# 3. Financials

# Income Statement

income\_statement = ticker.quarterly\_financials 或ticker.financials

print("Income Statement:")

income\_statement

The data displayed in the uploaded images includes various financial metrics that could potentially serve as features for predicting stock prices. However, not all metrics may be directly relevant or useful for your predictive model. Below is an analysis to help you decide which ones might be suitable:

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**### \*\*Categories of Metrics\*\***

1. **\*\*Revenue and Profitability Metrics\*\***

   - **\*\*Total Revenue\*\***: Highly relevant, as revenue reflects the company's ability to generate income.

   - **\*\*Gross Profit\*\***: Useful as it indicates the company's efficiency in managing production costs.

   - **\*\*EBITDA, EBIT\*\***: Earnings Before Interest,(Taxes,Depreciation and Amortization). Important for evaluating operating performance and profitability.

   - **\*\*Net Income\*\***: A key indicator of overall profitability, often correlated with stock price movements.

2. **\*\*Expense Metrics\*\***

   - **\*\*Cost of Revenue\*\***: Reflects the costs associated with generating revenue. It’s useful for understanding margins.

   - **\*\*Selling, General, and Administrative Expense\*\***: Can help assess the company's operational efficiency.

3. **\*\*Earnings per Share (EPS)\*\***

   - **\*\*Basic EPS, Diluted EPS\*\***: Critical as they are directly linked to shareholder returns and often influence stock price movements.

4. **\*\*Cash Flow Metrics\*\***

   - **\*\*Net Operating Cash Flow\*\***: Reflects the company’s ability to generate cash from operations, impacting valuation.

5. **\*\*Unusual Items and Adjustments\*\***

   - **\*\*Normalized EBITDA, Total Unusual Items\*\***: Useful for identifying anomalies or one-off effects that might skew profitability metrics.

   - **\*\*Tax Effect of Unusual Items\*\***: Relevant if there are frequent tax-related anomalies.

6. **\*\*Debt and Interest\*\***

   - **\*\*Interest Expense, Interest Income\*\***: Important for understanding the company’s debt burden and its impact on profitability.

   - **\*\*Net Non-Operating Interest Income/Expense\*\***: Could be useful if the company has significant non-operating financing activities.

7. **\*\*Minority Interests and Dividends\*\***

   - **\*\*Net Income Attributable to Minority Interests\*\***: Important in cases where the company has joint ventures or minority-owned subsidiaries.

   - **\*\*Dividends\*\***: Affects stockholder value and can influence stock price movements.

8. **\*\*Operating Metrics\*\***

   - **\*\*Operating Revenue, Operating Expense\*\***: Useful for analyzing core business operations.

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**### \*\*Factors to Consider When Using These Metrics\*\***

1. **\*\*Feature Correlation\*\***:

   - Some features may be highly correlated (e.g., Gross Profit and Total Revenue). Avoid multicollinearity in your model by selecting only one or using dimensionality reduction techniques (e.g., PCA).

2. **\*\*Company-Specific Factors\*\***:

   - Financial metrics such as EBIT, Net Income, and Revenue can have varying significance depending on the company's size, industry, and financial structure.

3. **\*\*Lagged Features\*\***:

   - Stock prices may not immediately respond to changes in financial metrics. Consider including lagged variables to capture delayed effects.

4. **\*\*Normalization and Scaling\*\***:

   - Many of these features are on different scales (e.g., Total Revenue vs. EPS). Normalize or standardize them before feeding them into the model.

5. **\*\*Time-Sensitive Data\*\***:

   - Metrics like Net Income or EPS are reported quarterly or annually, whereas stock prices are daily. Align the temporal resolution of your features with the target variable.

6. **\*\*Noise from Adjustments\*\***:

   - Metrics like "Total Unusual Items" or "Special Income Charges" might add noise unless the company frequently experiences these anomalies.

7. **\*\*Macroeconomic and Sector Variables\*\***:

   - Combine these company-specific features with external factors like crude oil prices (`CL=F`), sector indices, or macroeconomic variables.

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**### \*\*Suggested Features for Prediction\*\***

- **\*\*Highly Relevant\*\***:

  - Total Revenue

  - Net Income

  - EBIT/EBITDA

  - EPS (Basic and Diluted)

  - Operating Revenue/Expense

  - Interest Expense

- **\*\*Potentially Useful\*\***:

  - Normalized Income/EBITDA

  - Gross Profit

  - Dividends

  - Cost of Revenue

- **\*\*Less Relevant for Stock Price Prediction\*\***:

  - Tax Effect of Unusual Items

  - Minority Interests

  - Special Charges

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**### \*\*Modeling Considerations\*\***

- **\*\*Feature Engineering\*\***: Use ratios like Gross Profit Margin (Gross Profit / Total Revenue) or EPS growth rate instead of raw values.

- **\*\*Feature Selection\*\***: Use statistical methods like correlation analysis or machine learning techniques (e.g., Lasso Regression) to identify the most important features.

- **\*\*Economic Intuition\*\***: Ensure the selected features have logical relationships with the stock price.

Would you like help coding a preprocessing pipeline for these features or setting up the predictive model?