments    1836630000.0  1825923000.0
Other Short Term Investments                        1380804000.0  1352019000.0
Cash And Cash Equivalents                            455826000.0   473904000.0

                                                          2021          2020
Treasury Shares Number                                    99371.0       99371.0
Ordinary Shares Number                                 60898451.0    57382543.0
Share Issued                                           60997822.0    57481914.0
Net Debt                                              508032000.0   204883000.0
Total Debt                                            979167000.0   922938000.0
...                                                           ...           ...
Allowance For Doubtful Accounts Receivable            -6024000.0    -2515000.0
Gross Accounts Receivable                            141200000.0    88069000.0
Cash Cash Equivalents And Short Term Investments     957742000.0   986518000.0
Other Short Term Investments                         528045000.0   280326000.0
Cash And Cash Equivalents                            429697000.0   706192000.0

[70 rows x 4 columns]
      index         2020         2021         2022          2023
0  revenues  421720000.0  590380000.0  873782000.0  1284040000.0
1    EBITDA -128092000.0 -184772000.0 -264909000.0  -317473000.0
2      EBIT -147866000.0 -209304000.0 -289364000.0  -346655000.0
3       i_e   20983000.0   56107000.0   11316000.0     9797000.0
4        NE -175522000.0 -266944000.0 -306866000.0  -345398000.0
                                                          2023  \
Tax Effect Of Unusual Items                                0.0
Tax Rate For Calcs                                        0.21
Normalized EBITDA                                   -317473000.0
Net Income From Continuing Operation Net Minori...  -345398000.0
Reconciled Depreciation                               29182000.0
Reconciled Cost Of Revenue                           349304000.0
EBITDA                                              -317473000.0
EBIT                                                -346655000.0
Net Interest Income                                   15151000.0
Interest Expense                                       9797000.0
Interest Income                                       24948000.0
Normalized Income                                   -345398000.0
Net Income From Continuing And Discontinued Ope...  -345398000.0
Total Expenses                                     1630695000.0
Total Operating Income As Reported                  -346655000.0
Diluted Average Shares                                68628267.0
Basic Average Shares                                  68628267.0
Diluted EPS                                               -5.03
Basic EPS                                                 -5.03
Diluted NI Availto Com Stockholders                 -345398000.0
```

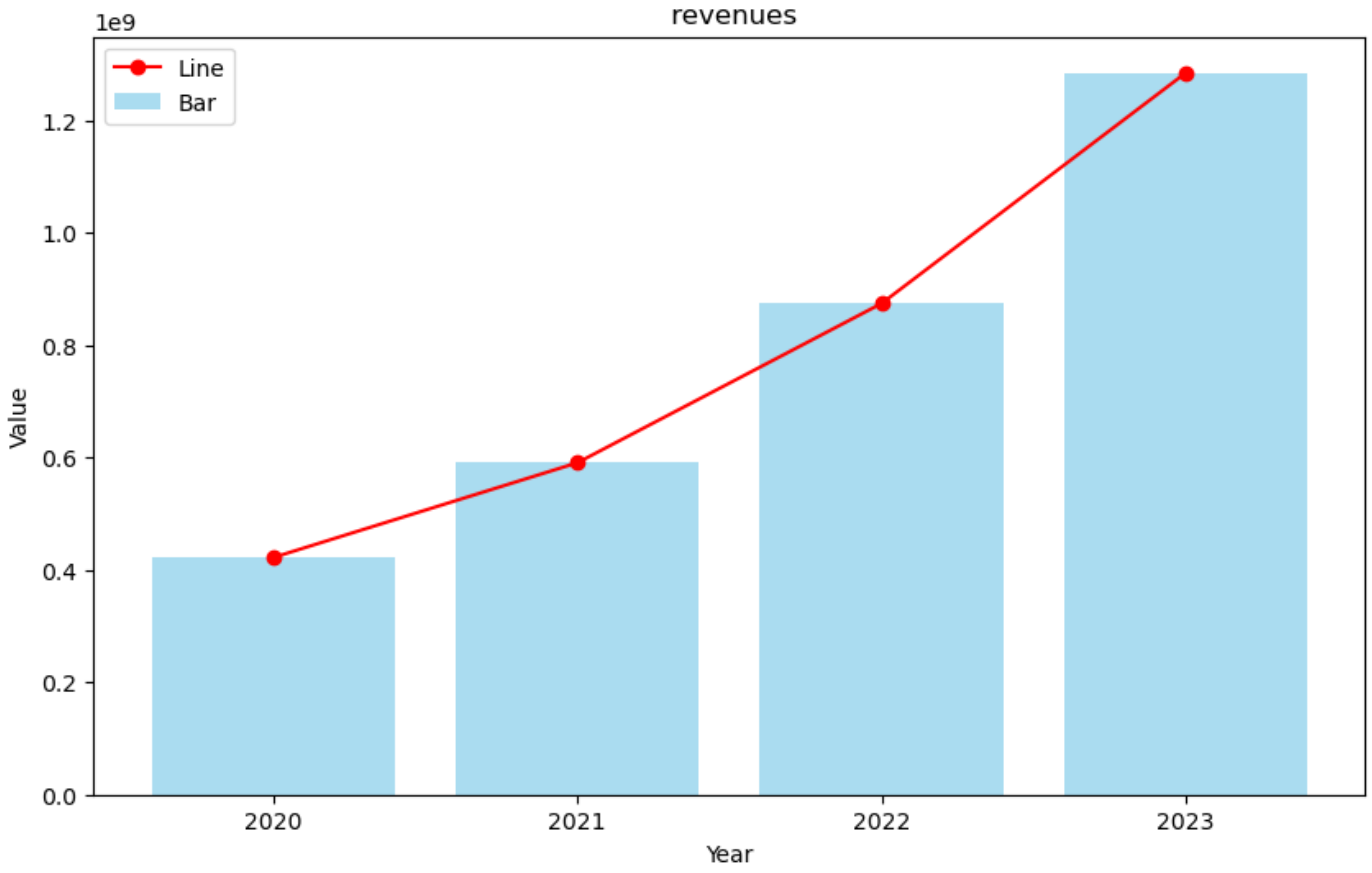
Net Income Common Stockholders	-345398000.0	
Net Income	-345398000.0	
Net Income Including Noncontrolling Interests	-345398000.0	
Net Income Continuous Operations	-345398000.0	
Tax Provision	12144000.0	
Pretax Income	-333254000.0	
Other Income Expense	13401000.0	
Other Non Operating Income Expenses	13401000.0	
Net Non Operating Interest Income Expense	15151000.0	
Interest Expense Non Operating	9797000.0	
Interest Income Non Operating	24948000.0	
Operating Income	-346655000.0	
Operating Expense	1281391000.0	
Research And Development	421692000.0	
Selling General And Administration	859699000.0	
Selling And Marketing Expense	699201000.0	
General And Administrative Expense	160498000.0	
Other Gand A	160498000.0	
Gross Profit	934736000.0	
Cost Of Revenue	349304000.0	
Total Revenue	1284040000.0	
Operating Revenue	1284040000.0	

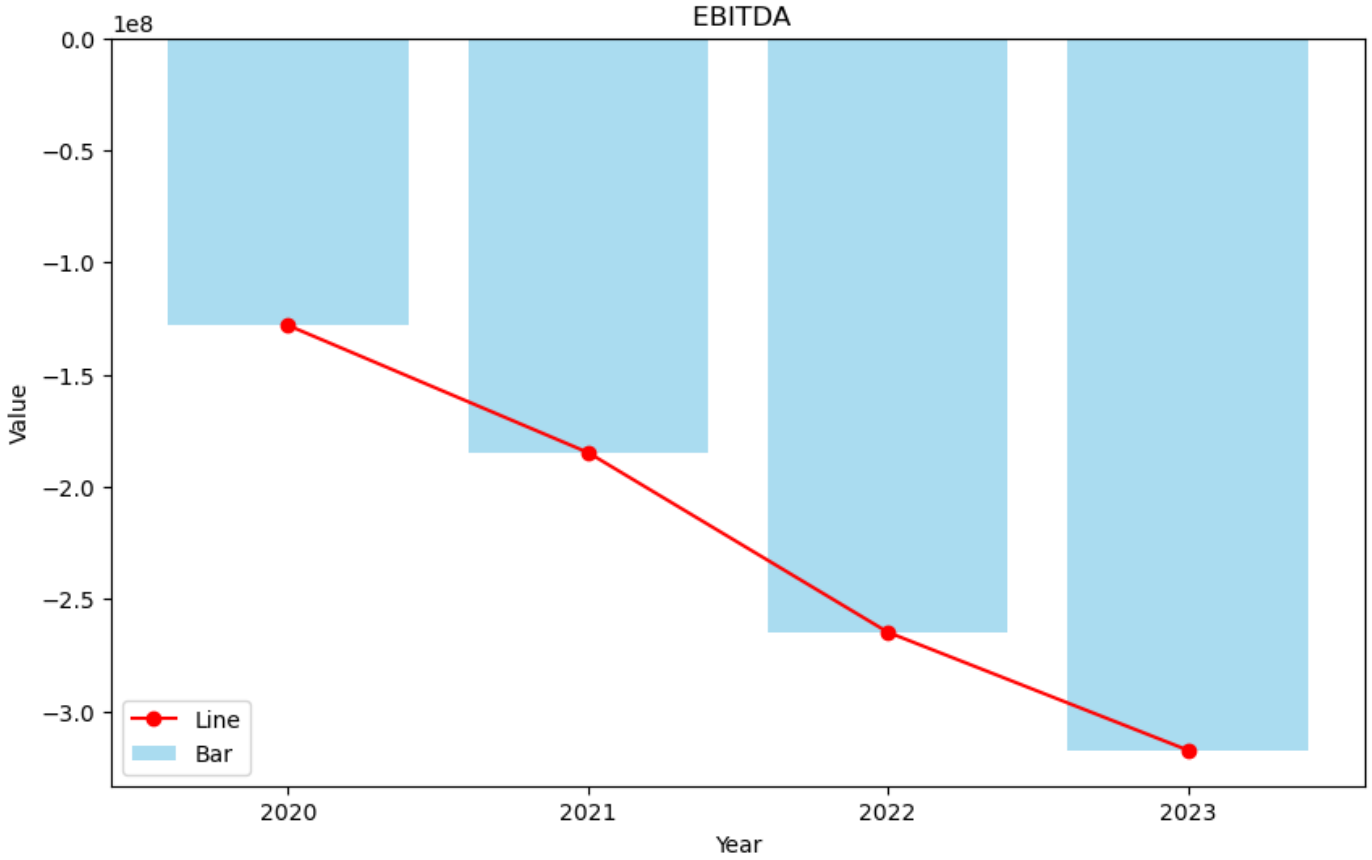
	2022	2021	\
Tax Effect Of Unusual Items	0.0	0.0	
Tax Rate For Calcs	0.21	0.27	
Normalized EBITDA	-264909000.0	-184772000.0	
Net Income From Continuing Operation Net Minori...	-306866000.0	-266944000.0	
Reconciled Depreciation	24455000.0	24532000.0	
Reconciled Cost Of Revenue	259492000.0	177076000.0	
EBITDA	-264909000.0	-184772000.0	
EBIT	-289364000.0	-209304000.0	
Net Interest Income	-10390000.0	-51538000.0	
Interest Expense	11316000.0	56107000.0	
Interest Income	926000.0	4569000.0	
Normalized Income	-306866000.0	-266944000.0	
Net Income From Continuing And Discontinued Ope...	-306866000.0	-266944000.0	
Total Expenses	1163146000.0	799684000.0	
Total Operating Income As Reported	-289364000.0	-209304000.0	
Diluted Average Shares	64563032.0	58984604.0	
Basic Average Shares	64563032.0	58984604.0	
Diluted EPS	-4.75	-4.53	
Basic EPS	-4.75	-4.53	
Diluted NI Availto Com Stockholders	-306866000.0	-266944000.0	
Net Income Common Stockholders	-306866000.0	-266944000.0	
Net Income	-306866000.0	-266944000.0	
Net Income Including Noncontrolling Interests	-306866000.0	-266944000.0	
Net Income Continuous Operations	-306866000.0	-266944000.0	
Tax Provision	3977000.0	4251000.0	
Pretax Income	-302889000.0	-262693000.0	
Other Income Expense	-13525000.0	-53389000.0	
Other Non Operating Income Expenses	-13525000.0	-53389000.0	
Net Non Operating Interest Income Expense	-10390000.0	-51538000.0	
Interest Expense Non Operating	11316000.0	56107000.0	
Interest Income Non Operating	926000.0	4569000.0	
Operating Income	-289364000.0	-209304000.0	
Operating Expense	903654000.0	622608000.0	
Research And Development	308820000.0	205161000.0	
Selling General And Administration	594834000.0	417447000.0	
Selling And Marketing Expense	471890000.0	325100000.0	
General And Administrative Expense	122944000.0	92347000.0	
Other Gand A	122944000.0	92347000.0	
Gross Profit	614290000.0	413304000.0	
Cost Of Revenue	259492000.0	177076000.0	

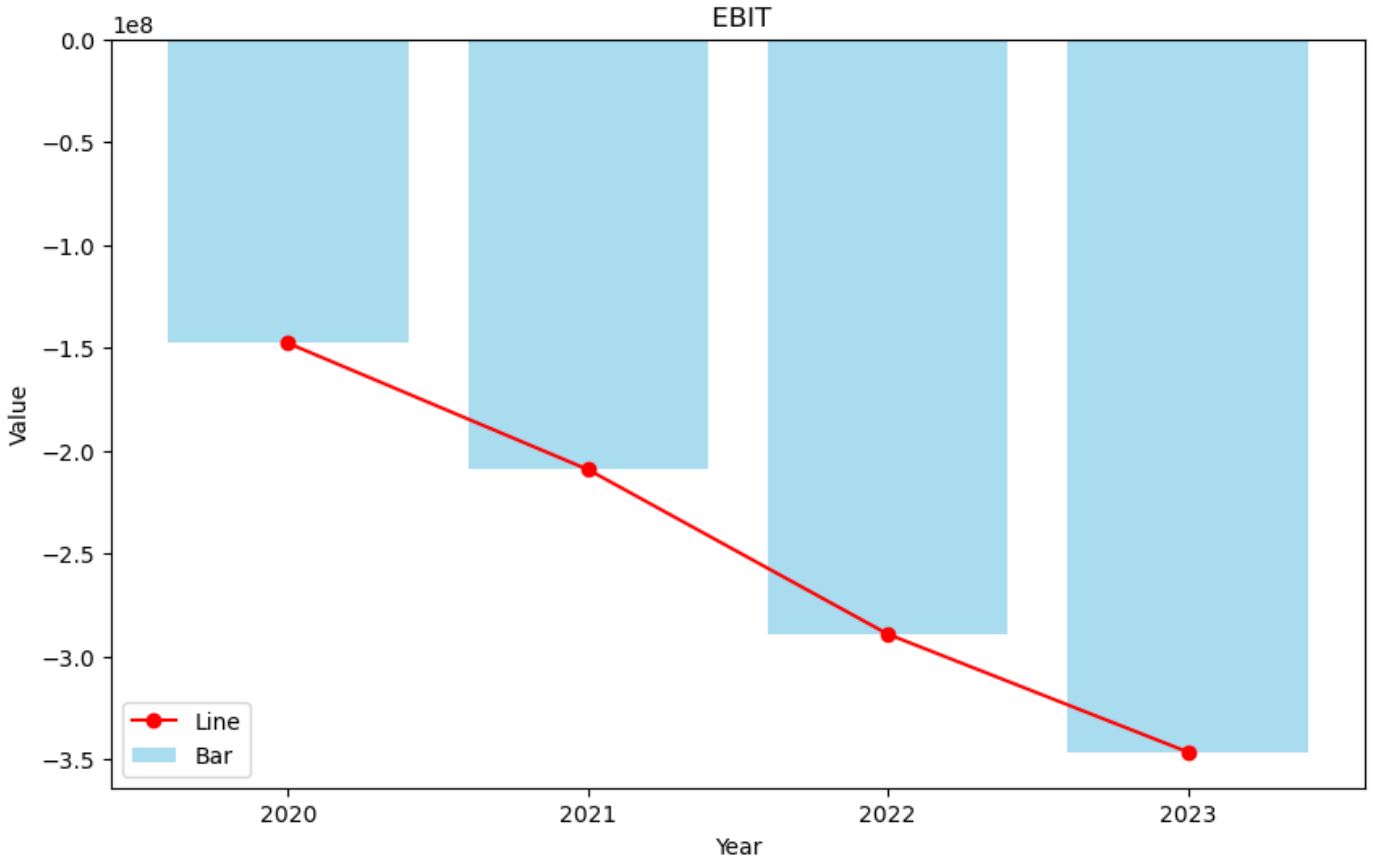
Total Revenue	873782000.0	590380000.0
Operating Revenue	873782000.0	590380000.0

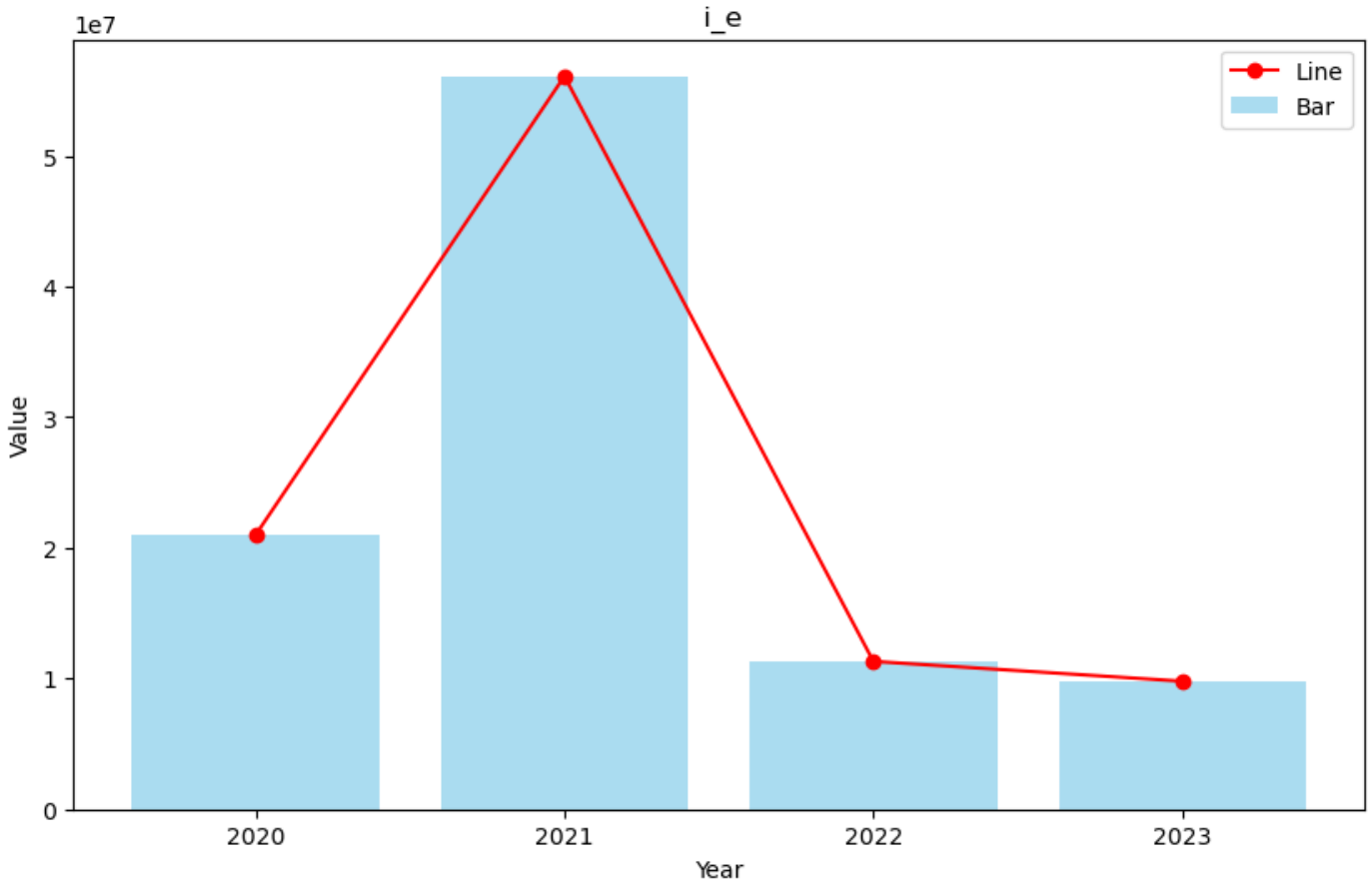
	2020
Tax Effect Of Unusual Items	0.0
Tax Rate For Calcs	0.003724
Normalized EBITDA	-128092000.0
Net Income From Continuing Operation Net Minori...	-175522000.0
Reconciled Depreciation	19774000.0
Reconciled Cost Of Revenue	125356000.0
EBITDA	-128092000.0
EBIT	-147866000.0
Net Interest Income	-12427000.0
Interest Expense	20983000.0
Interest Income	8556000.0
Normalized Income	-175522000.0
Net Income From Continuing And Discontinued Ope...	-175522000.0
Total Expenses	569586000.0
Total Operating Income As Reported	-147866000.0
Diluted Average Shares	55939032.0
Basic Average Shares	55939032.0
Diluted EPS	-3.14
Basic EPS	-3.14
Diluted NI Availto Com Stockholders	-175522000.0
Net Income Common Stockholders	-175522000.0
Net Income	-175522000.0
Net Income Including Noncontrolling Interests	-175522000.0
Net Income Continuous Operations	-175522000.0
Tax Provision	-656000.0
Pretax Income	-176178000.0
Other Income Expense	-28312000.0
Other Non Operating Income Expenses	-28312000.0
Net Non Operating Interest Income Expense	-12427000.0
Interest Expense Non Operating	20983000.0
Interest Income Non Operating	8556000.0
Operating Income	-147866000.0
Operating Expense	444230000.0
Research And Development	149033000.0
Selling General And Administration	295197000.0
Selling And Marketing Expense	223893000.0
General And Administrative Expense	71304000.0
Other Gand A	71304000.0
Gross Profit	296364000.0
Cost Of Revenue	125356000.0
Total Revenue	421720000.0
Operating Revenue	421720000.0

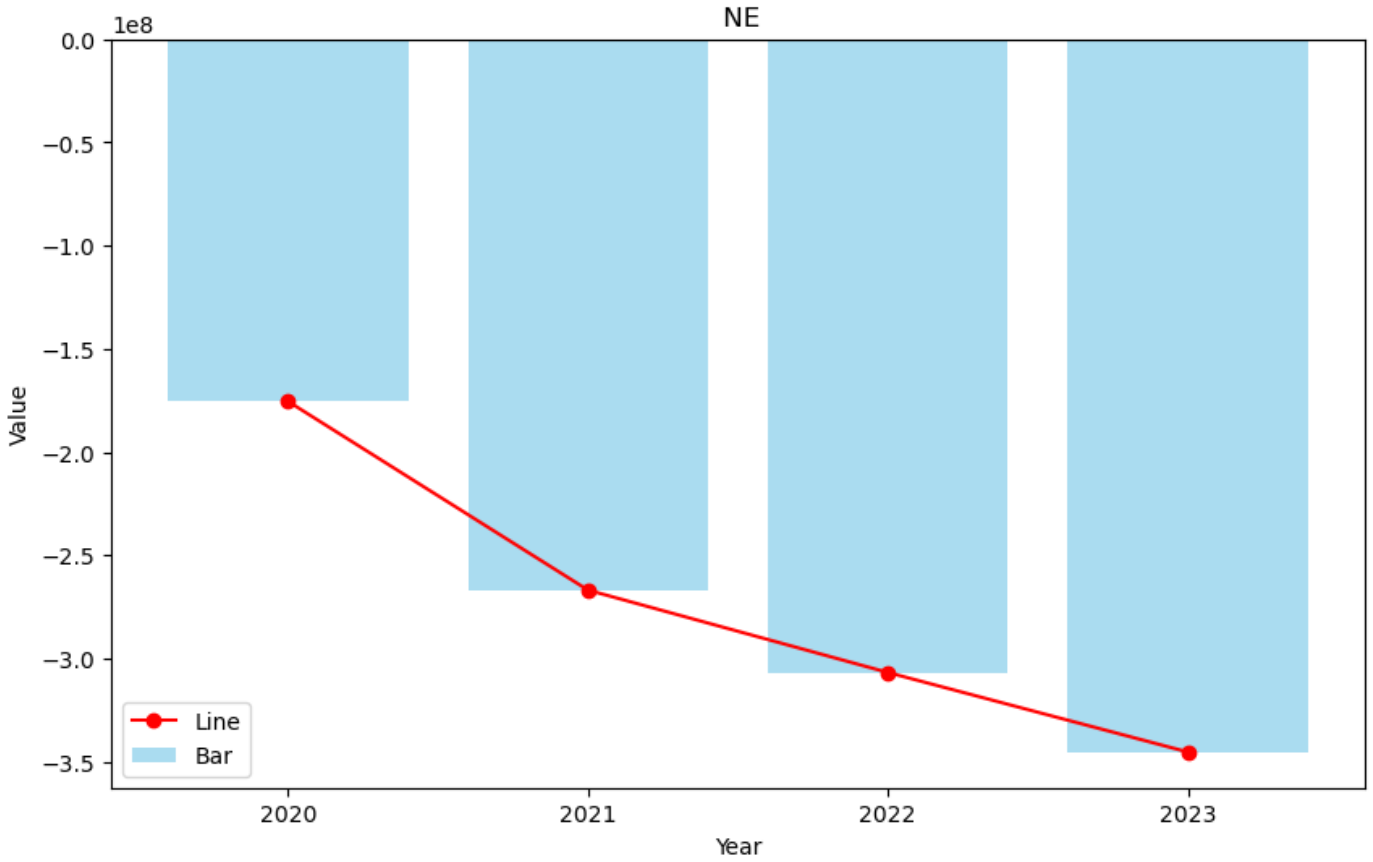
	index	2020	2021	2022	2023
0	ROI	-0.148769	-0.224408	-0.160471	-0.184451
1	ROS	-0.350626	-0.354524	-0.331163	-0.269972
2	capital turnover	0.424294	0.632982	0.484567	0.683222
3	EBITDA ANALYSIS	-0.303737	-0.312971	-0.303175	-0.247245
4	WC/revenues	2.064906	1.333626	1.820439	1.283505
5	Days Sales Outstanding(dso)	73.032913	82.427182	80.498202	79.957883
6	Debt Sustainability	-1.599499	-2.749508	-2.5013	-2.154684
7	LEVERAGE	2.4727	-100.940195	0.993876	0.925012
8	ebitda/interest expense	-6.104561	-3.293208	-23.410127	-32.405124

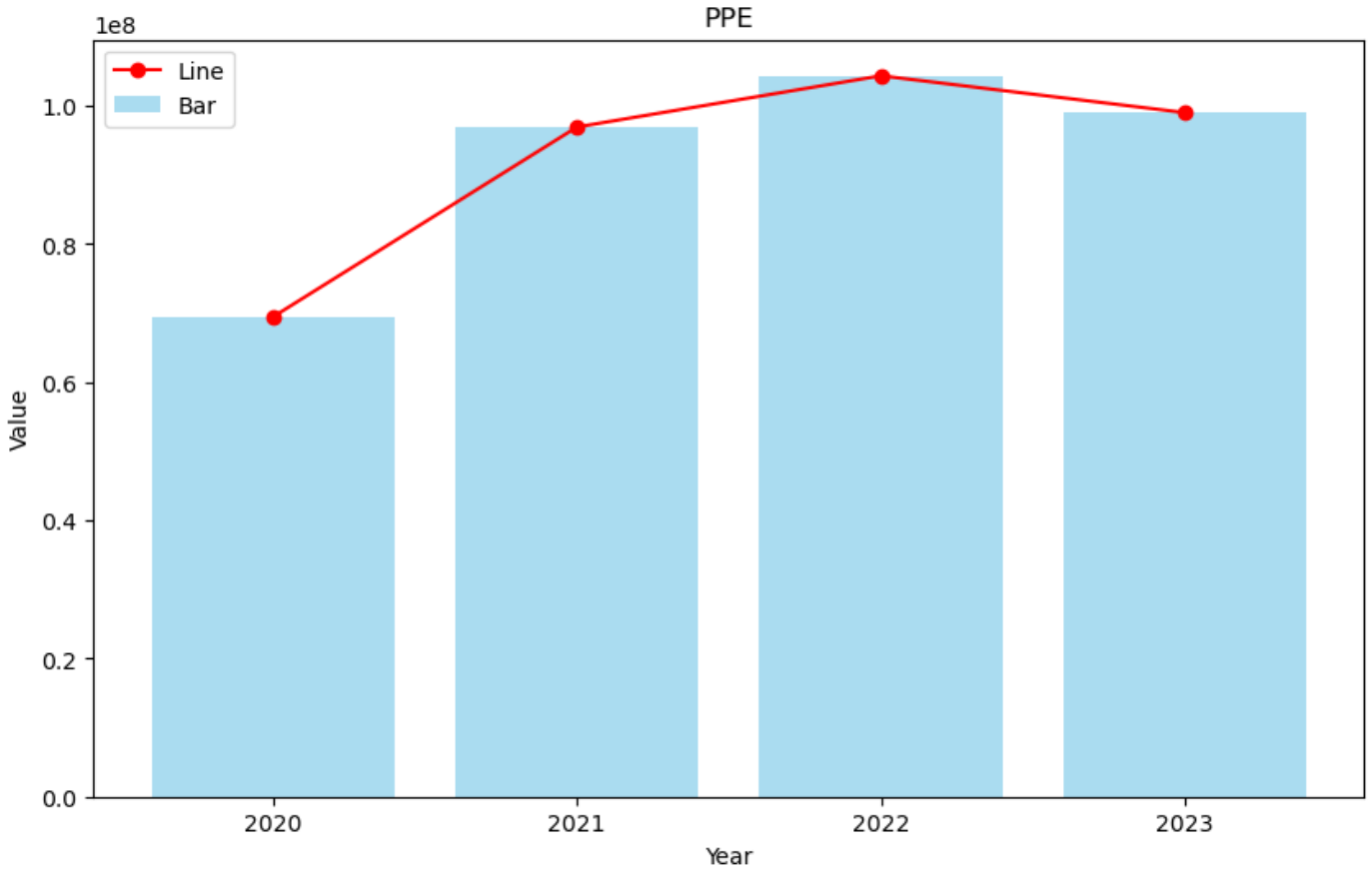


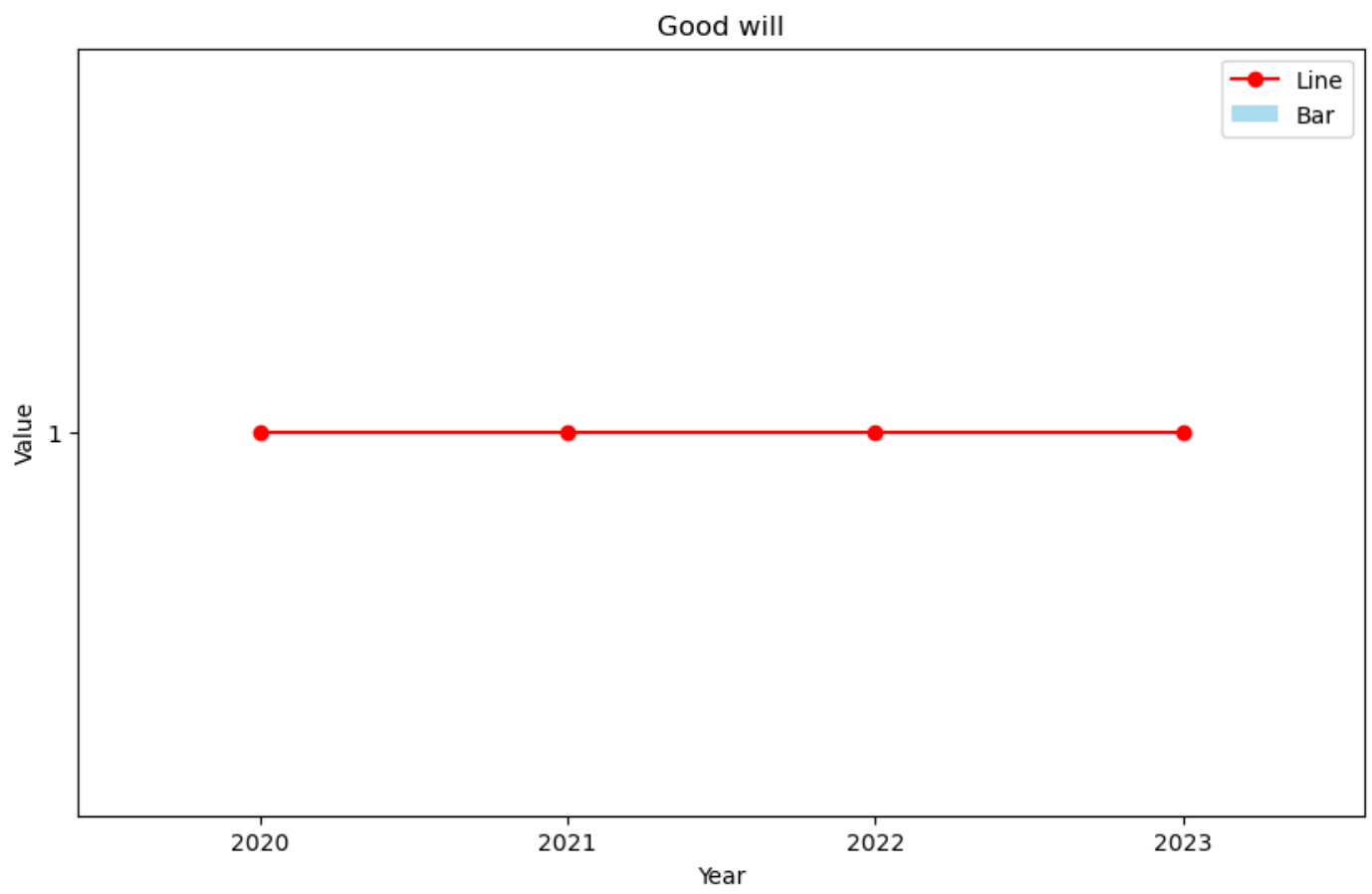


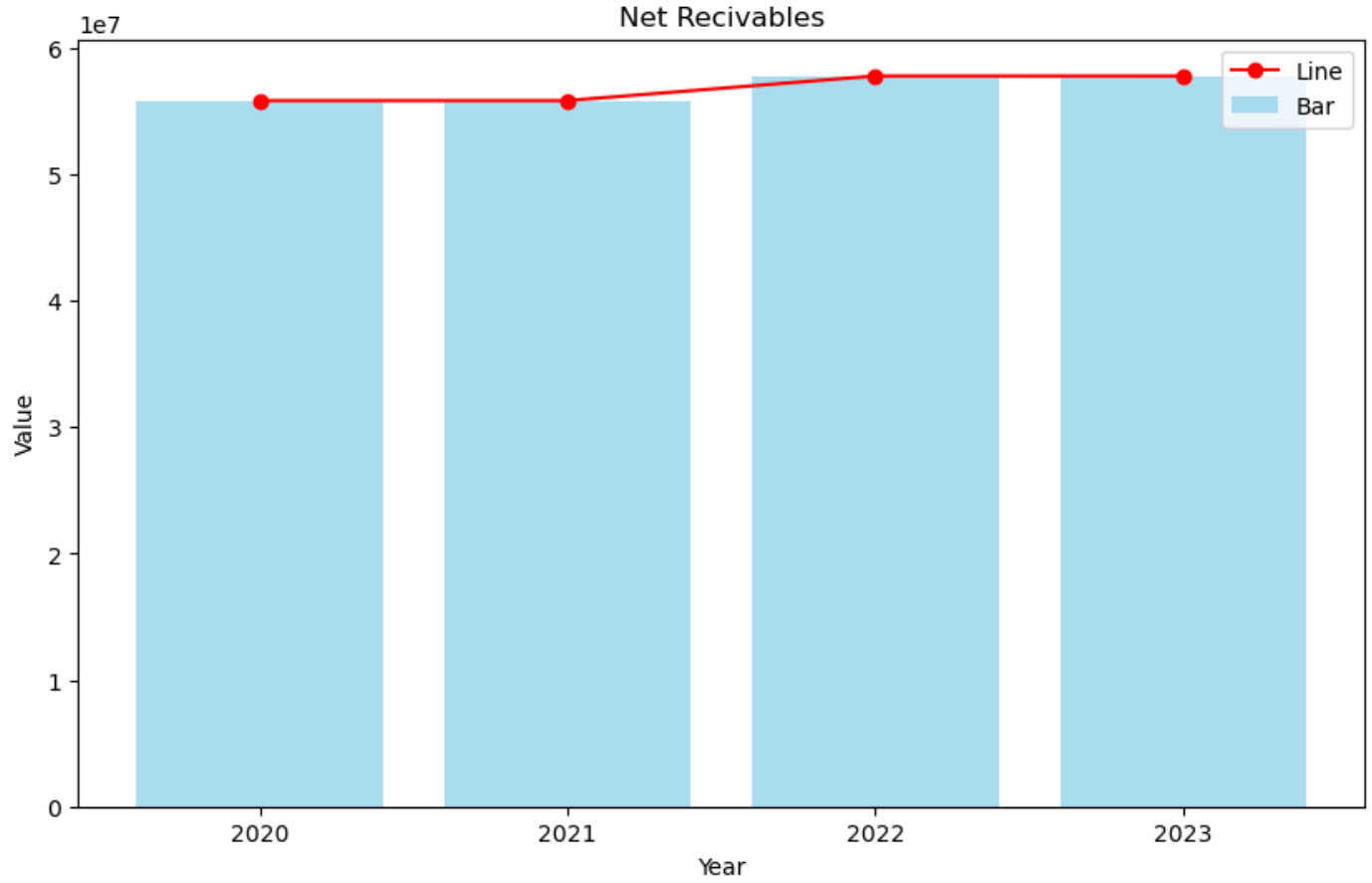


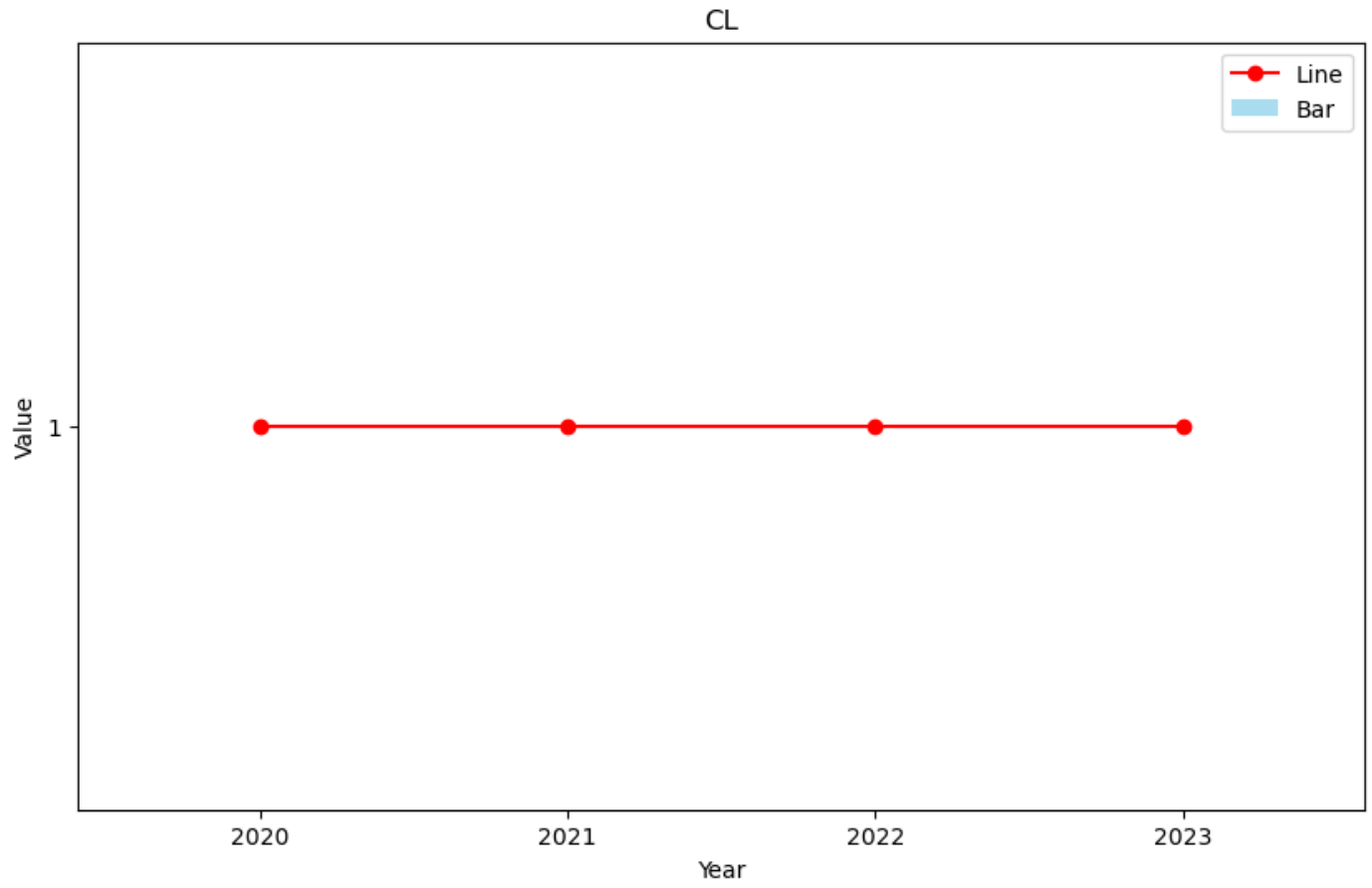


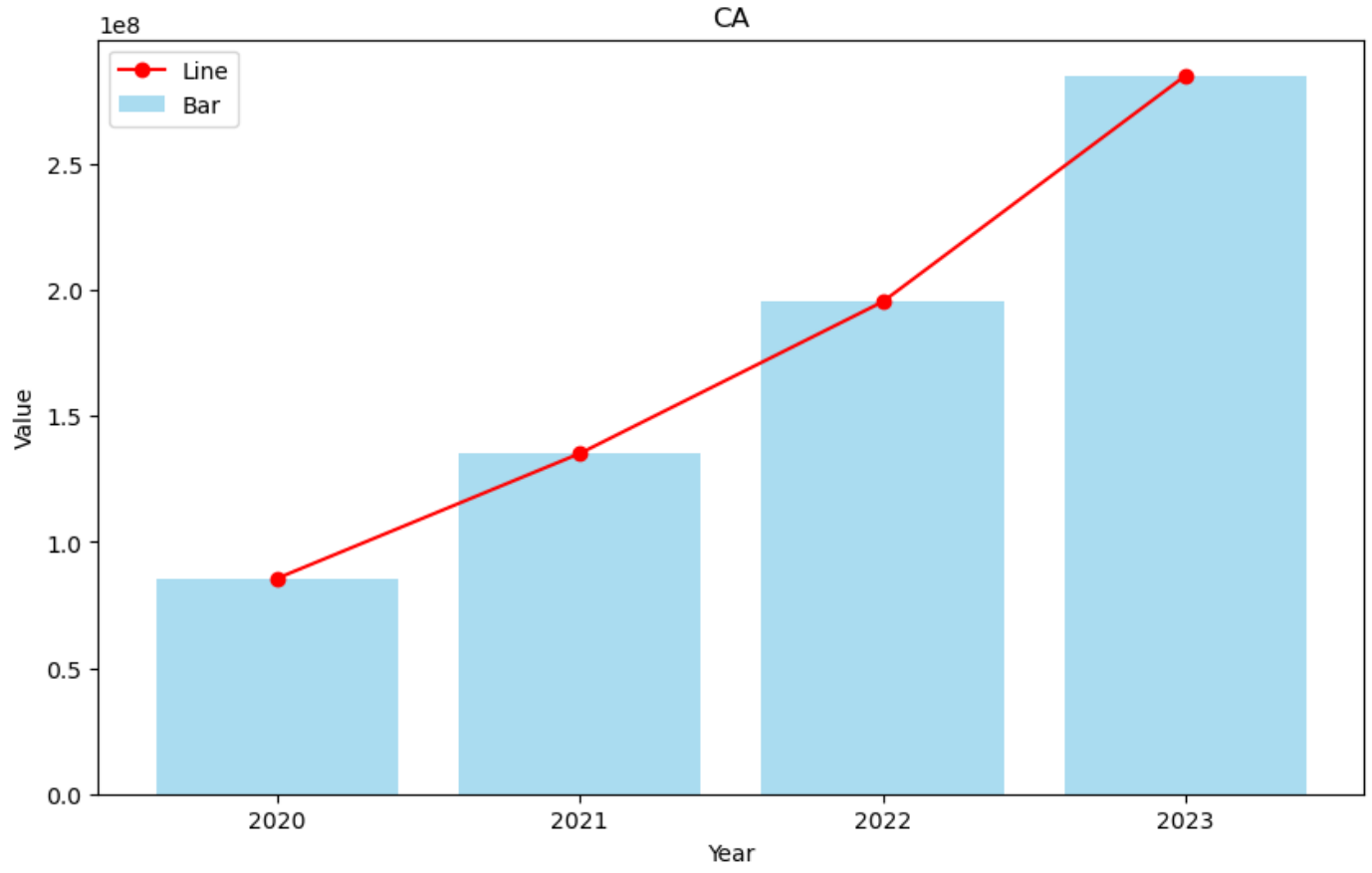


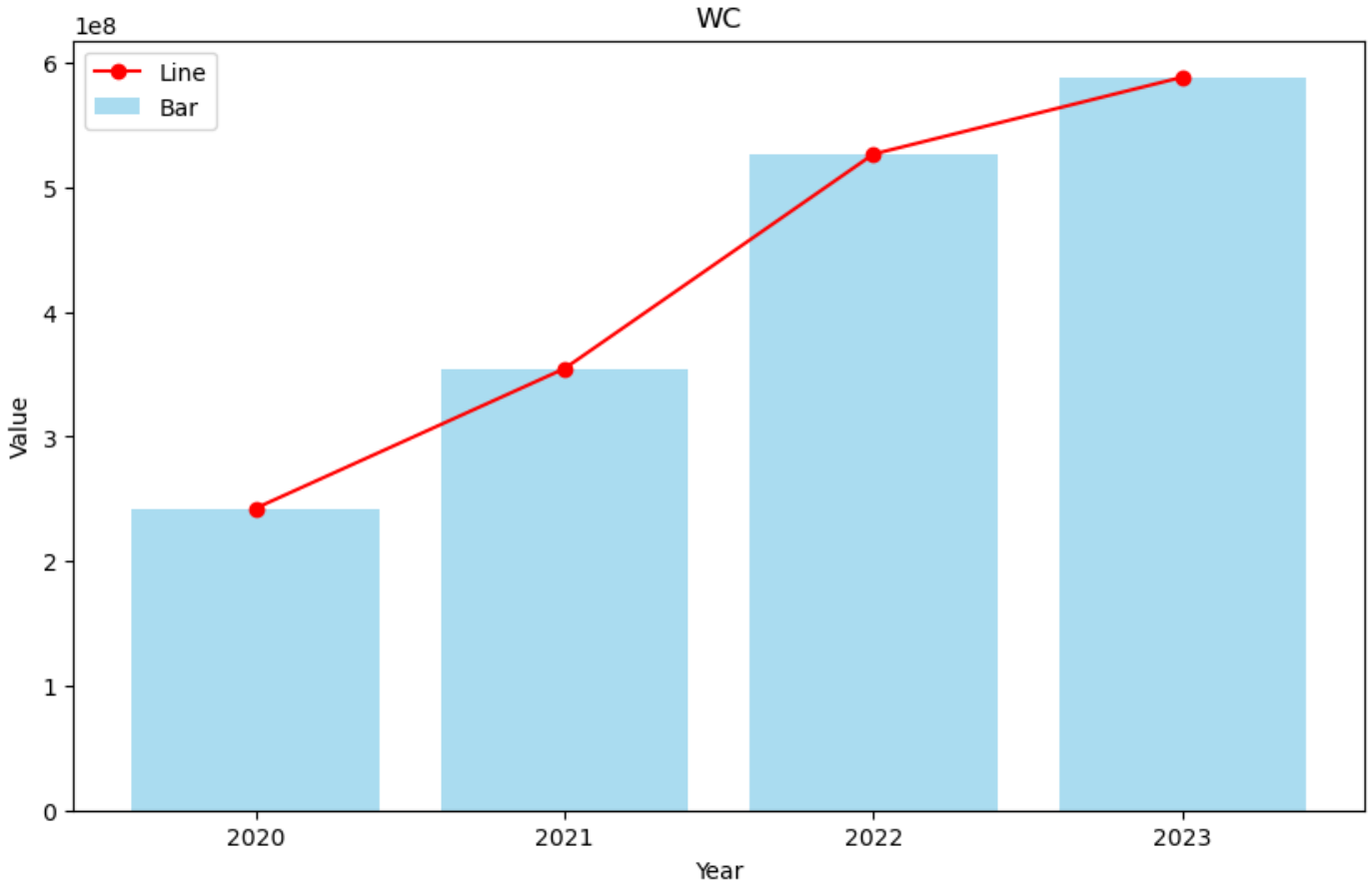


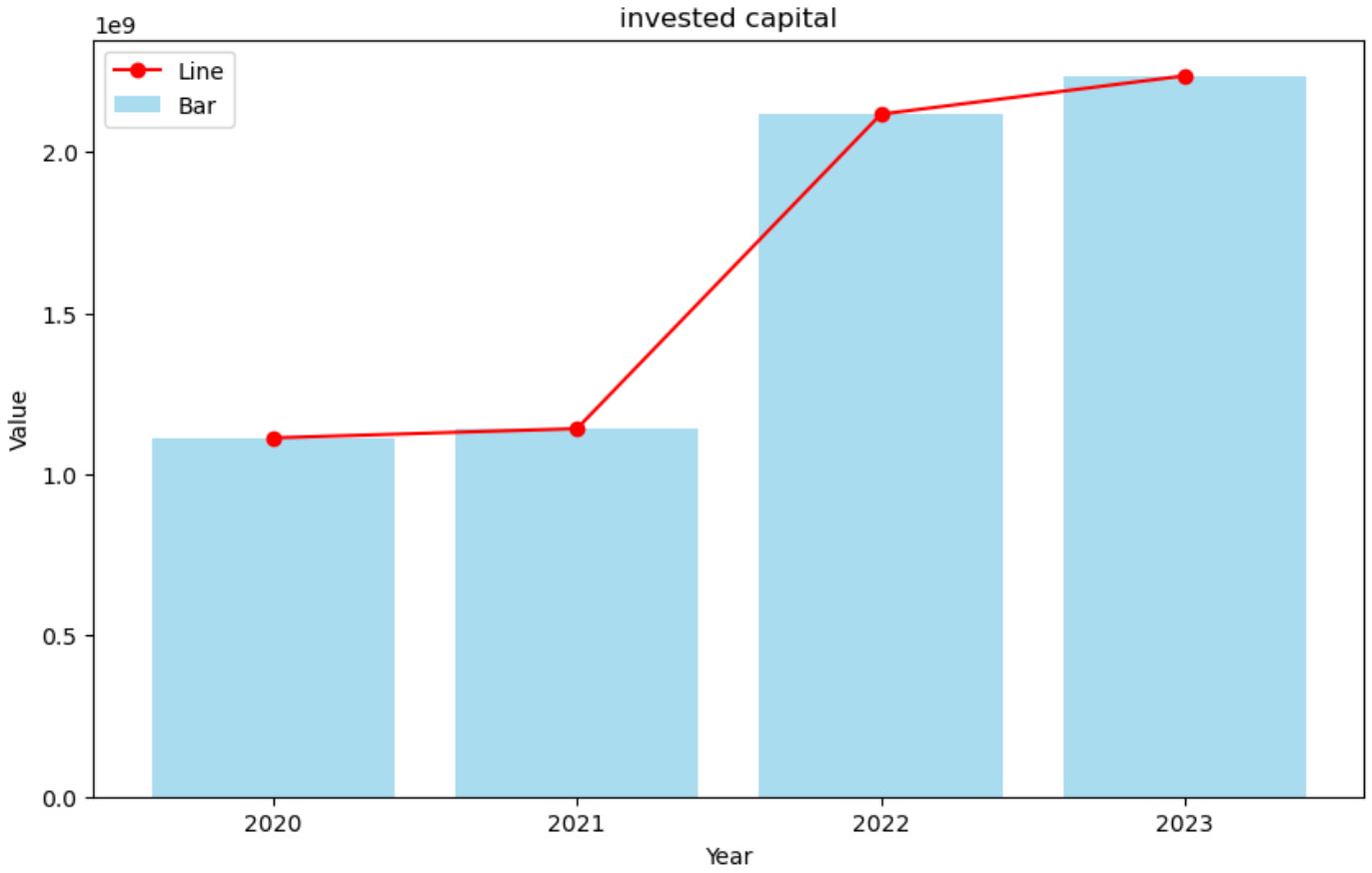


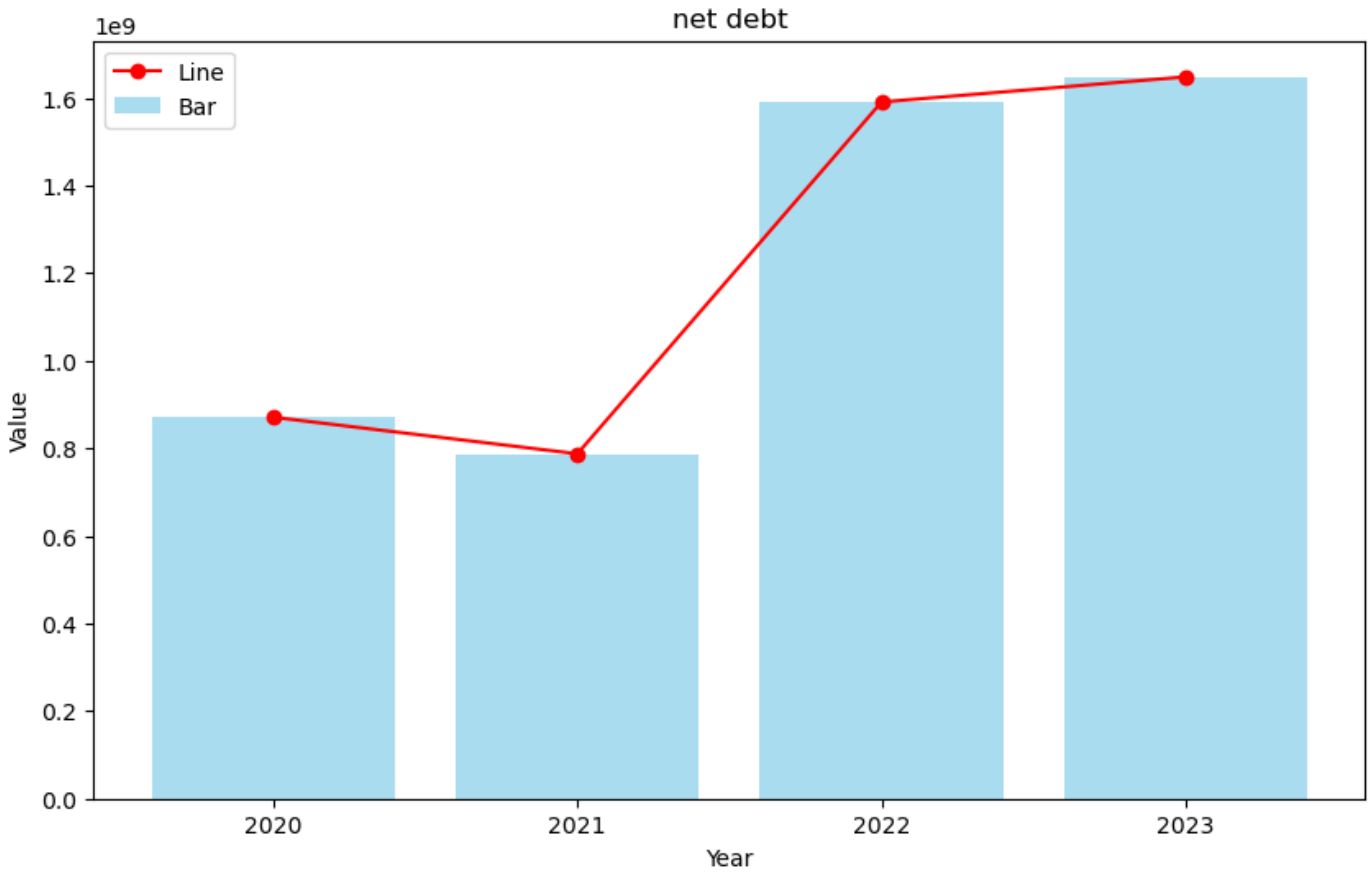


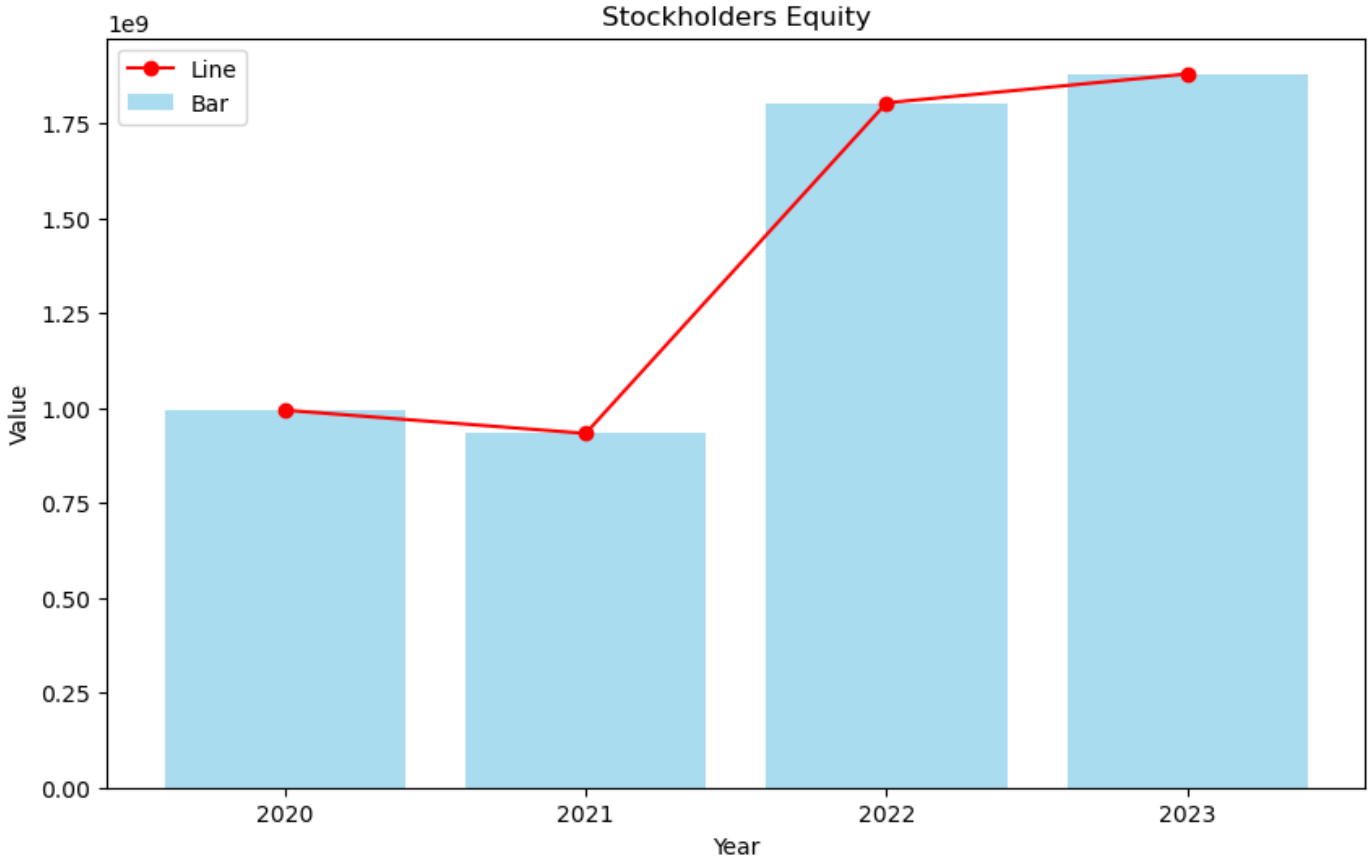


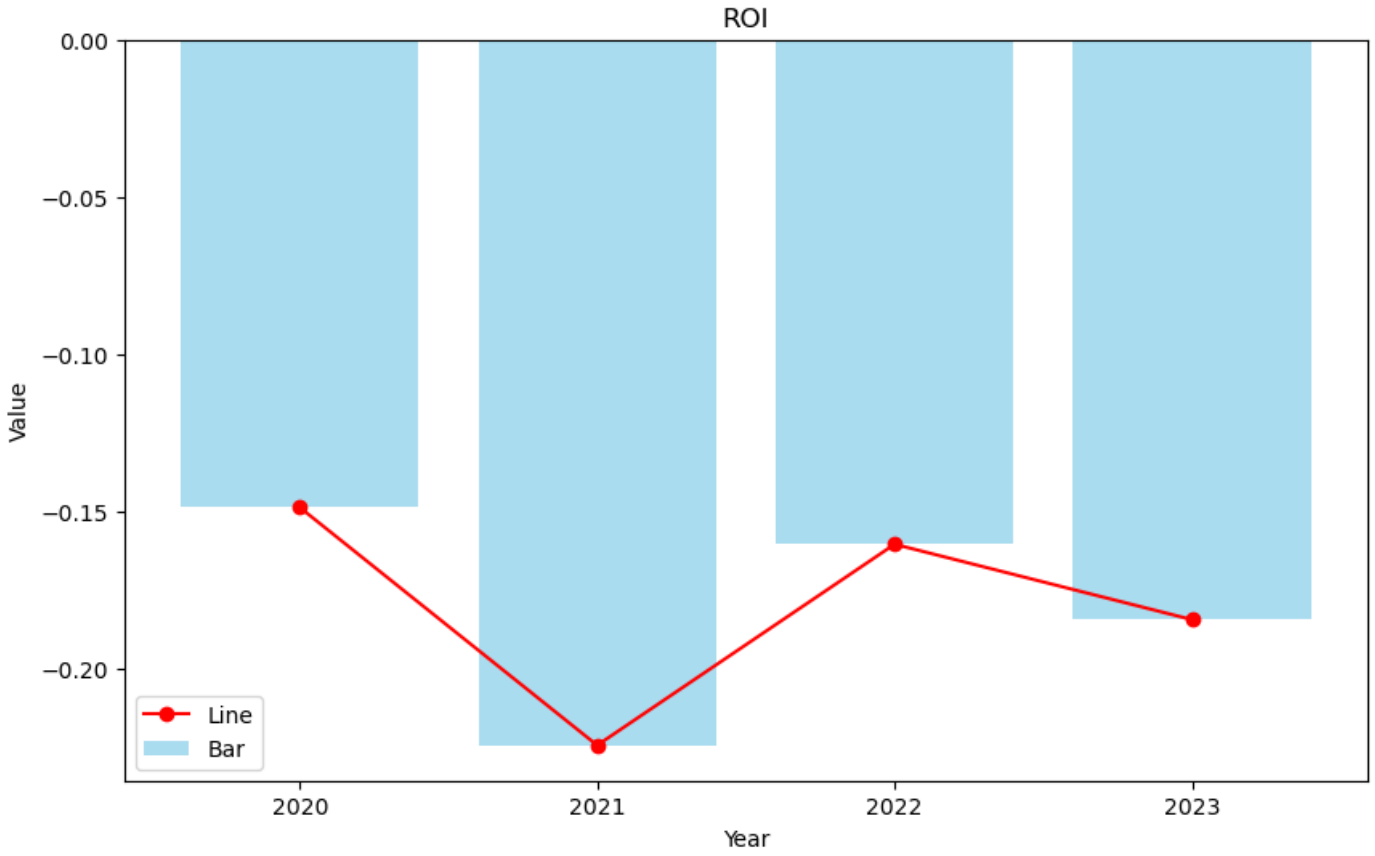


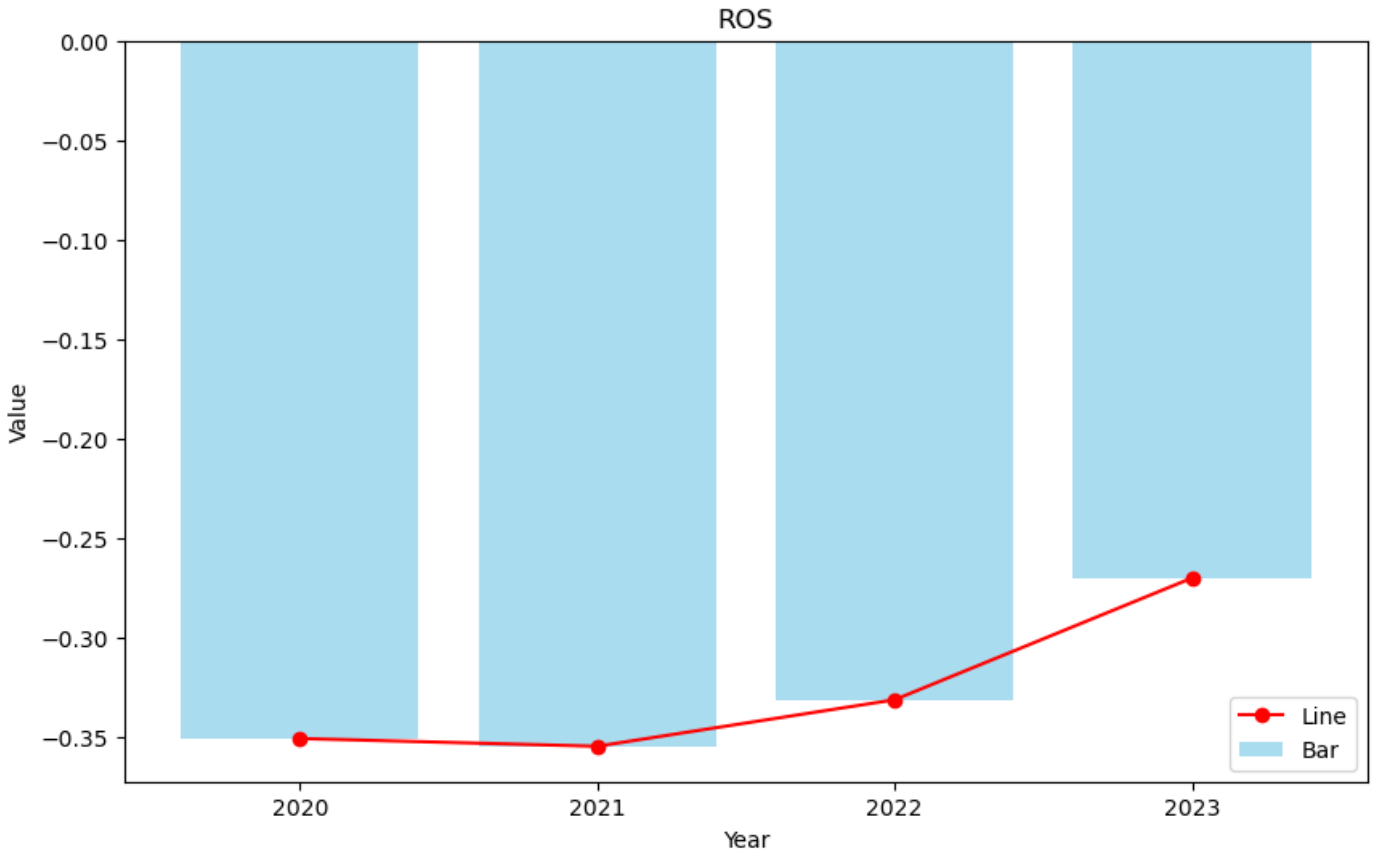


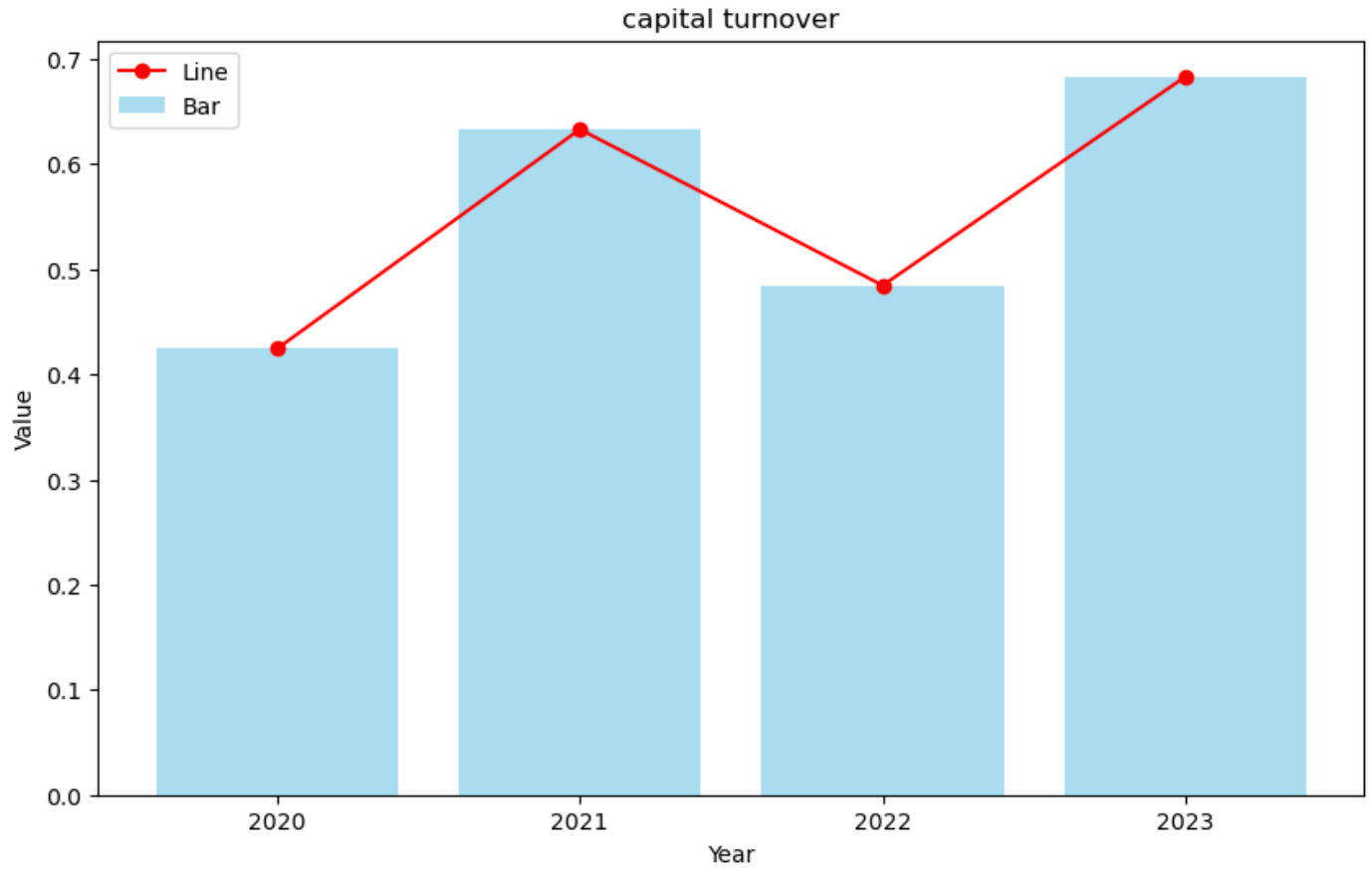


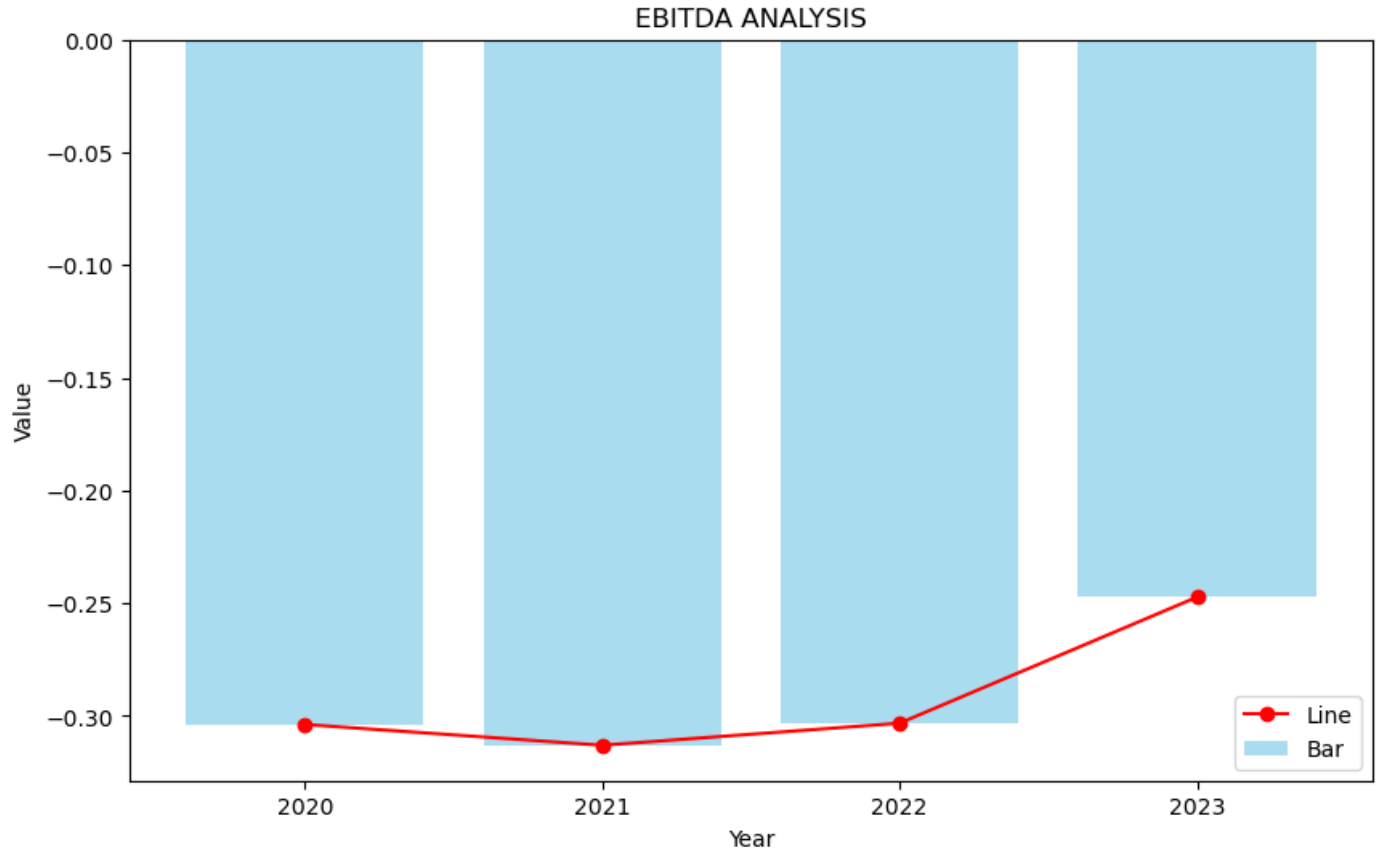


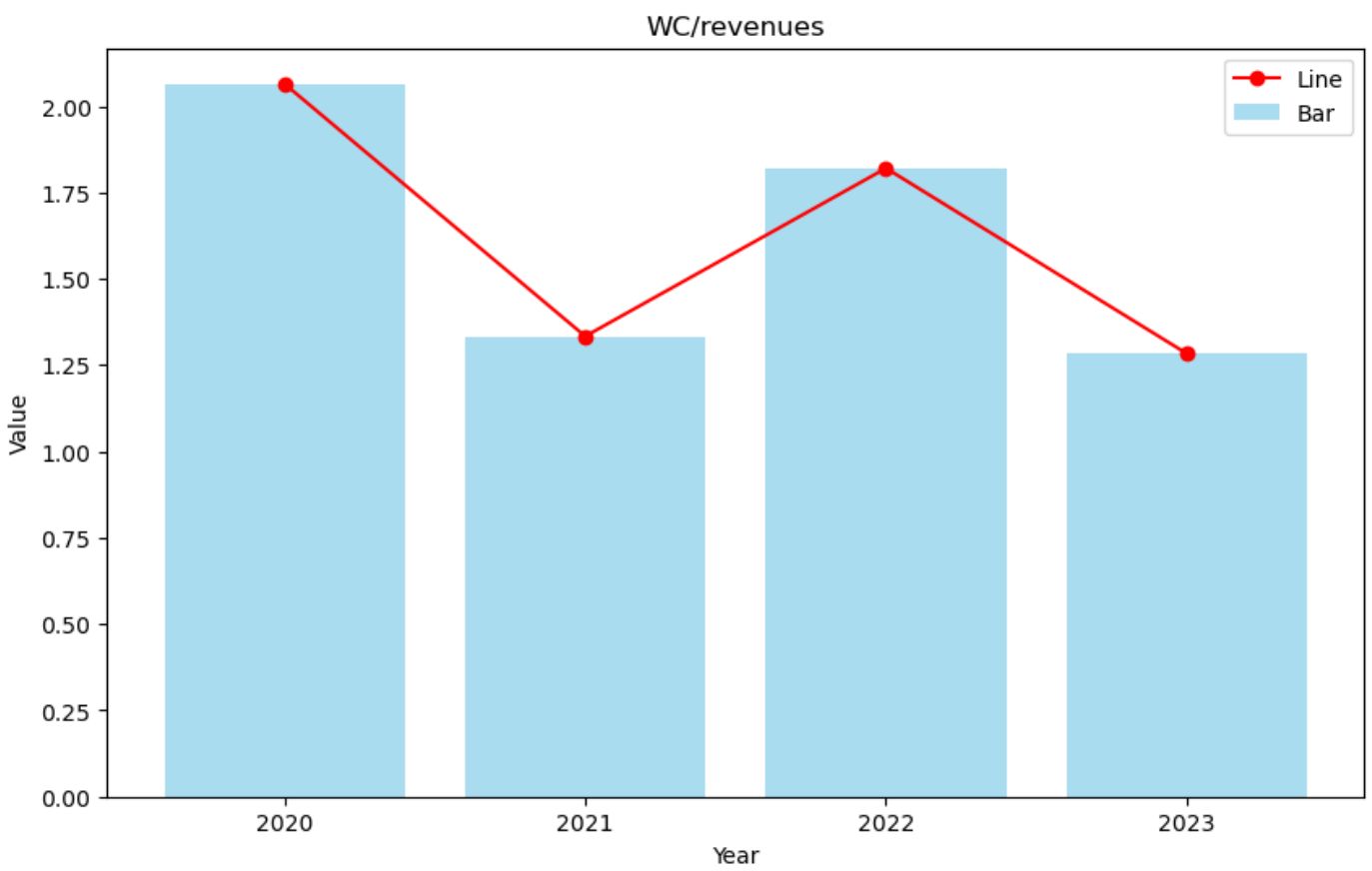


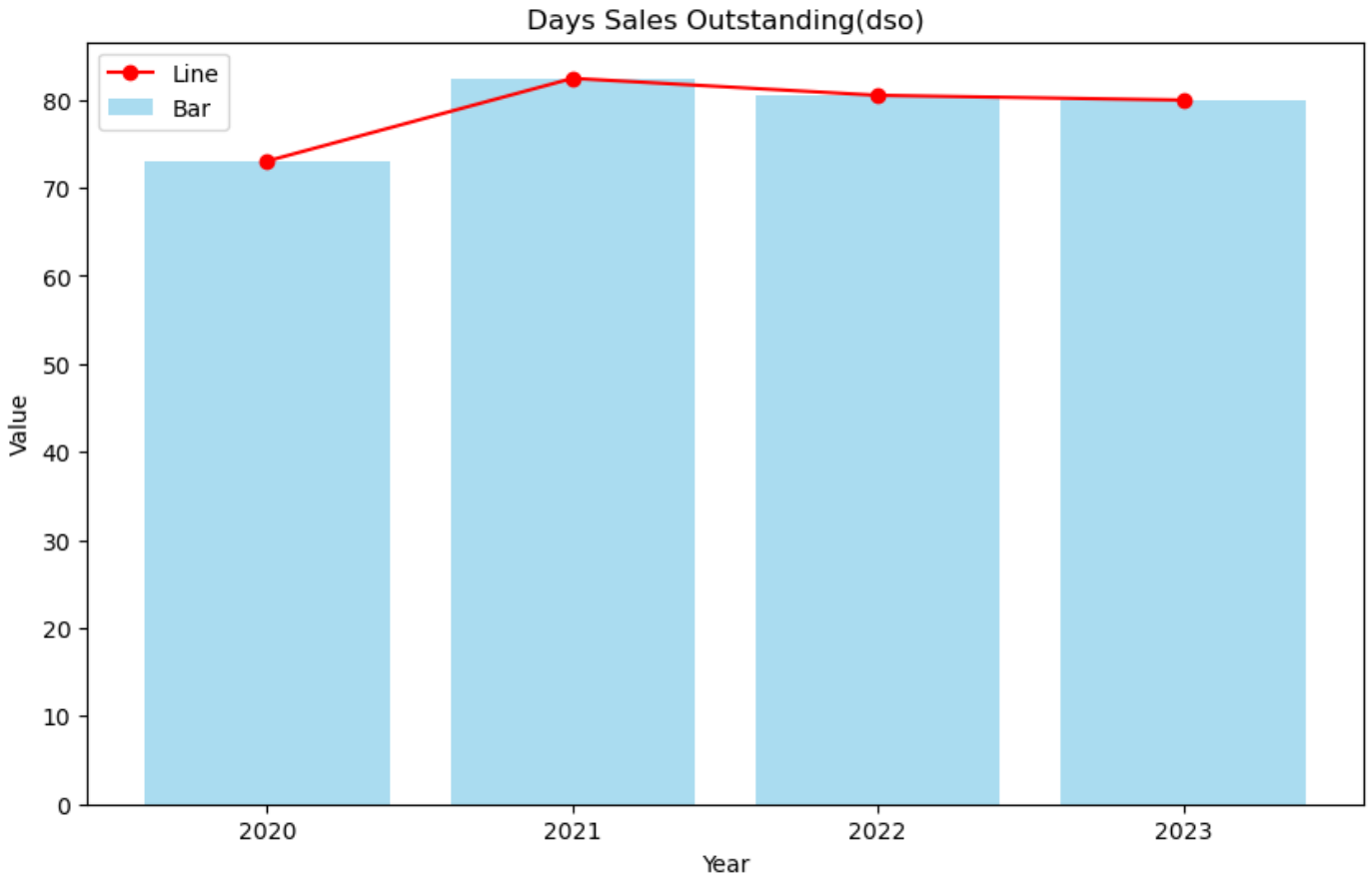


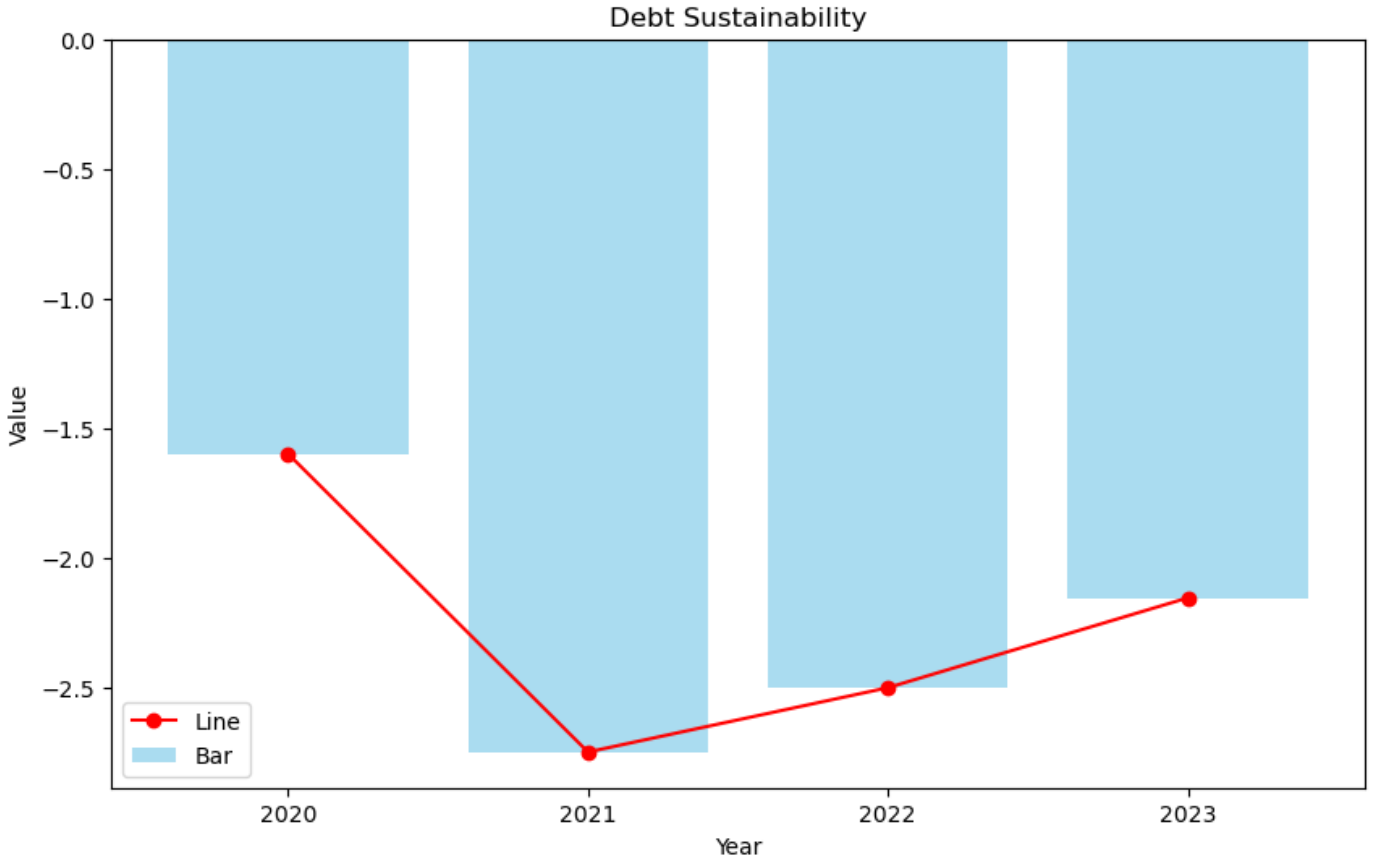


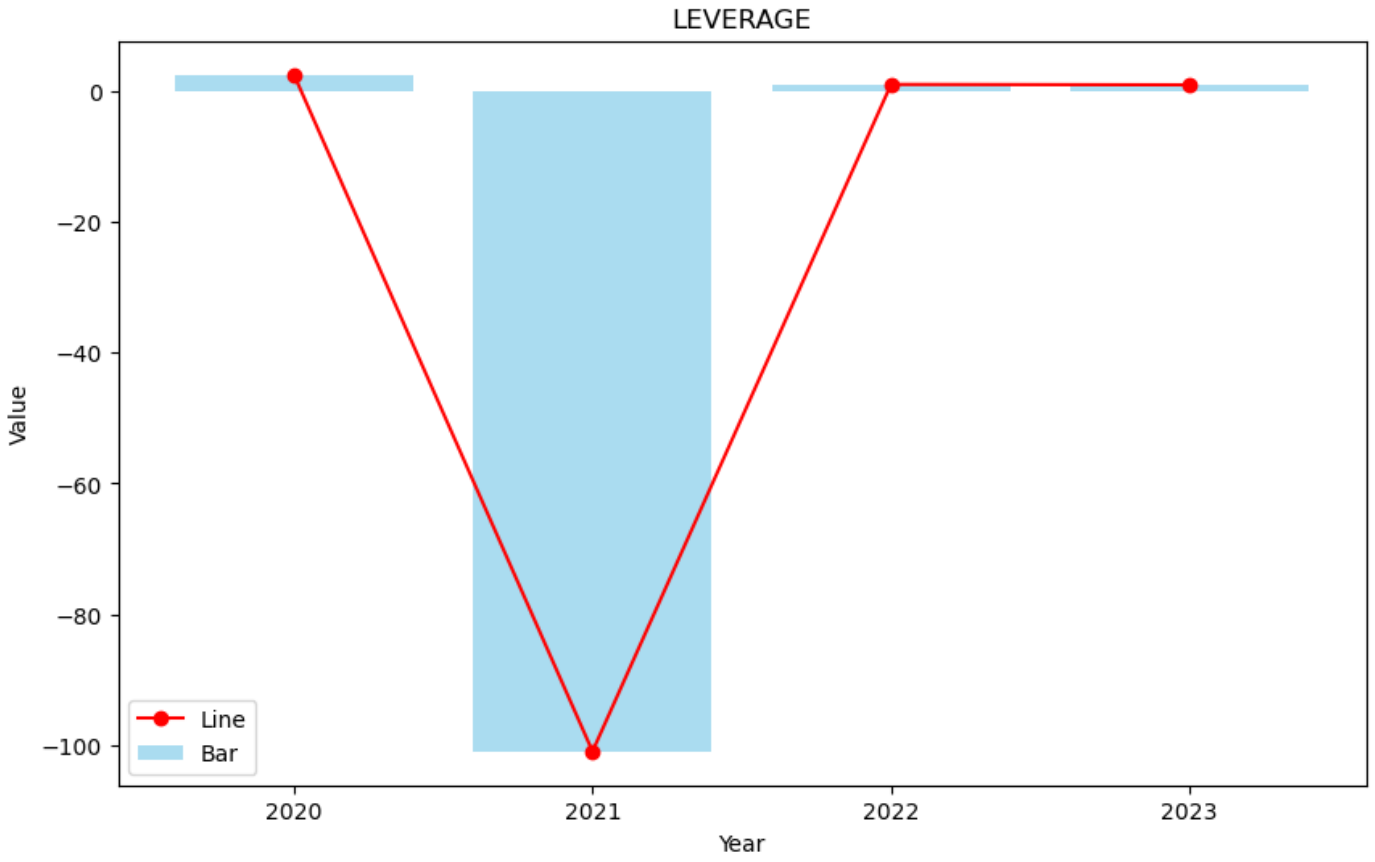


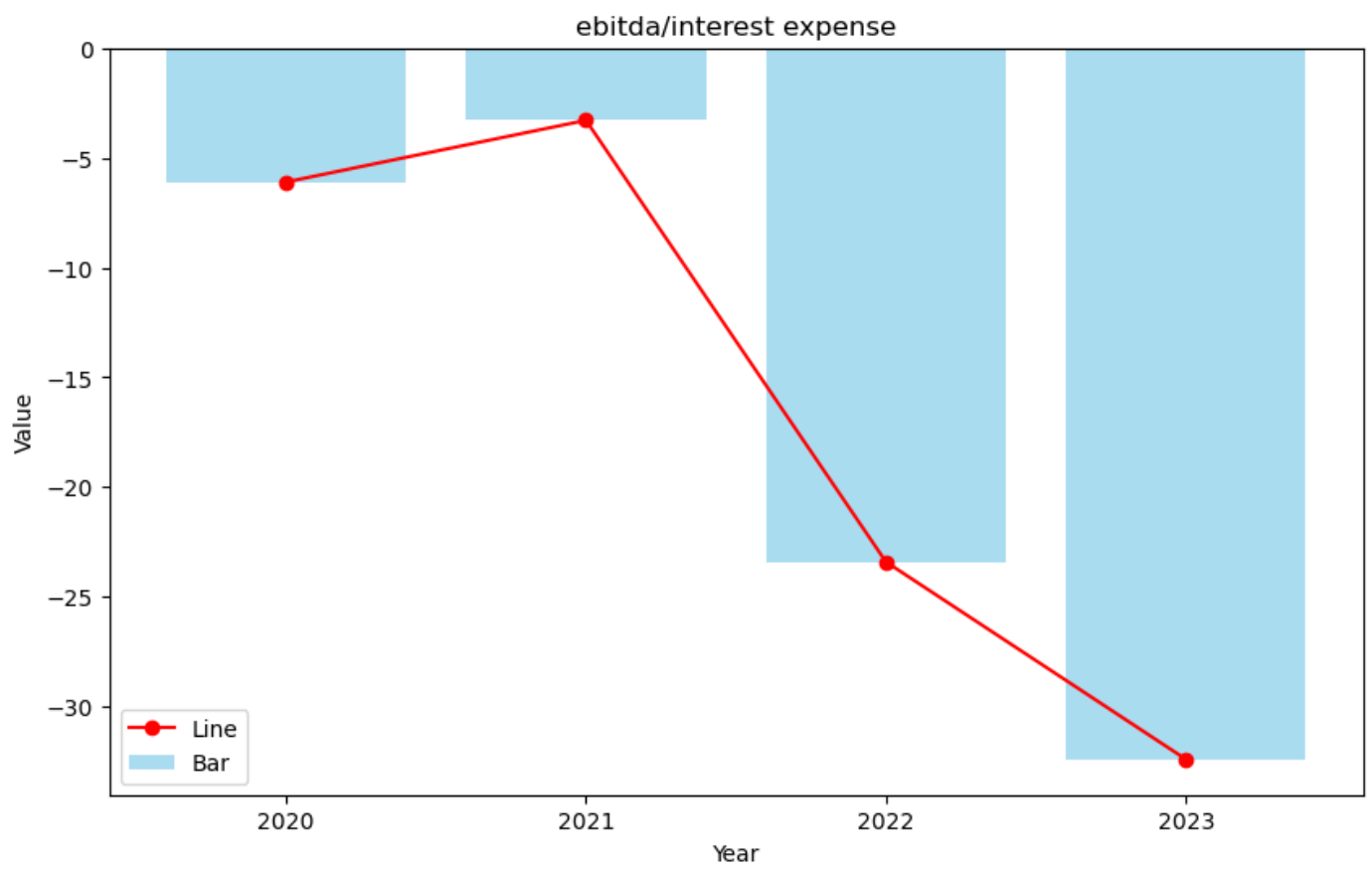












In [ ]: