



# FINANCIAL MODELING HANDBOOK THIRD EDITION

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# 1.



## WHY

# FINANCIAL MODELING

## IS IMPORTANT?

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# WHY FINANCIAL MODELING IS IMPORTANT

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## What is Financial Modeling?

Financial modeling is a mathematical representation of a company's financial performance, used to forecast future outcomes and make informed decisions.

## Why is it important?



### 1. Strategic Planning

Financial modeling helps organizations plan future. It enables the creation of detailed financial projections that consider various scenarios, helping in long-term strategic planning.



### 2. Risk Assessment

Through financial modeling, businesses can assess potential risks and uncertainties. By running sensitivity analyses and stress tests, organizations can identify vulnerabilities and develop strategies to mitigate risks.



### 3. Capital Budgeting

Financial models aid in capital budgeting decisions, helping companies allocate resources efficiently to projects, investments, or acquisitions. Models evaluate the potential returns and risks associated with different choices.

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## 4. Valuation

Financial modeling is integral to the valuation of companies for mergers, acquisitions, and investment decisions. It provides a framework for estimating the worth of a business based on factors like earnings, assets, and market conditions.

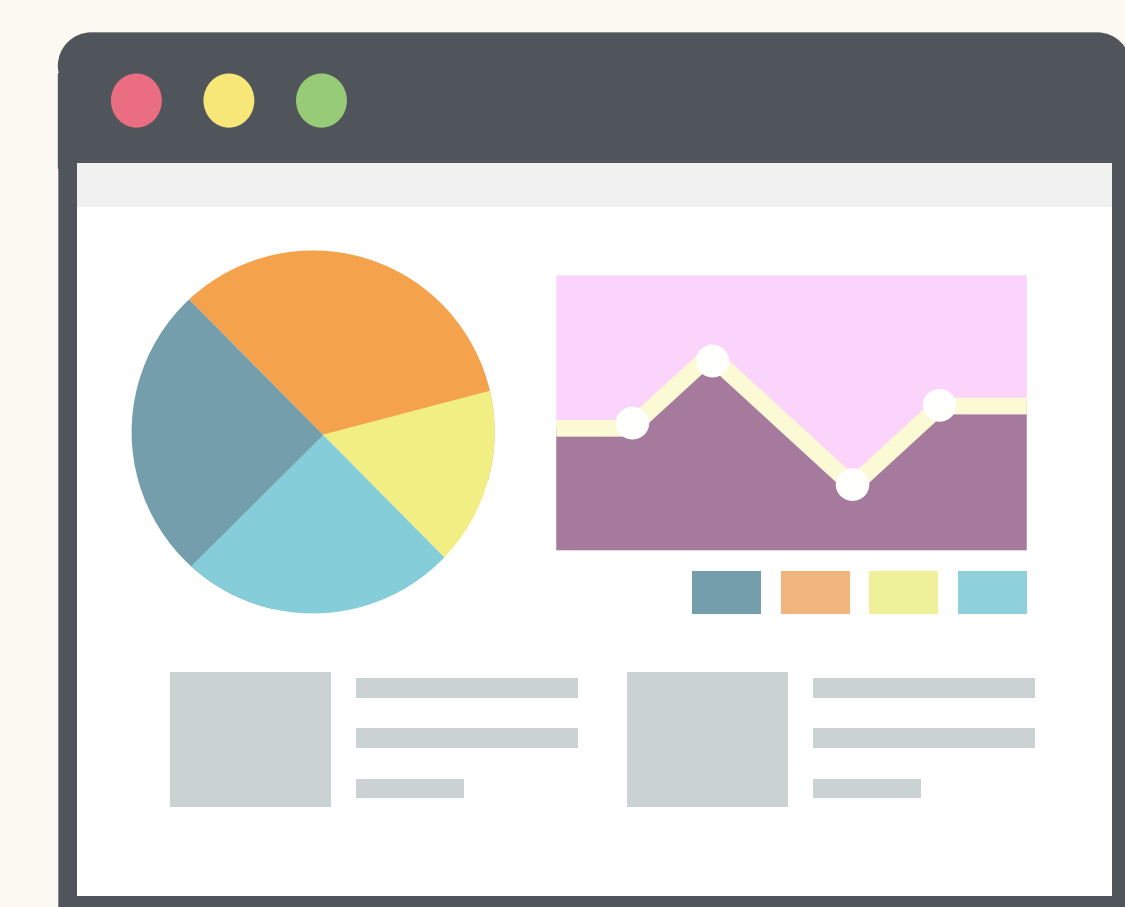


## 5. Fundraising

When seeking funding from investors or lenders, financial models serve as a means to communicate the financial health and growth potential of a company. Investors rely on these models to make informed investment decisions.

## 6. Performance Analysis

Businesses use financial models to analyze their historical financial performance and compare it to their projections. This helps in identifying areas for improvement and optimizing financial strategies.



## 7. Resource Allocation

Financial models assist in optimizing resource allocation by allocating budgets to different departments or projects based on their financial impact and alignment with strategic goals.



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## 8. Cost Control

They help in monitoring and controlling costs by providing insights into cost structures and cost drivers. This enables organizations to identify areas where cost reductions are feasible.



## 9. Scenario Planning

Financial models allow for scenario planning, which is crucial in uncertain economic environments. Businesses can create multiple scenarios (optimistic, pessimistic, baseline) to prepare for different outcomes.

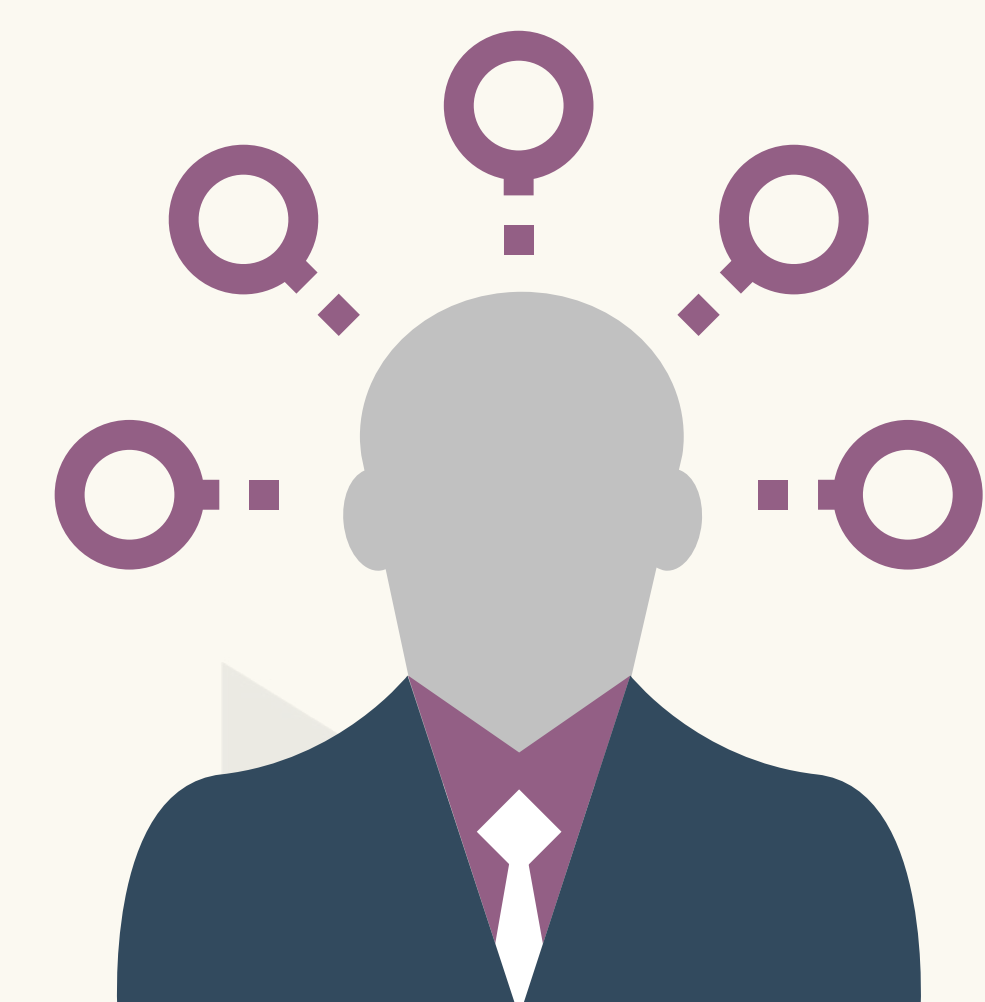
## 10. Cash Flow Management

Managing cash flow is critical for the survival of any business. Financial models help in forecasting cash flows, ensuring that a company has enough liquidity to cover its obligations.



## 11. Investor Communication

Publicly traded companies often use financial models to communicate their financial performance and growth prospects to shareholders, analysts, and the public.



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## 12. Decision-Making

Financial models provide a structured framework for making informed decisions. They help in evaluating the financial implications of various choices and selecting the best course of action.



## 13. Compliance and Reporting

Many industries and regulatory bodies require companies to maintain accurate financial records and reports. Financial models assist in ensuring compliance with these requirements.

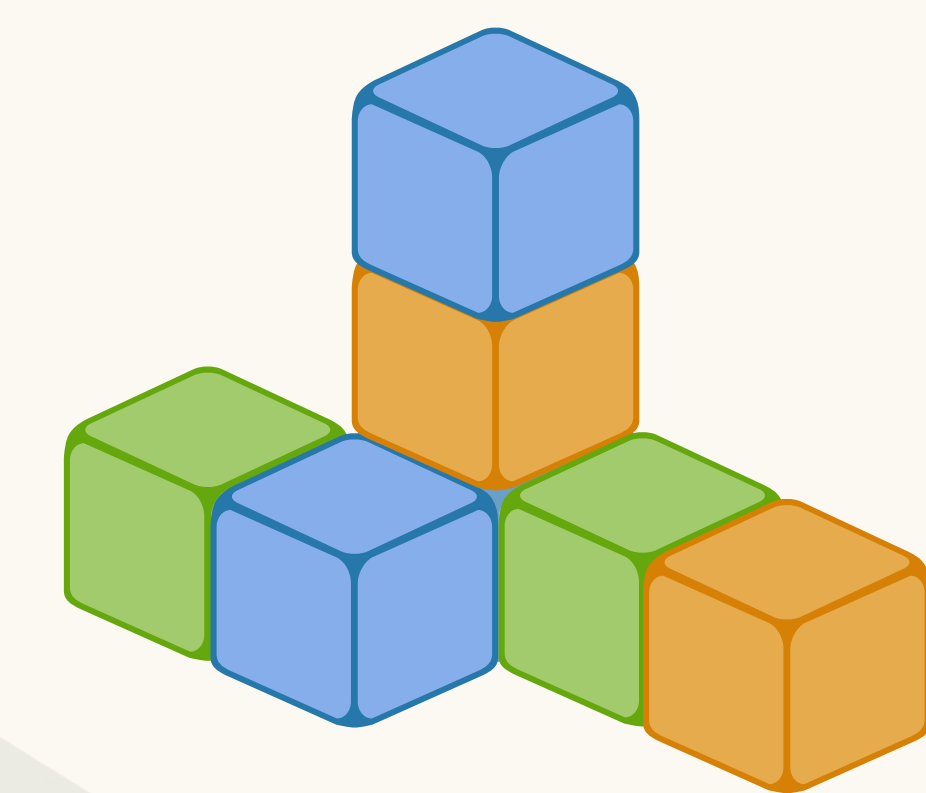
## 14. Performance Metrics

Financial models help in calculating and tracking key performance indicators (KPIs) such as return on investment (ROI), profitability ratios, and break-even points.



## 15. Flexibility

Financial models can be adapted to various industries and sectors, making them a versatile tool for businesses of all types and sizes.



2.



# TYPES OF FINANCIAL MODELS





# TYPES OF FINANCIAL MODELS

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## 1. Financial Statement Models:

These models project a company's future financial performance by forecasting income statements, balance sheets, and cash flow statements. They are fundamental for financial planning and analysis.



## 2. Valuation Models:



Valuation models are used to determine the intrinsic value of an asset or a company. Common valuation models include Discounted Cash Flow (DCF), Comparable Company Analysis (CCA), and Precedent Transaction Analysis (PTA).

## 3. Merger and Acquisition (M&A) Models:

M&A models help in evaluating the financial impact of potential mergers, acquisitions, or divestitures. They often include sensitivity analysis and scenario modeling.



## 4. Budgeting and Forecasting Models:

These models help in creating budgets and financial forecasts for a company, allowing for better planning and resource allocation.

## 5. Risk and Sensitivity Analysis Models:

These models assess the impact of various scenarios and changes in key variables on a company's financial performance. Monte Carlo simulations are often used for risk analysis.



# TYPES OF FINANCIAL MODELS

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## 6. Option Pricing Models:

These models, such as the Black-Scholes model, are used to calculate the value of financial options and derivatives.



## 7. Credit Risk Models:

These models assess the creditworthiness of individuals or companies, often used by banks and financial institutions for lending decisions.

## 8. Portfolio Management Models:

Portfolio models help investors optimize their investment portfolios by considering risk and return, asset allocation, and diversification.

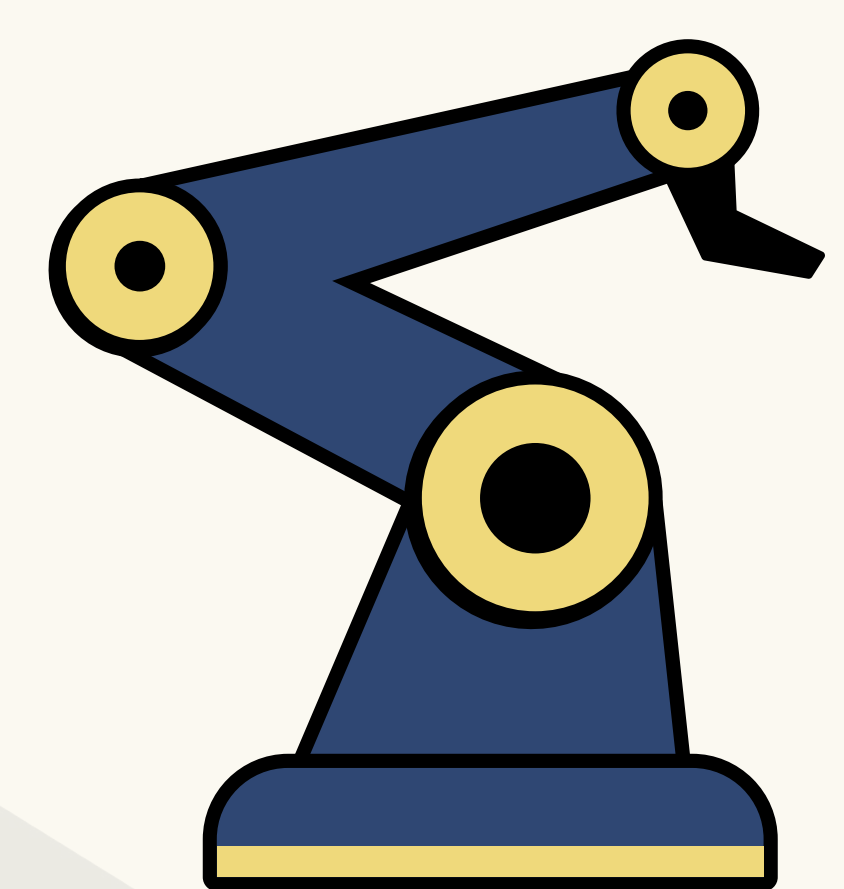


## 9. Real Estate Models:

These models are used for real estate investment analysis, including property valuation, cash flow projections, and return on investment (ROI) calculations.

## 10. Economic and Industry Models:

These models analyze macroeconomic and industry-specific factors to make informed financial decisions. For example, econometric models and industry-specific supply and demand models.

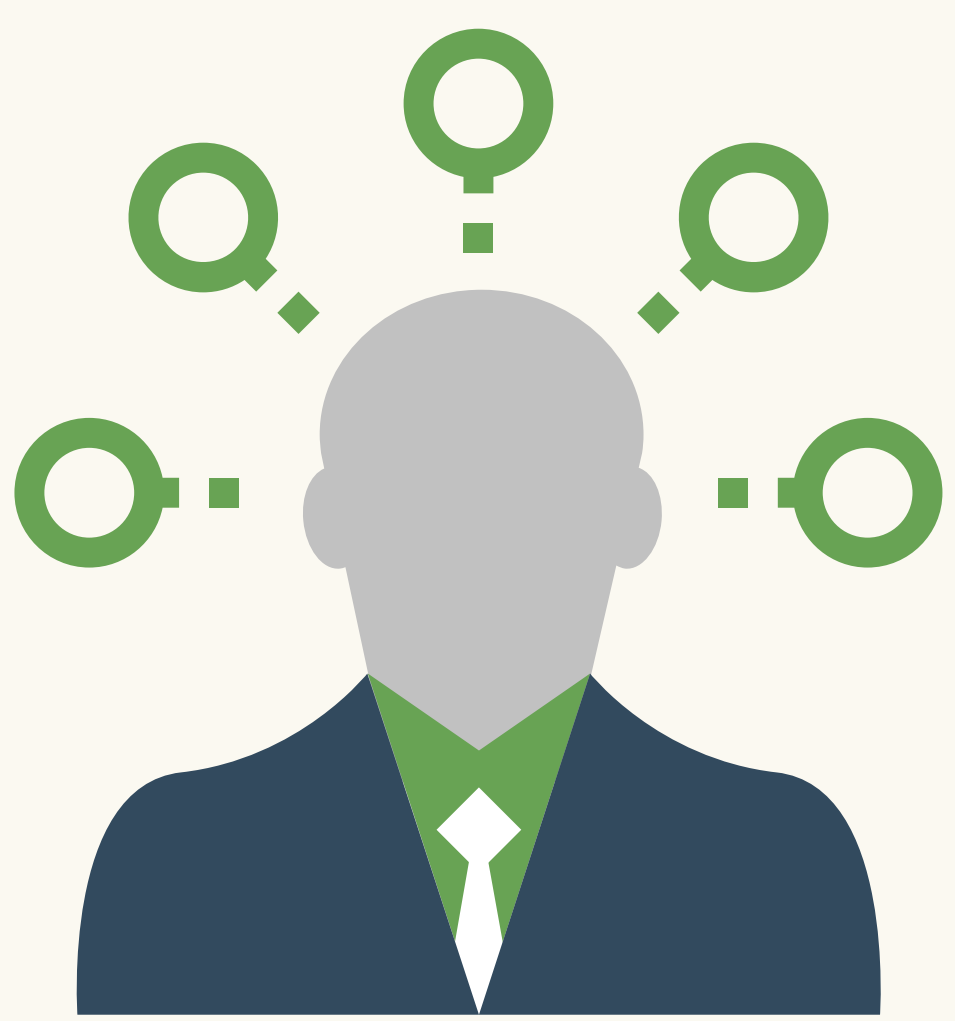


# TYPES OF FINANCIAL MODELS

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## 11. Working Capital Models:

These models help in managing a company's working capital efficiently by optimizing cash, accounts receivable, and accounts payable.



## 12. Capital Structure Models:

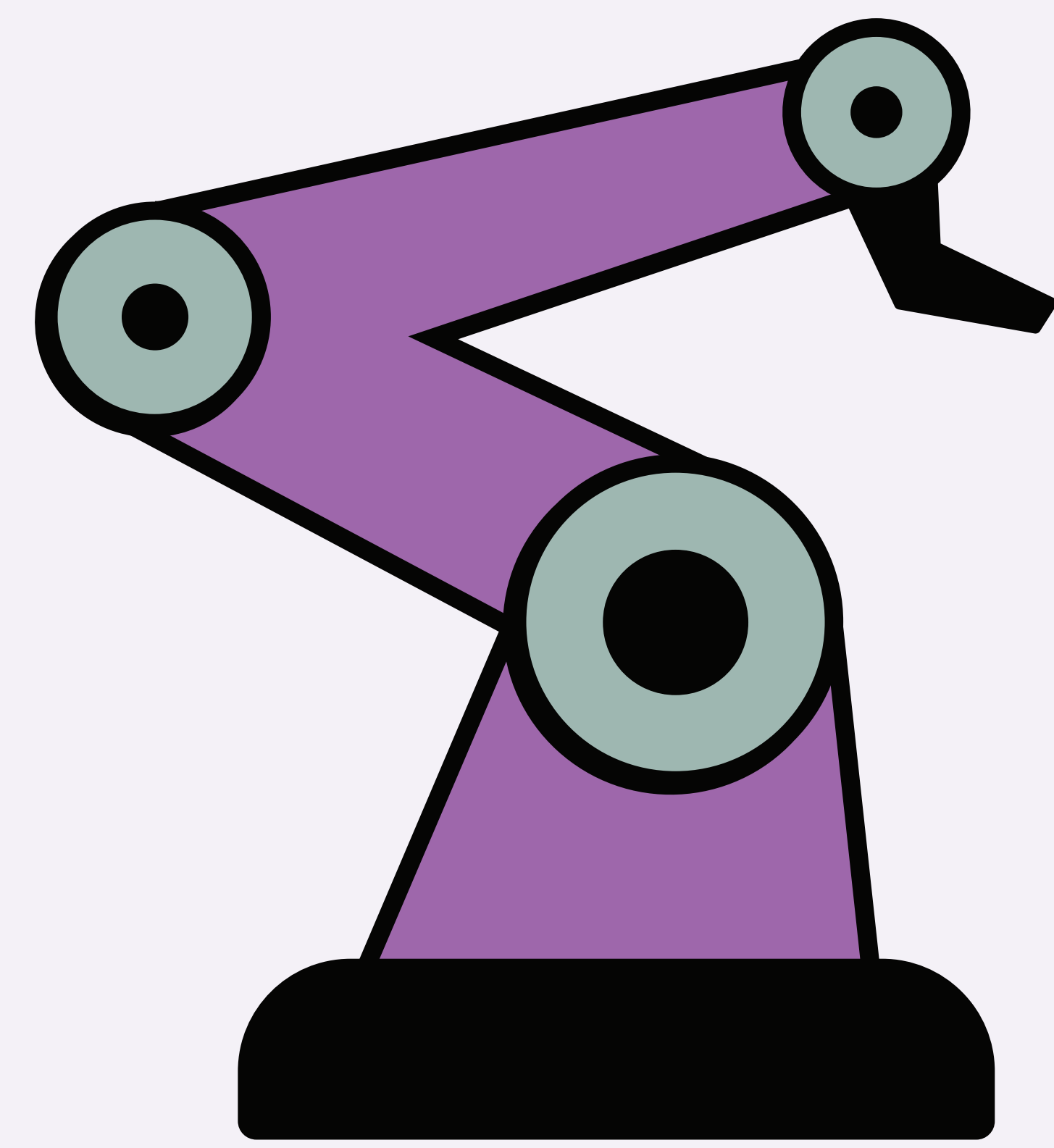
These models determine the optimal mix of debt and equity financing for a company to minimize the cost of capital and maximize shareholder value.

## 13. Project Finance Models:

Used in infrastructure and large-scale projects, project finance models evaluate the financial feasibility and risks associated with a project.



3.



**FINANCIAL**  
**STATEMENT**  
ANATOMY



# FINANCIAL STATEMENT ANATOMY

## Income Statement

<b>Revenue</b>	<b>Total income from primary operations.</b>
<b>Cost of Goods Sold (COGS)</b>	<b>Direct costs of production.</b>
<b>Gross Profit</b>	<b>Revenue minus COGS.</b>
<b>Operating Expenses</b>	<b>Selling, general, and administrative costs.</b>
<b>Operating Income</b>	<b>Gross Profit minus Operating Expenses.</b>
<b>Other Income/Expenses</b>	<b>Non-operating items (interest, taxes).</b>
<b>Net Income</b>	<b>Final profit or loss.</b>

## Balance Sheet

<b>Assets</b>		=	<b>Liabilities</b>		+	<b>Shareholders' Equity</b>	
<b>Current Assets</b>	<b>Non-Current Assets</b>		<b>Current Liabilities</b>	<b>Non-Current Liabilities</b>		<b>Common Stock</b>	<b>Retained Earnings</b>
↓	↓		↓	↓		↓	↓
Cash, accounts receivable, inventory.	Long-term investments, property.		Short-term obligations.	Long-term debt, deferred tax.		Par value of shares.	Cumulative net income.

## Cash Flow Statement

<b>Operating Activities</b>	<b>Cash transactions in core operations.</b>
<b>Investing Activities</b>	<b>Cash transactions for long-term assets.</b>
<b>Financing Activities</b>	<b>Cash transactions with owners and creditors.</b>
<b>Net Cash Flow</b>	<b>Sum of operating, investing, and financing activities.</b>
<b>Beginning and Ending Cash Balance</b>	<b>Initial and final cash position.</b>

# 4.



## TOP 10 EXCEL

FUNCTIONS

YOU SHOULD KNOW

IN FINANCIAL MODELING

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# 10 EXCEL FUNCTIONS YOU SHOULD KNOW

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## 1. =SUMIFS()

SUMIFS function adds all of its arguments that meet multiple criteria. For example, you would use SUMIFS in your financial model to sum up the sales of (1) a specific employee (2) for a specific product.

**=SUMIFS**  
(sum range (e.g. sales),  
criteria range 1 (e.g.  
employee),  
criteria 1 (e.g. Tim),  
criteria range 2 (e.g.  
Product),  
criteria 2, (e.g. Chairs))

Month	Total Wages Allocated	Employees	Wage
Jan	\$3,200	2	\$1,600
Feb	\$1,600	1	\$1,600
Mar (shop closed)	\$0	0	#ERROR! (or #N/A)

Know your IFs, COUNTIFs, AVERAGEIFs and all other IFs too - after all, financial modeling is just a series of IFs that could happen in this world.

## 2. =IFERROR()

Use IFERROR function to format your financial models. The function checks for errors and returns the value specified by the user if found. The function checks for the following errors: #N/A, #VALUE!, #REF!, #DIV/0!, #NUM!, #NAME? or #NULL!.

**=IFERROR(value, value\_if\_error)**

Month	Total Wages Allocated	Employees	Wage
Jan	\$3,200	2	\$1,600
Feb	\$1,600	1	\$1,600
Mar (shop closed)	\$0	0	#ERROR! (or #N/A)

## 3. =XIRR()

Internal rate of return metric is needed to find out the annual growth rate of an investment. The higher the IRR, the better the investment (keeping all other factors the same, of course). IRR is good for comparing different investment opportunities.

**=XIRR(cash flow values, dates of cash flows)**

Date	1	2	3	4	5
7/12/2021	8/11/2021	9/10/2021	10/10/2021	11/9/2021	
Cash Flow	-1000	-550	750	1000	1250

## 4. =XNPV()

Finance is money and we all know that money today is worth more than tomorrow. Financial analysts oftentimes have to calculate the value of an investment/company/project in today's terms.

**=XNPV**(discount rate, cash flow values, dates of cash flow)

Date	1	2	3	4	5
7/12/2021	8/11/2021	9/10/2021	10/10/2021	11/9/2021	
Cash Flow	-1000	-550	750	1000	1250

## 5. =PMT()

PMT function calculates the payment for a loan based on constant payments and a constant interest rate. You have to know the present loan value, number of periods and the interest rate. PMT, PPMT and IPMT functions are needed to figure out annuity loan repayments (e.g. mortgage)

**=PMT**(interest rate, number of periods, present value)

Rate	Number of periods	Present value	Future value
5%	12	10000	15000

Unlike IRR and NPV, XIRR and XNPV functions allow for payments at irregular intervals

## 6. =SLOPE()

If you're into investment banking, at some point you'll have to calculate the Beta of a stock, which means volatility. By using the SLOPE function in Excel, you'll find it easily by using the returns of the stock and the comparative benchmark index.

**=SLOPE**  
(% of equity change range,  
% range of change of index)

Year	Index	Equity
2010	100	100
2011	110	110
2012	120	120

## 7. =XLOOKUP

Lookup functions are a must to know for any modeler. They are used to quickly and easily find data in a table, for example, to find the amount sold by an employee, ID number, and thousands of other things.

**=XLOOKUP**(what do you want to look up, where can it be found, what do you want to return)

Employee	Sold
John	15,000
Alice	20,000
Tim	10,000
Prash	25,000

## 8. =INDEX() & MATCH()

Sometimes, XLOOKUP won't do the job, as it can only compare one array with another one. Index and Match function combination can look up values in the whole table - it's 2 Dimensional.

**=INDEX**  
(what you want to return,  
=INDEX(array, row\_num, [column\_num])

**=MATCH**  
(what are you looking for, where can it be found)  
=MATCH(lookup\_value, lookup\_array, [match\_type])

Player	Stage 1	Stage 2	Stage 3	Stage 4	Total
Carroll's Law	1000	857	1000	900	3657
Quinn's Baby	821	700	830	1000	3351
Andrew's Top	847	895	915	820	3477

## 9. =EOMONTH()

EOMONTH function finds the last day of the month after you add a specific number of months to a date. It's useful for calculating maturity dates or due dates that fall on the last day of the month. It also aids in setting up your financial model.

**=EOMONTH**  
(start\_date,  
months you want  
to add/subtract)

=EDATE() will aid in adding months to a specified start date

Start Date	Months	End Date
1/1/2021	1	31/1/2021
1/1/2021	2	29/2/2021
1/1/2021	3	31/3/2021

## 10. =SEQUENCE

The SEQUENCE function allows you to generate a list of sequential numbers in an array. SEQUENCE function works great if you need to generate a list of 10,000 numbers in a column.

**=SEQUENCE** (number of rows you want to generate, number of columns you want to generate, starting point, step)

Row	Column 1	Column 2	Column 3	Column 4	Column 5
1	1	2	3	4	5
2	6	7	8	9	10
3	11	12	13	14	15
4	16	17	18	19	20
5	21	22	23	24	25



5.

**THE INCOME**  
**STATEMENT**  
GUIDE

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## What is an **Income Statement**?

An income statement, also known as a profit and loss statement (P&L), is a financial report that shows a company's revenues, expenses, and profits (or losses) over a specific period, typically a fiscal quarter or year.

## Components of an **Income Statement**

### **Revenue (Sales):**

The total income generated from selling goods or providing services.



### **Cost of Goods Sold (COGS):**

The direct costs associated with producing the goods or services.

### **Gross Profit:**

Revenue minus COGS, representing the initial profit before operating expenses.



### **Operating Expenses:**

Costs related to the day-to-day operations of the business (e.g., salaries, rent, utilities).

### **Operating Income:**

Gross profit minus operating expenses, indicating the profit from core operations.



### **Non-Operating Income (Expenses):**

Additional income or expenses not directly related to core operations.

### **Net Income (Profit or Loss):**

The final result, indicating the overall profit or loss after all income and expenses.



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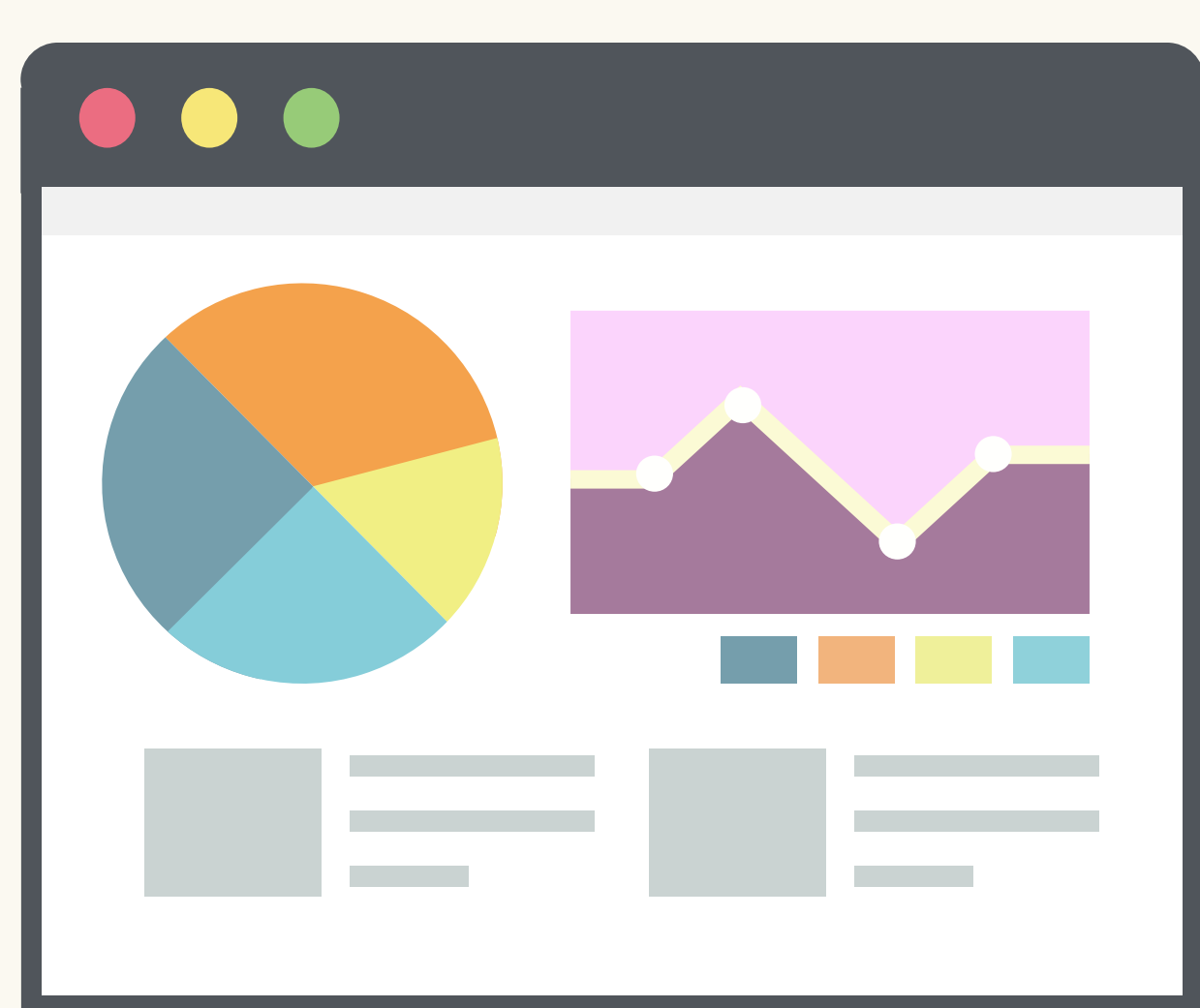
## Analysis of an **Income Statement**

To evaluate a company's Income Statement, various margins and ratios are used:

### **Profit Margin:**

Measures the percentage of revenue that remains as net profit after deducting all expenses, providing insights into the overall profitability of the company.

$$\text{(Net Income / Revenue) x 100}$$



### **Gross Margin:**

Represents the percentage of sales revenue remaining after deducting the costs of goods sold.

$$\text{(Gross Profit / Revenue) x 100}$$

### **Operating Margin:**

Shows the profitability of core business operations before interest and taxes.

$$\text{(Operating Income / Revenue) x 100}$$



### **Earnings Before Interest, Taxes, Depreciation, and Amortization (EBITDA) Margin**

Evaluates a company's profitability and operating efficiency by measuring the percentage of revenue represented by EBITDA.

$$\text{(EBITDA / Revenue) x 100}$$

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## Revenue Growth Rate:

Measures the percentage change in revenue over a period of time to assess a company's ability to generate more sales.



$$\frac{((\text{Current Period Revenue} - \text{Previous Period Revenue}) / \text{Previous Period Revenue}) \times 100}{}$$

## Return on Equity (ROE):



Measure the profitability of shareholders' investments by assessing the net income generated per unit of shareholders' equity.

$$(\text{Net Income} / \text{Shareholders' Equity}) \times 100$$

## Return on Assets (ROA):

Determines the profitability of a company's assets by measuring the net income generated per unit of total assets.



$$(\text{Net Income} / \text{Total Assets}) \times 100$$

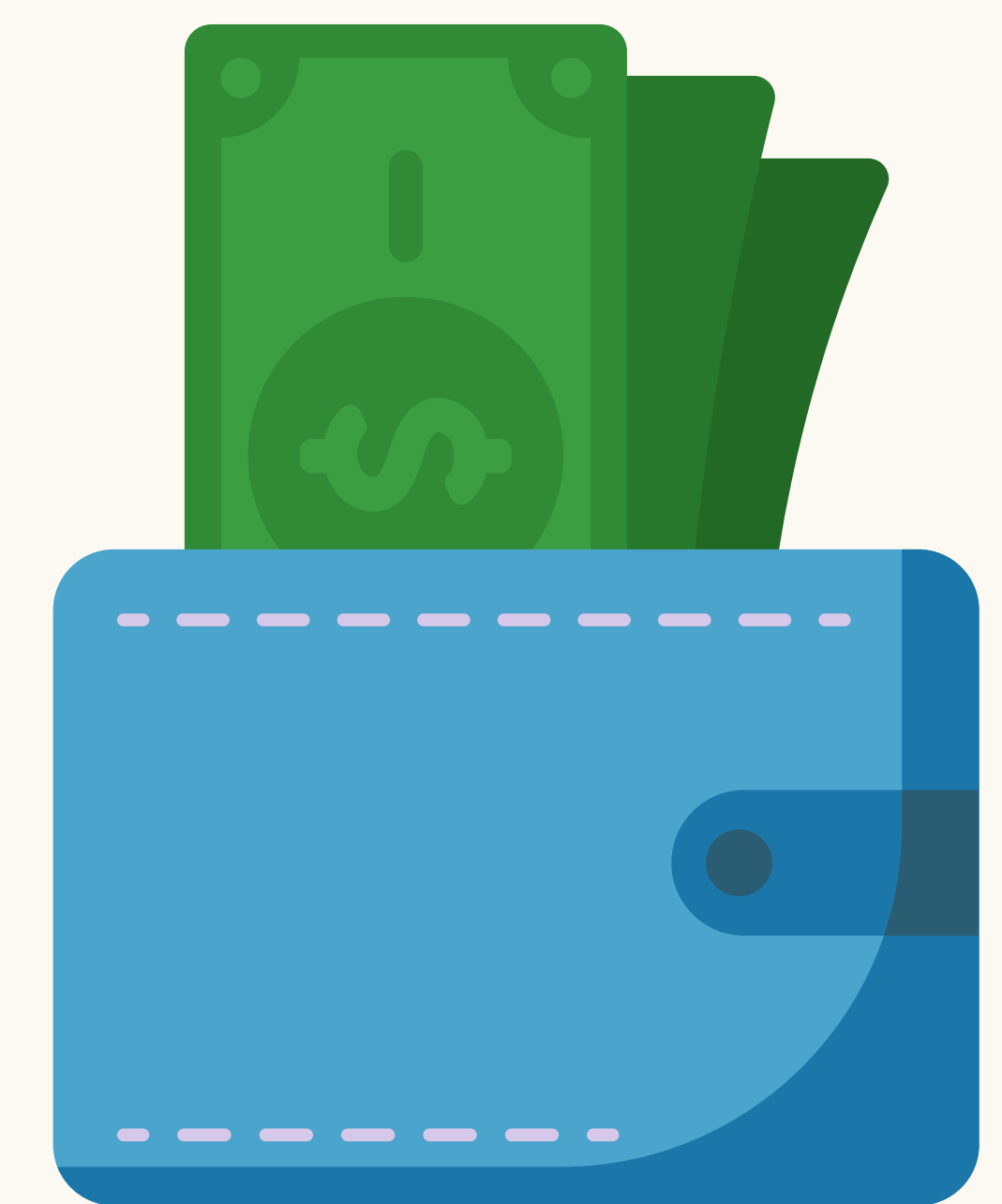
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## Interpreting an Income Statement

### Positive Net Income:

The company is profitable, and the amount represents its earnings for the period.

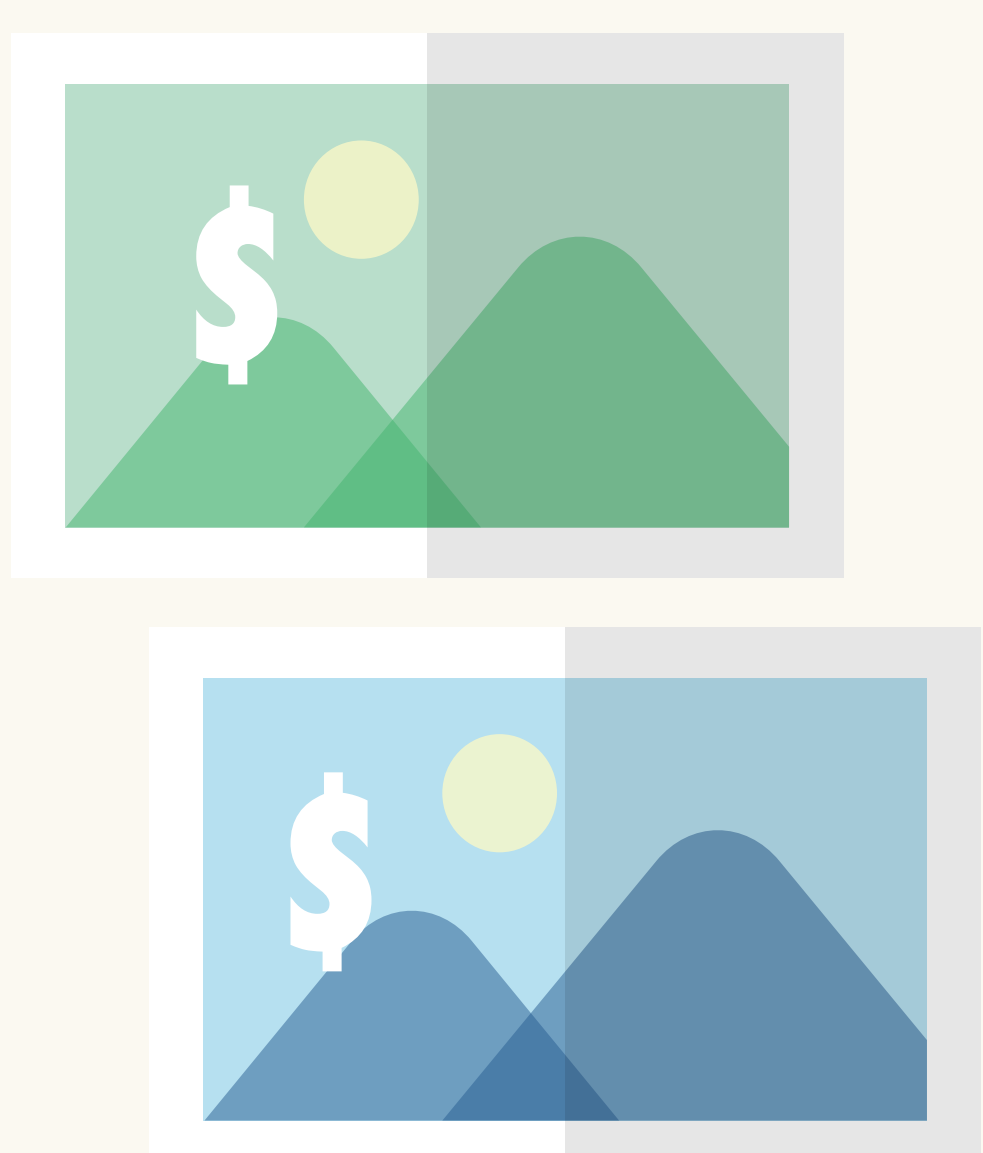
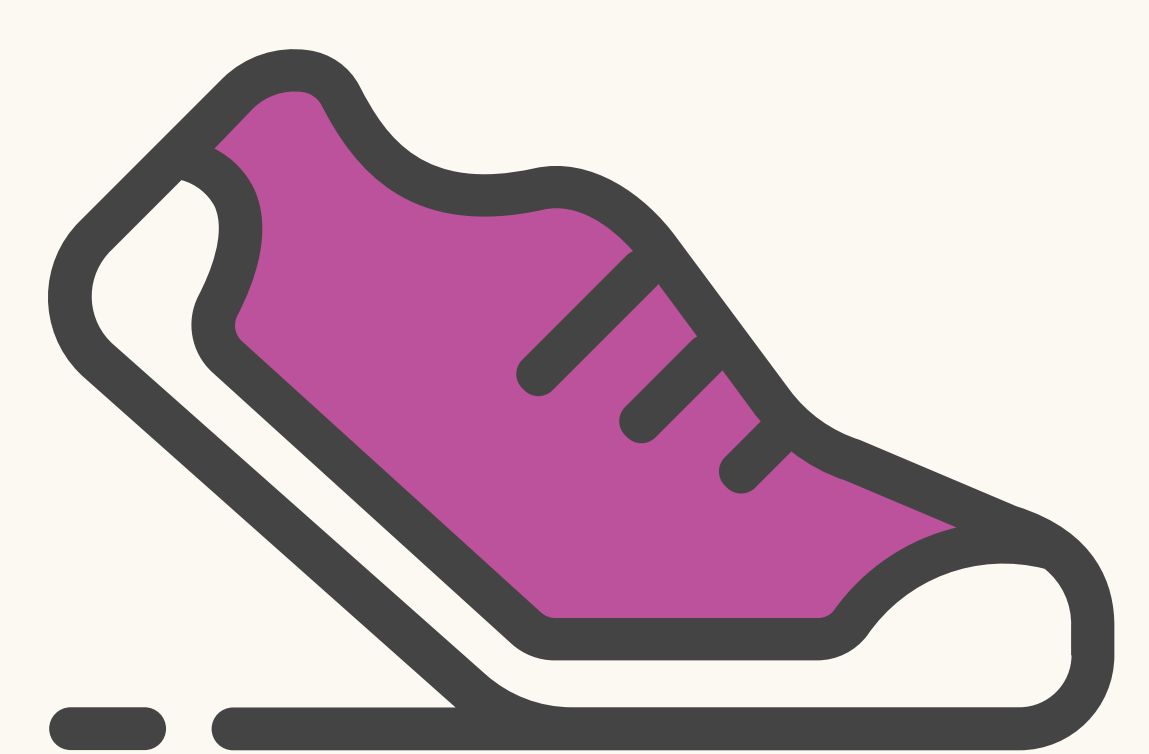


### Negative Net Income:

The company incurred losses for the period.

### Trends:

Analyze trends over multiple periods to assess the company's financial health.



### Comparisons:

Compare the income statement with those of competitors or industry standards for benchmarking.



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## Importance of the Income Statement

### Investor Insight:

Investors rely on income statements to gauge a company's financial health and make informed investment decisions.



### Management Tool:

Within organizations, income statements guide financial planning, resource allocation, and decision-making.

### Creditworthiness:

Lenders use income statements to assess a company's ability to meet financial obligations when seeking loans or credit.



### Strategic Planning:

Income statements inform long-term strategies by identifying financial trends and guiding growth plans.

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## Legal Compliance:

Businesses must maintain accurate income statements to comply with financial regulations and accounting standards.

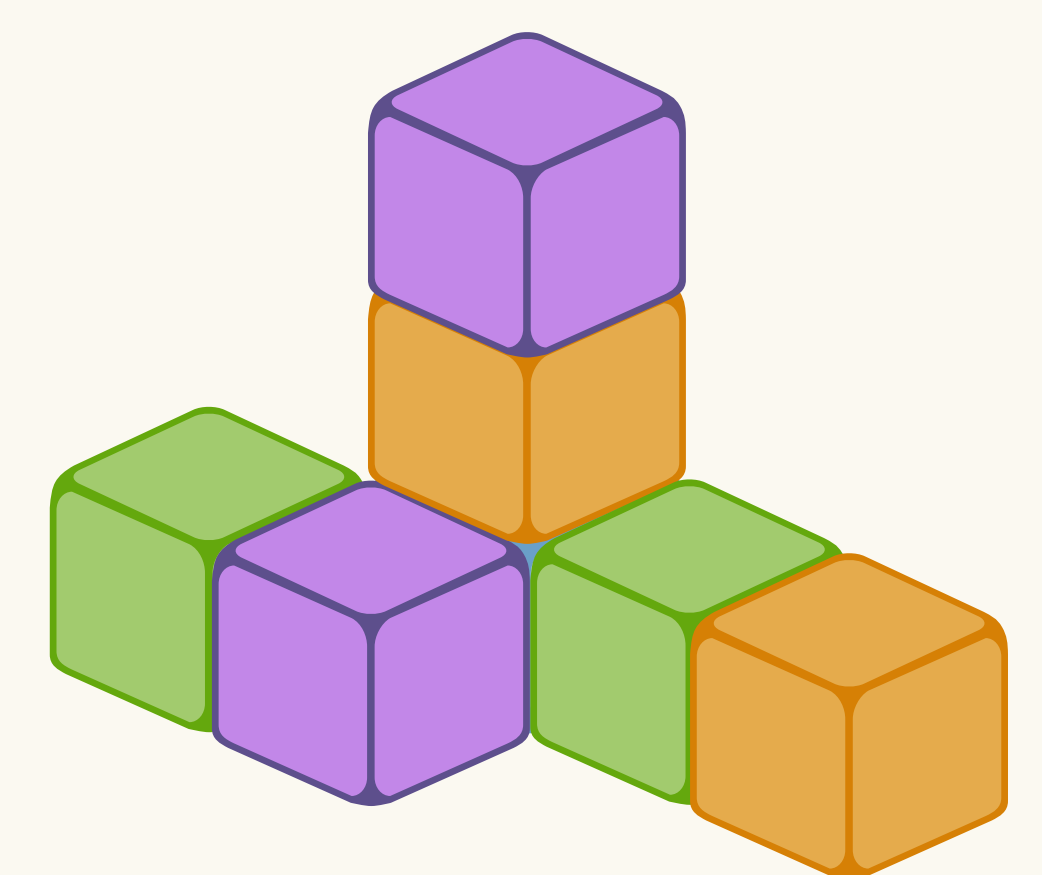


## Transparency and Trust:

Transparent income statements build trust with stakeholders, fostering a positive corporate reputation.

## Benchmarking:

Comparing income statements to industry standards and competitors helps companies assess their performance and make improvements.





# 6.

# THE **BALANCE** **SHEET** GUIDE

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# THE BALANCE SHEET GUIDE

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## What is a Balance Sheet?

A balance sheet is a financial statement that provides a snapshot of a company's financial position at a specific moment in time. It's a crucial tool for understanding a company's assets, liabilities, and equity.

The balance sheet offers a point-in-time view of a company's financial health, allowing investors and stakeholders to assess its liquidity, solvency, and financial stability.

## Balance Sheet Components

$$\text{Assets} = \text{Liabilities} + \text{Equity}$$

A balance sheet comprises three main components: assets, liabilities, and equity. These components reflect the basic accounting equation, which states that the total assets of a company must equal the sum of its liabilities and equity.





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## Assets

### Current Assets

These are assets expected to be converted into cash or used up within one year, such as cash, accounts receivable, and inventory.

### Non-Current Assets

These are long-term assets like property, plant, equipment, and investments.



## Liabilities

### Current Liabilities

These are obligations that must be settled within one year, including accounts payable and short-term debt.

### Non-Current Liabilities

These are long-term obligations like long-term loans or bonds.



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## Equity

Equity represents the owner's or shareholders' residual interest in the company's assets after deducting liabilities. It includes items like common stock, retained earnings, and additional paid-in capital.

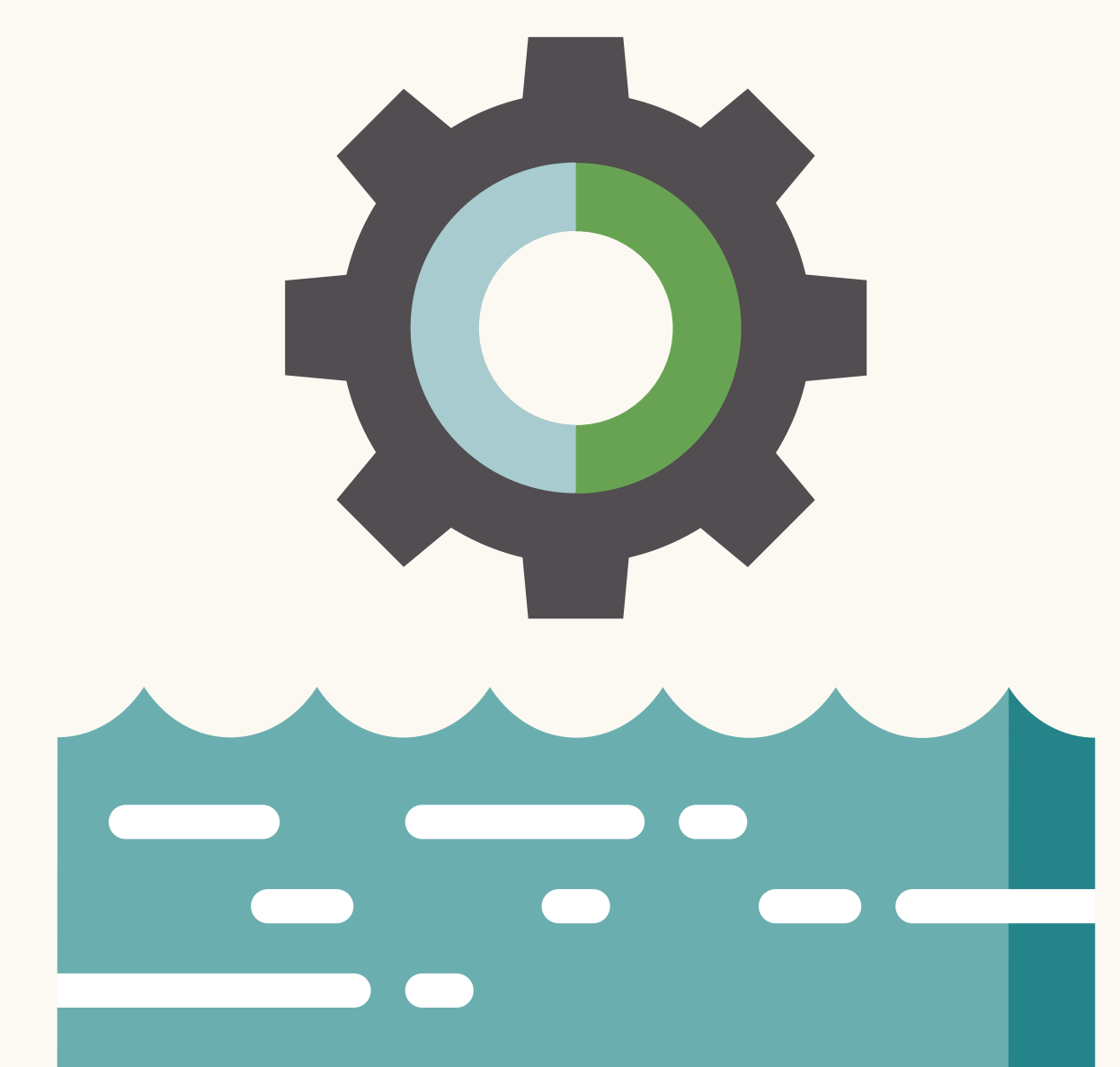


## Analysis

Financial analysts and stakeholders use the balance sheet to perform a comprehensive assessment of a company's financial health and stability.

### a. Liquidity Assessment:

The balance sheet helps determine a company's liquidity, or its ability to meet short-term obligations. Analysts often focus on current assets and current liabilities to calculate ratios like the current ratio and the quick ratio. These ratios gauge whether the company has enough assets that can be quickly converted to cash to cover its short-term debts.



### b. Solvency Evaluation:

Solvency is an essential aspect of financial analysis. Analysts use the balance sheet to assess a company's long-term financial viability. They look at non-current liabilities and equity to calculate ratios like the debt-to-equity ratio. This ratio helps determine how much of the company's assets are financed through debt, which can be critical for making investment decisions.

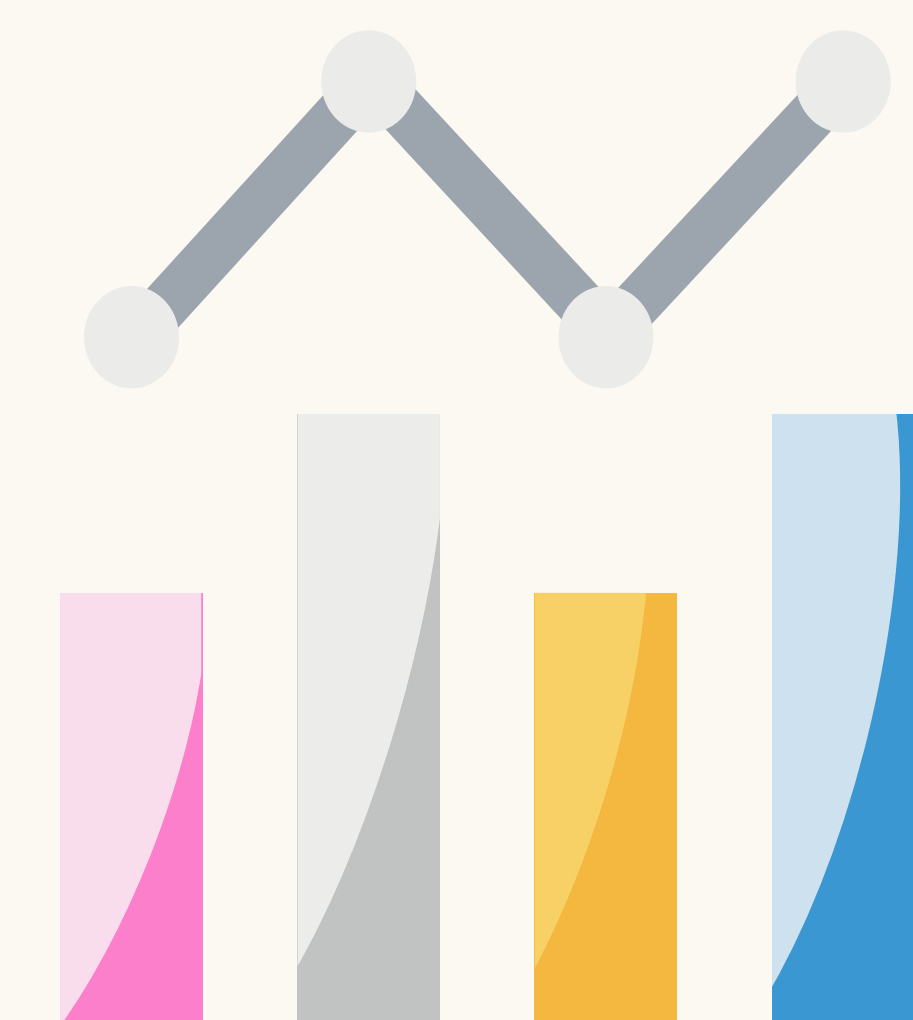


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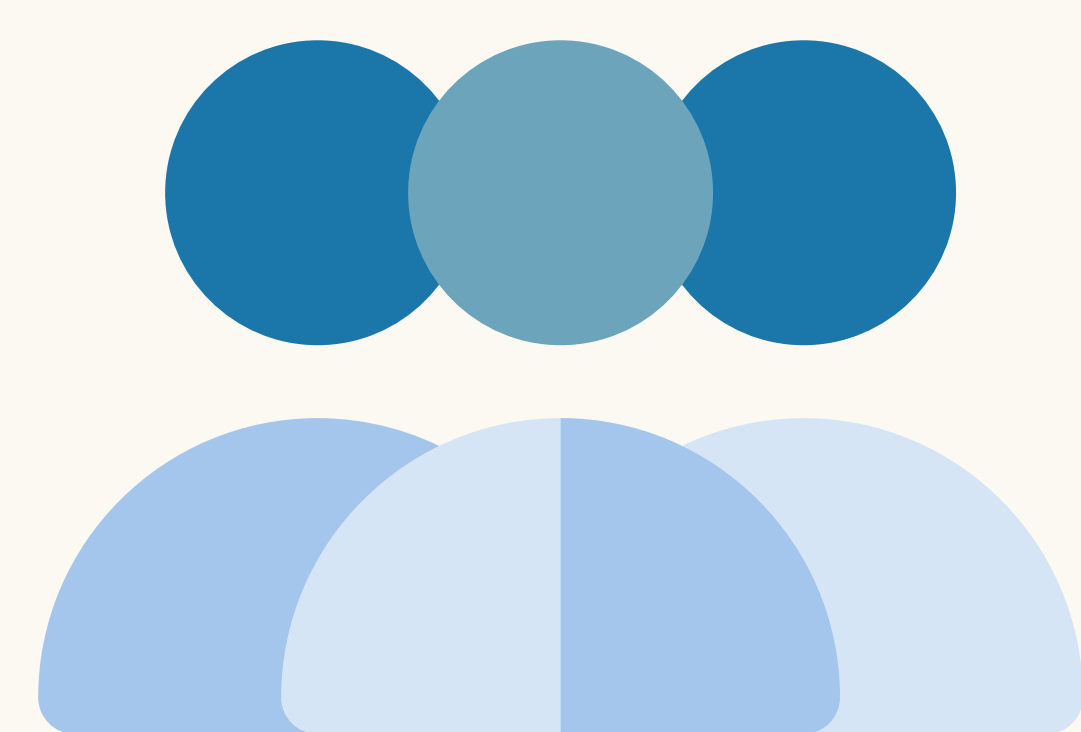
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## c. **Financial Stability:**

A stable balance sheet is a sign of financial well-being. Analysts examine the trend of a company's assets, liabilities, and equity over time to identify any unusual fluctuations. A consistent and well-structured balance sheet demonstrates financial stability and responsible management.



## d. **Working Capital Management:**



The balance sheet provides insights into how efficiently a company manages its working capital. Effective working capital management ensures that the company can maintain daily operations. Analysts monitor the level of working capital and assess whether it is sufficient to support business activities.

## e. **Growth Potential:**

Investors and stakeholders also use the balance sheet to assess a company's growth potential. A healthy balance sheet with adequate equity can be a sign that the company is well-positioned to fund future expansion and investments.



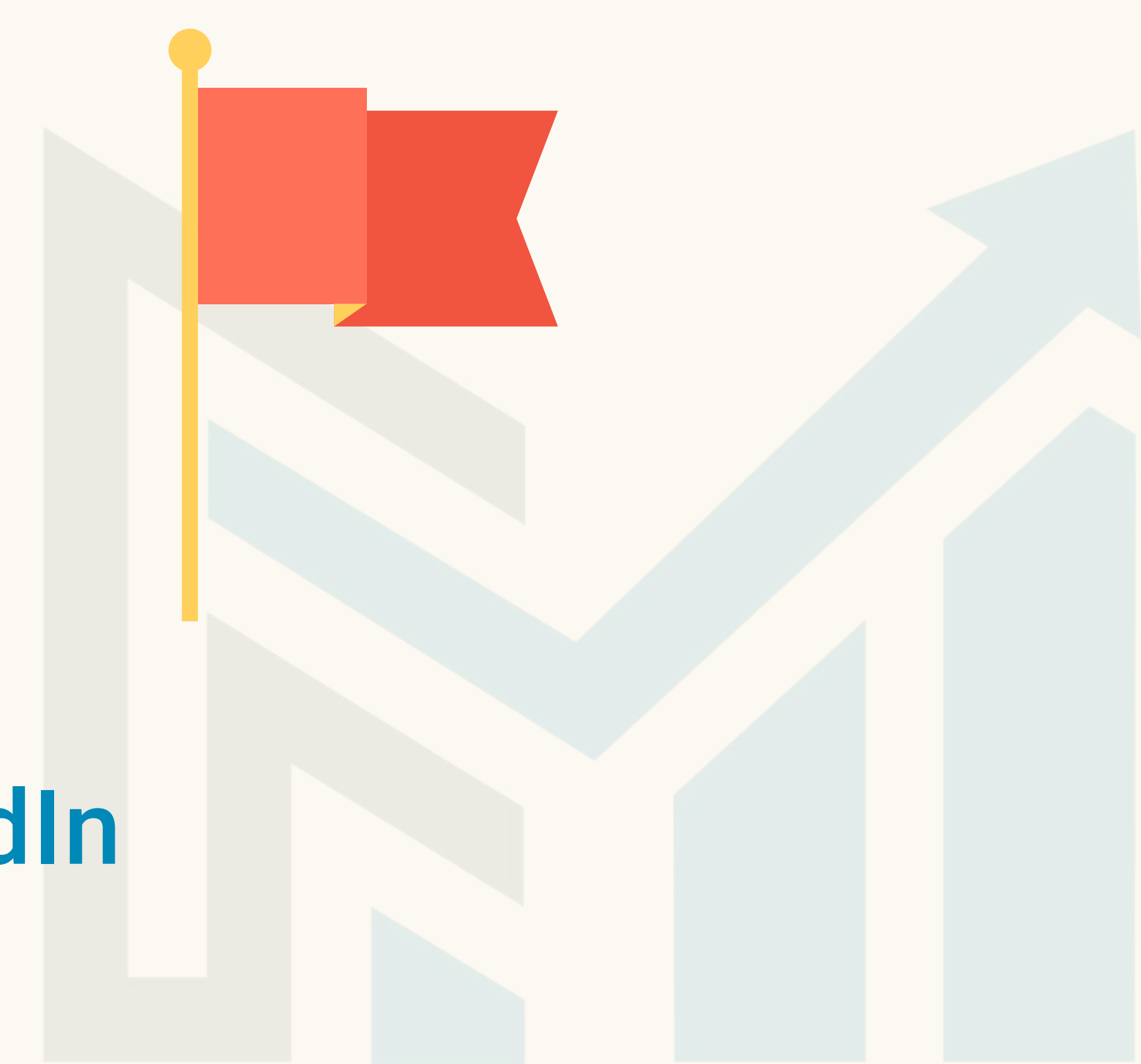
## f. **Benchmarking:**

Analysts often compare a company's balance sheet to those of its peers or industry standards. This benchmarking helps assess whether a company is in line with its industry norms or if it has specific strengths or weaknesses.



## g. **Red Flags:**

Lastly, analysts scrutinize the balance sheet for any red flags, such as excessive debt, declining equity, or irregularities in asset valuation. These red flags can indicate financial distress or potential accounting issues.





# 7.

# THE CASH FLOW STATEMENT GUIDE



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## What is a Cash Flow Statement?

The cash flow statement is a financial statement that provides a summary of a company's cash inflows and outflows over a specific period. It categorizes cash transactions into operating, investing, and financing activities.

The primary purpose of the cash flow statement is to offer insights into a company's liquidity, showing how changes in balance sheet accounts and income affect cash and cash equivalents.

## Components of Cash Flow:



### 1. Operating Cash Flow (OCF):

OCF represents the cash generated or used in a company's core operating activities. It is calculated by adjusting net income for non-cash items and changes in working capital.

$$\text{OCF} = \text{Net Income} + \text{Non-Cash Expenses (Depreciation, Amortization, etc.)} + \text{Changes in Working Capital}$$

### Positive OCF:

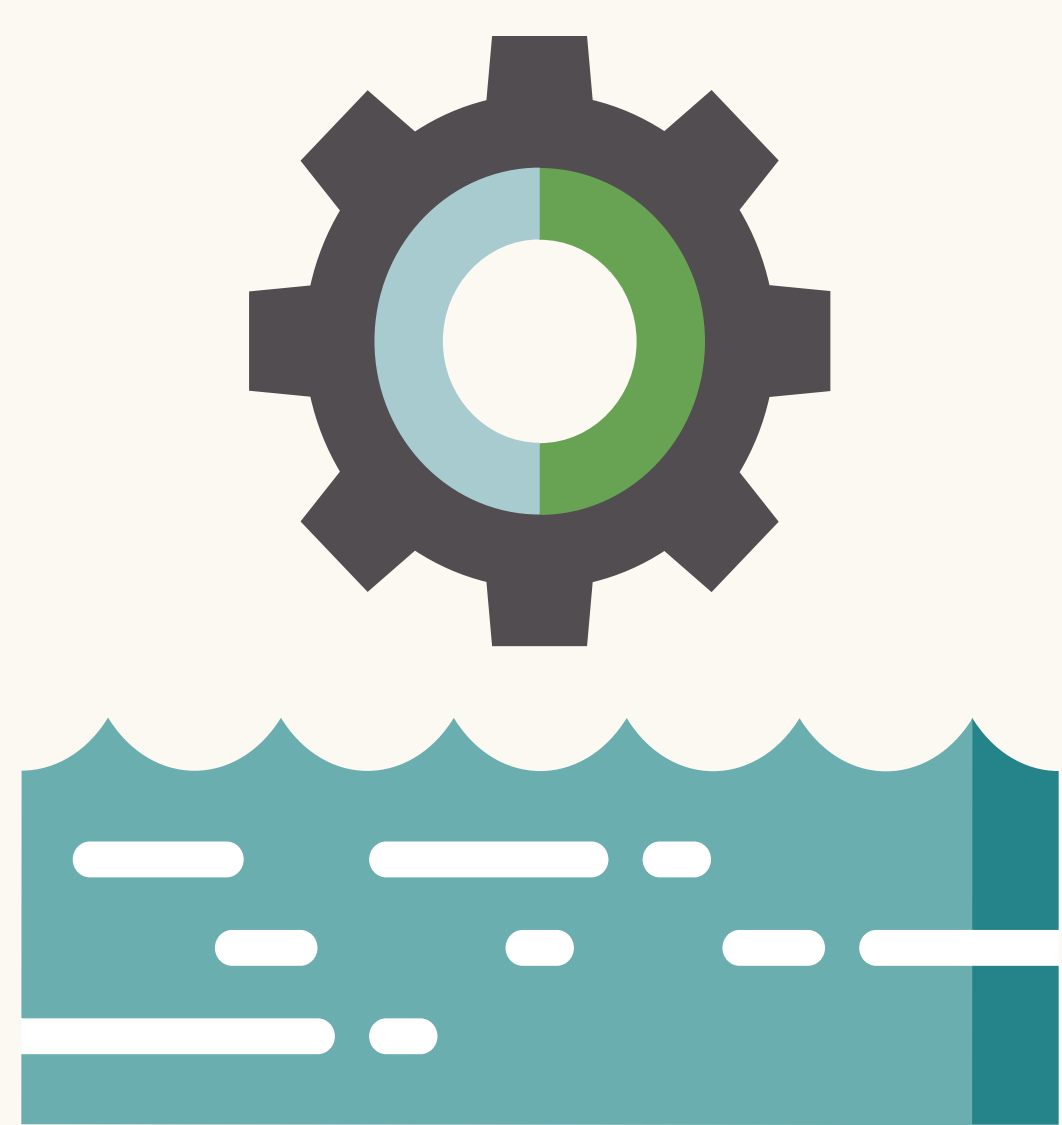
Indicates that the company is generating cash from its core business operations. This is generally a positive sign as it suggests operational efficiency and the ability to cover day-to-day expenses.

### Negative OCF:

May signal challenges in generating cash from core operations. It's important to investigate the reasons behind negative OCF, such as changes in working capital or profitability issues.

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## 2. Investing Cash Flow (ICF):

ICF involves cash transactions related to the purchase and sale of long-term assets (investments in property, equipment, securities, etc.). Positive ICF indicates asset purchases, while negative ICF indicates asset sales.

**ICF = Cash Inflows from Asset Sales – Cash Outflows for Asset Purchases**

### Positive ICF:

Can result from asset sales or strategic investments. Positive ICF from selling assets may indicate a focus on optimizing the asset portfolio. Strategic investments could signal long-term growth plans.

### Negative ICF:

Indicates capital expenditures, such as purchasing property or equipment. While necessary for growth, consistently negative ICF might warrant a closer look at capital allocation decisions.

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## 3. Financing Cash Flow (FCF):



FCF represents cash transactions with a company's owners and creditors, including equity and debt financing. It reflects changes in the company's capital structure.

**FCF = Cash Inflows from Financing (e.g., Issuing Stock, Borrowing)  
– Cash Outflows for Financing (e.g., Debt Repayment, Dividends)**

### Positive FCF:

Reflects funds raised through financing activities, such as issuing stock or taking on debt. Positive FCF can provide resources for expansion or debt repayment.

### Negative FCF:

Results from paying down debt, buying back shares, or distributing dividends. While these actions may be part of a sound financial strategy, consistent negative FCF could impact liquidity.

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## 4. Net Change in Cash and Cash Equivalents



Net Change in Cash and Cash Equivalents: Reflects the overall variation in a company's cash position over a specific period. Serves as a key indicator of a company's liquidity and its ability to generate and manage cash.

$$\text{Net Change in Cash and Cash Equivalents} = \text{OCF} + \text{ICF} + \text{FCF}$$

### Positive Change:

Indicates a net increase in cash, providing financial flexibility. Positive changes are generally favorable for a company's ability to invest, repay debt, or weather economic uncertainties.

### Negative Change:

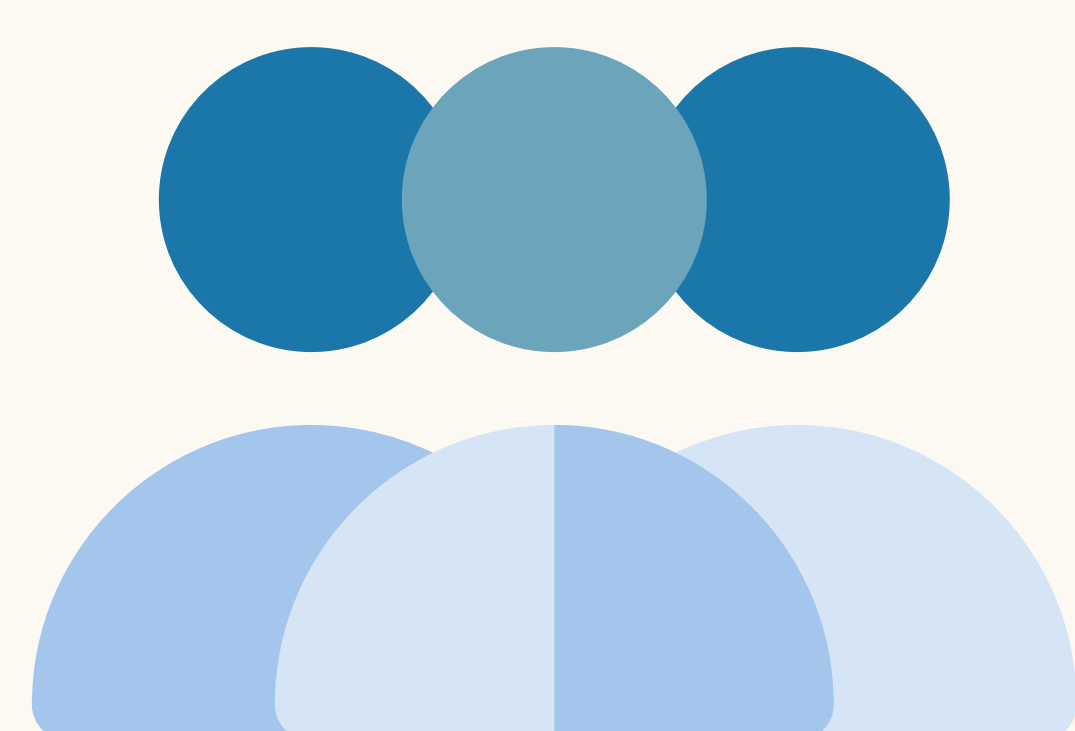
Suggests a net decrease in cash. While occasional negative changes are normal, consistent declines may indicate potential liquidity challenges.



# THE CASH FLOW STATEMENT GUIDE

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## How the Cash Flow Statement Complements Other Financial Statements:



- **Income Statement Connection:**

Bridges the gap between net income and cash generated from operating activities, offering a holistic view of profitability and liquidity.

- **Balance Sheet Connection:**

Explains changes in balance sheet items, helping users understand the impact of operational, investing, and financing activities on the company's financial position.



## Importance of the Cash Flow Statement



### 1. Liquidity Assessment:

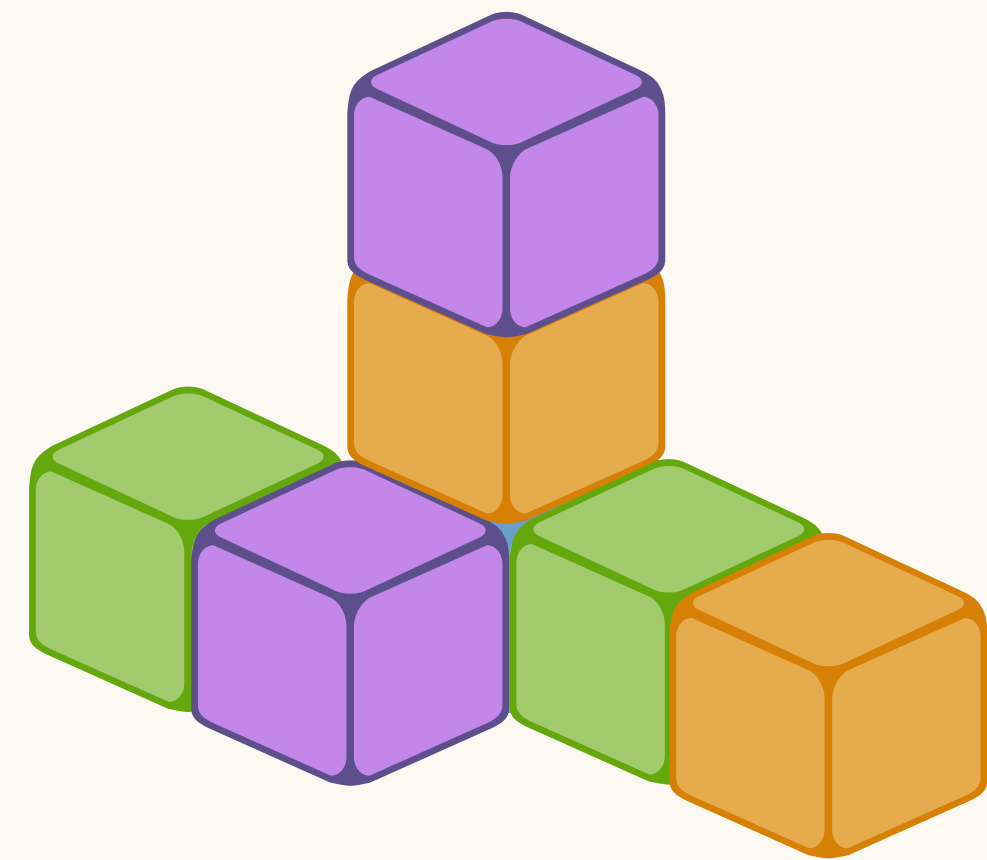
The Cash Flow Statement provides insights into a company's ability to meet its short-term obligations. By detailing cash inflows and outflows, it helps assess the company's liquidity position.

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## 2. Operational Efficiency:

- Examining the Operating Cash Flow (OCF) component reveals how well a company generates cash from its core operations. This is crucial for evaluating operational efficiency and sustainability.

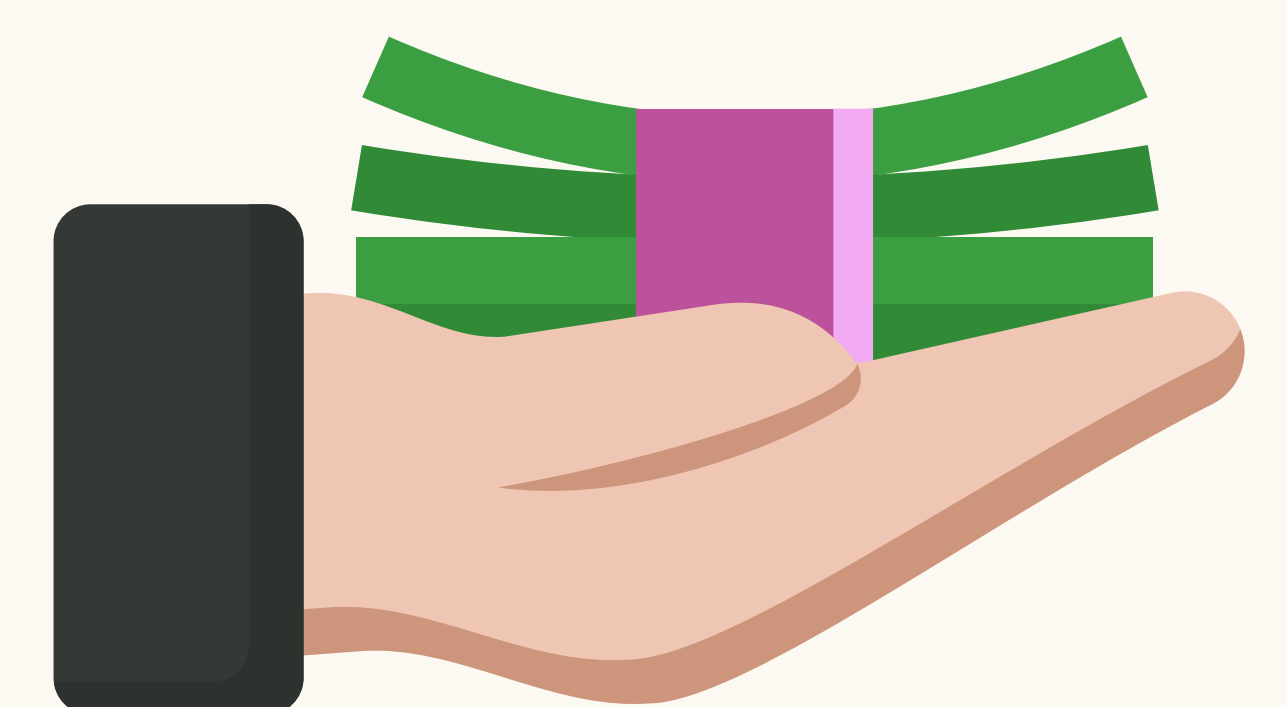


## 3. Operational Efficiency:

Examining the Operating Cash Flow (OCF) component reveals how well a company generates cash from its core operations. This is crucial for evaluating operational efficiency and sustainability.

## 4. Investment Decision-Making:

Investors use the Cash Flow Statement to evaluate a company's financial health and potential for future growth. It helps them make informed investment decisions by providing a clear picture of cash flow dynamics.



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## 4. Debt Repayment Capacity:

Lenders and creditors use the statement to assess a company's ability to service debt. A positive cash flow indicates the capacity to meet debt obligations, enhancing the company's creditworthiness.

## 5. Identification of Trends and Patterns:

Analyzing trends and patterns in cash flow over multiple periods helps in identifying potential financial issues or areas of strength. This historical perspective aids in forecasting future cash flows.



## 6. Strategic Decision-Making:

Management uses the Cash Flow Statement for strategic decision-making. It helps in determining the impact of different business activities on cash flow and guides decisions related to investments, financing, and operational changes.



## 7. Investor and Stakeholder Confidence:

Transparent and accurate cash flow reporting enhances investor and stakeholder confidence. It provides a clear understanding of how a company manages its cash resources, contributing to overall trust in financial reporting.



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## Common Cash Flow Statement Issues:

Common Cash Flow Statement issues can arise from various sources, affecting the accuracy and reliability of the financial information presented. Here are some of the common issues and ways to address them:

### 1. Neglecting Non-Cash Items:

#### Issue:

Failure to adjust for non-cash items like depreciation or amortization can lead to an inaccurate representation of actual cash flows.

#### Solution:

Ensure that non-cash items are appropriately adjusted to reflect their impact on cash flow.



### 2. Overlooking Working Capital Changes:

#### Issue:

Changes in working capital, such as receivables and payables, can significantly impact cash flow but are sometimes overlooked.

#### Solution:

Pay attention to working capital changes and include them in the cash flow calculations.

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## 3. Inconsistent Accounting Policies:



### Issue:

Inconsistencies in accounting policies, especially changes in the treatment of certain transactions, can lead to misinterpretations.

### Solution:

Maintain consistency in accounting policies to ensure accurate and comparable reporting.

## 4. Timing Differences in Revenue Recognition:

### Issue:

Timing differences between recognizing revenue and actual cash receipt can distort the accuracy of cash flow from operating activities.

### Solution:

Align revenue recognition policies with cash receipts to avoid discrepancies.



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## 5. Ignoring Financing Costs:

### Issue:

Neglecting to include financing costs in the Financing Cash Flow section can result in an incomplete representation of cash flows.

### Solution:

Ensure that all financing-related transactions, including interest payments, are appropriately accounted for.



## 6. Misinterpretation of Positive and Negative Cash Flow:



### Issue:

Misunderstanding the implications of positive and negative cash flow can lead to inaccurate assessments of a company's financial health.

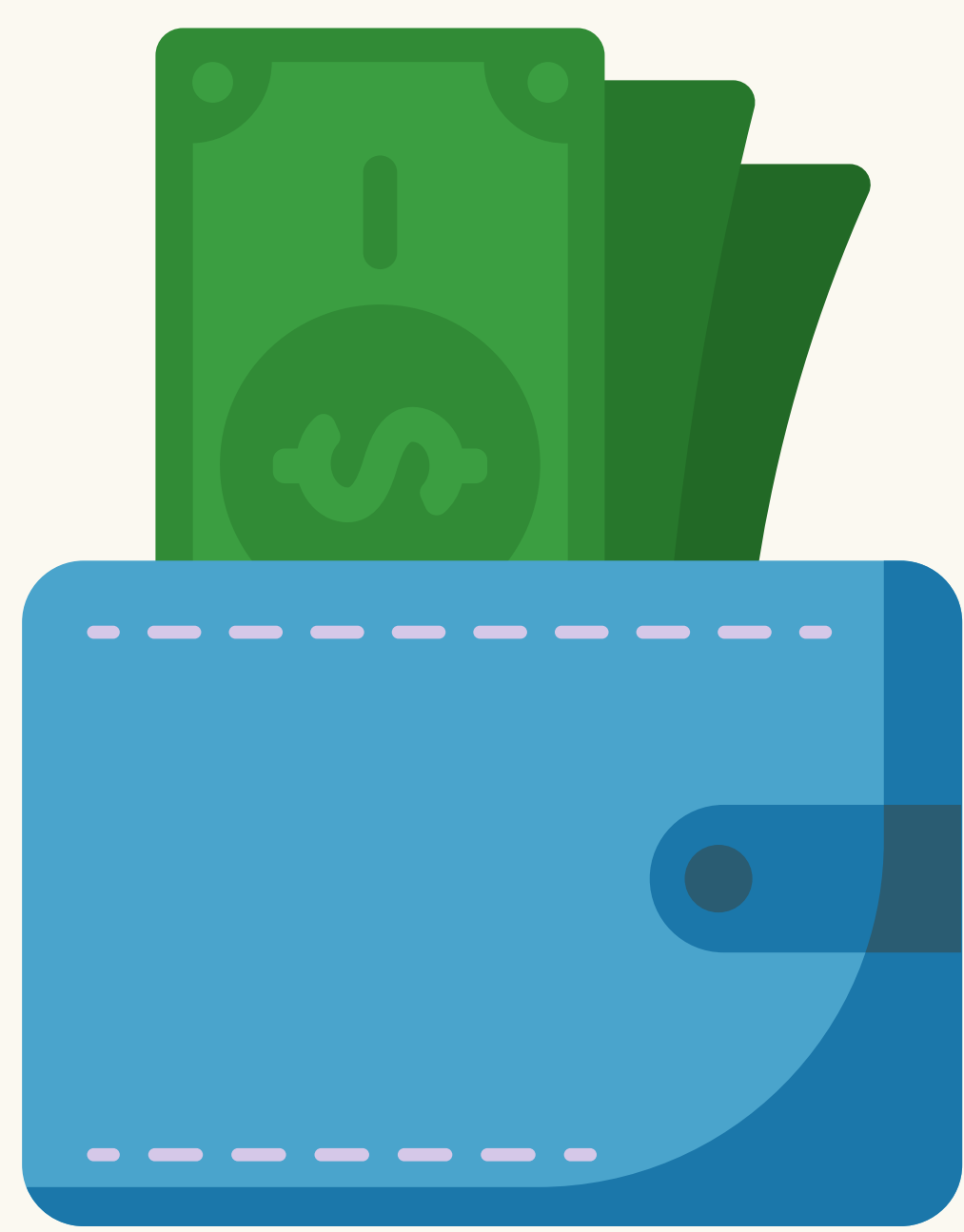
### Solution:

Provide clear explanations of the meaning and significance of positive and negative cash flows in the context of the business.

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## 7. Excluding Important Cash Flow Components:



### Issue:

Omitting relevant cash flow components, such as dividends paid or received, can result in an incomplete Cash Flow Statement.

### Solution:

Include all relevant cash flow items to ensure a comprehensive representation of cash movements.

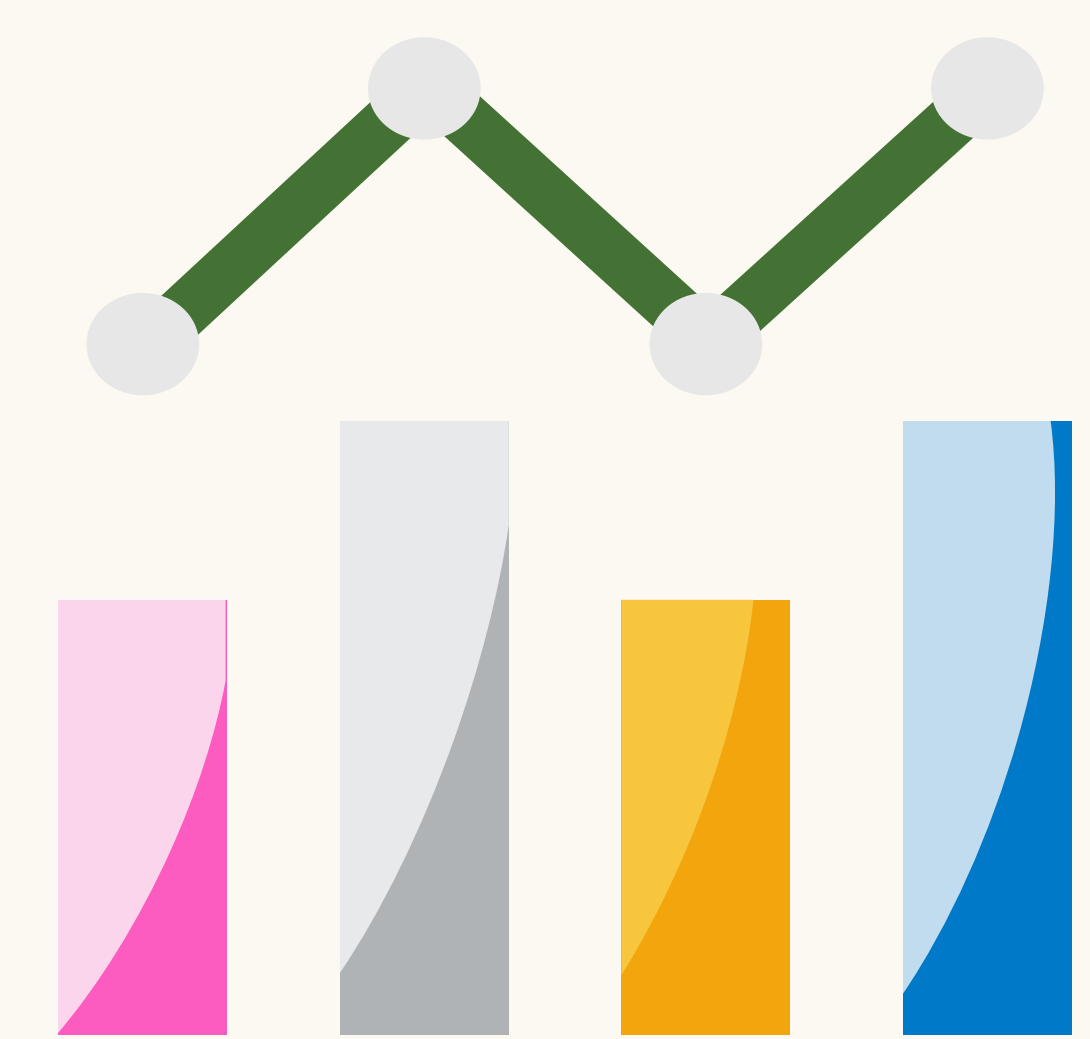
## 8. Not Considering Seasonal Variations:

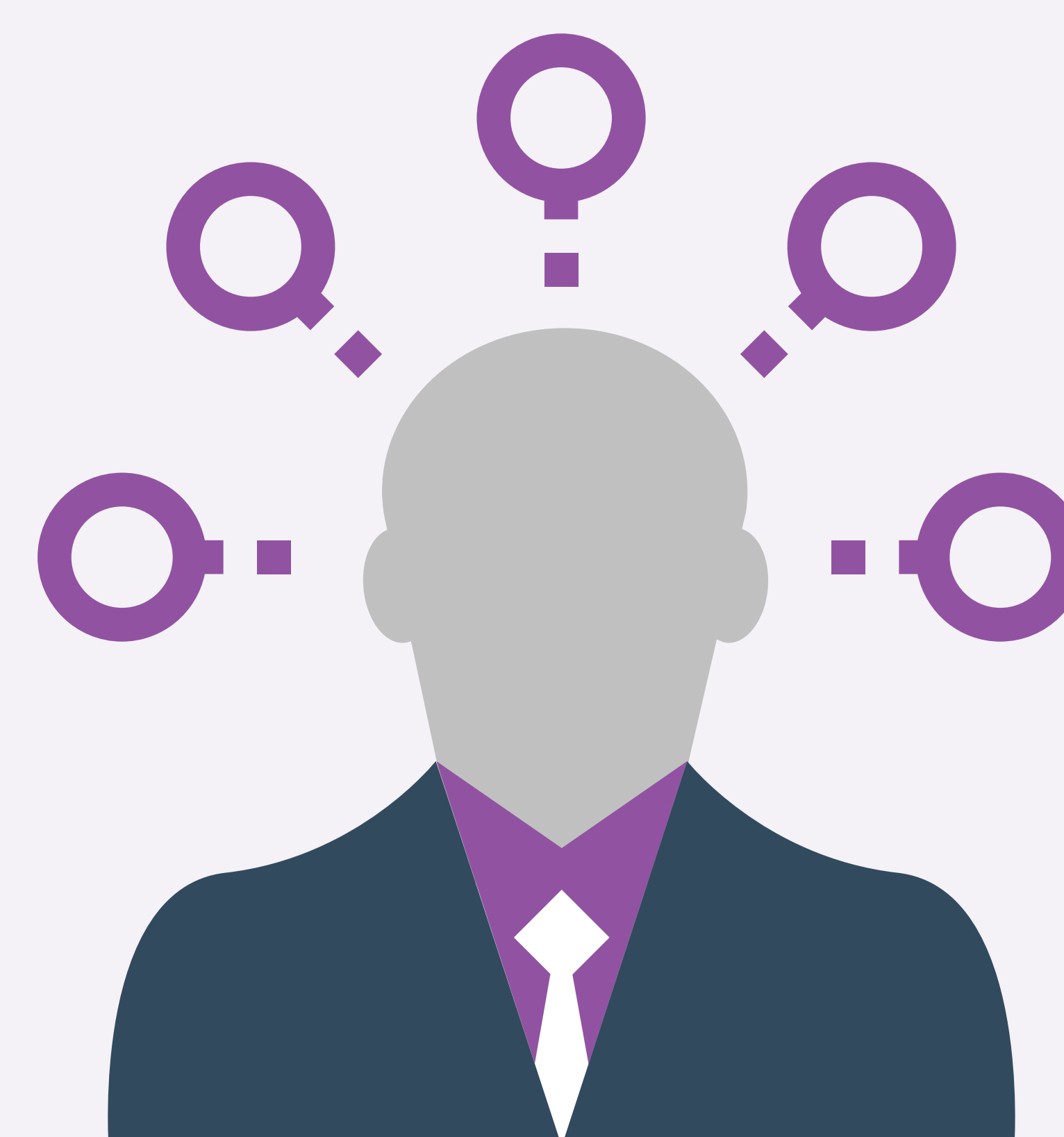
### Issue:

Failing to account for seasonal variations in cash flows can lead to misleading conclusions about a company's financial performance.

### Solution:

Analyze cash flows over multiple periods to account for seasonal variations and make appropriate adjustments.





# 8.

## THE ULTIMATE BUDGETING GUIDE

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# THE ULTIMATE BUDGETING GUIDE

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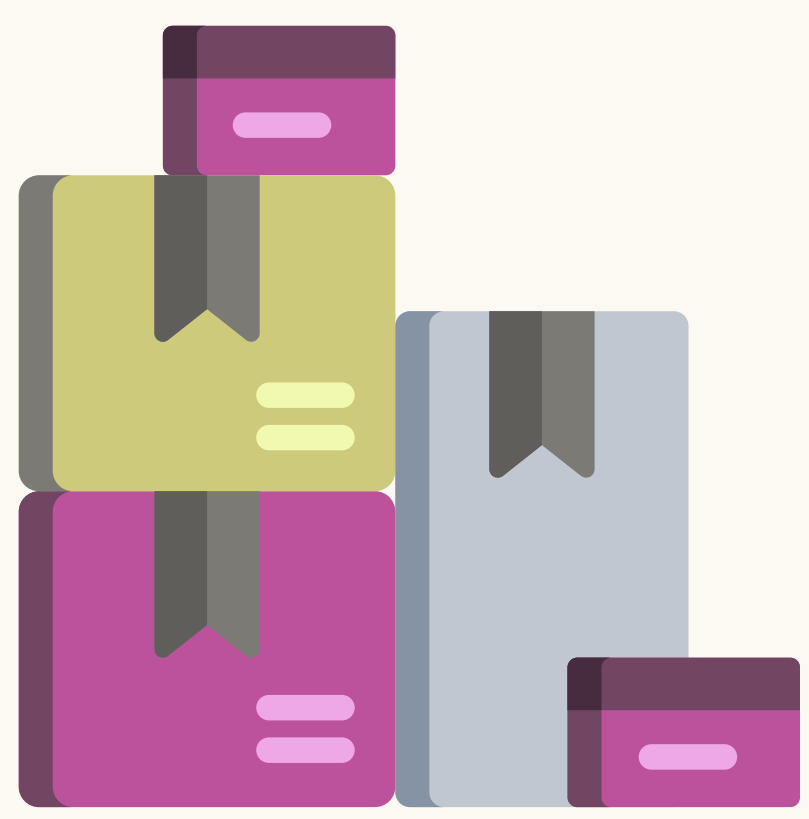
## What is Budgeting?

Budgeting is a strategic financial planning and management process used to set financial goals, allocate resources, and guide the organization's financial decisions over a specific period, typically a fiscal year.

## Key Aspects

### a. Financial Planning:

Companies use budgeting to create a roadmap for their financial activities. This includes estimating revenues, identifying costs and expenses, and setting financial goals.



### b. Resource Allocation:

Budgets help organizations allocate their financial resources to various departments, projects, and initiatives. This allocation ensures that funds are available for essential business operations.

### c. Performance Evaluation:

Budgets serve as benchmarks for evaluating the company's financial performance. By comparing actual results to the budget, businesses can identify areas where they are exceeding or falling short of their financial targets.

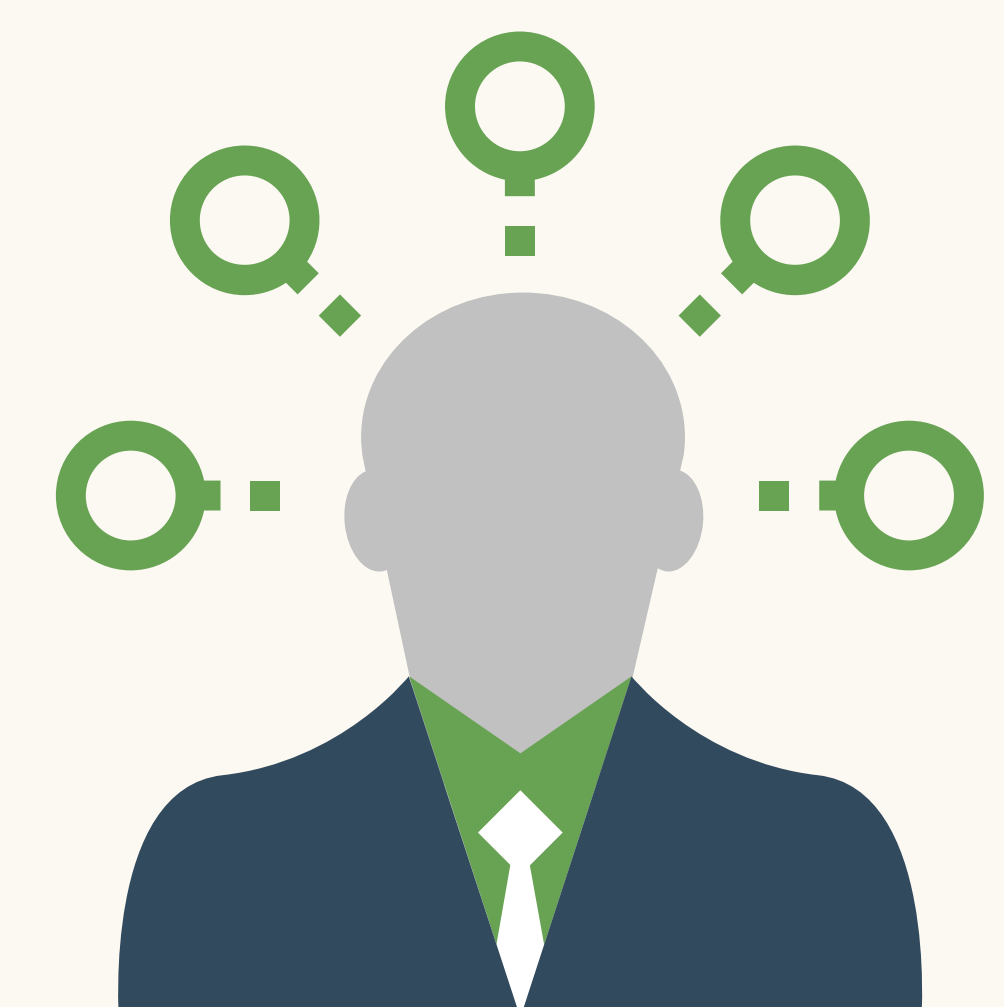


### d. Risk Management:

Budgets help companies anticipate and prepare for financial challenges and risks. They enable businesses to set aside funds for contingencies or unexpected expenses.

### e. Decision-Making:

Budgets play a crucial role in decision-making processes. They help management prioritize investments, expansion plans, and cost-saving measures based on available financial resources.



### f. Communication:

Budgets are used as communication tools within the organization. They provide a clear financial framework that all employees can follow, ensuring alignment with the company's financial objectives.

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## Budgeting Methods

The choice of a budgeting method depends on the company's objectives, industry, and willingness to adapt to changing business conditions. Each budgeting method offers a unique approach to financial planning and resource allocation. Companies often use a combination of several methods to create a budgeting approach tailored to their specific needs.

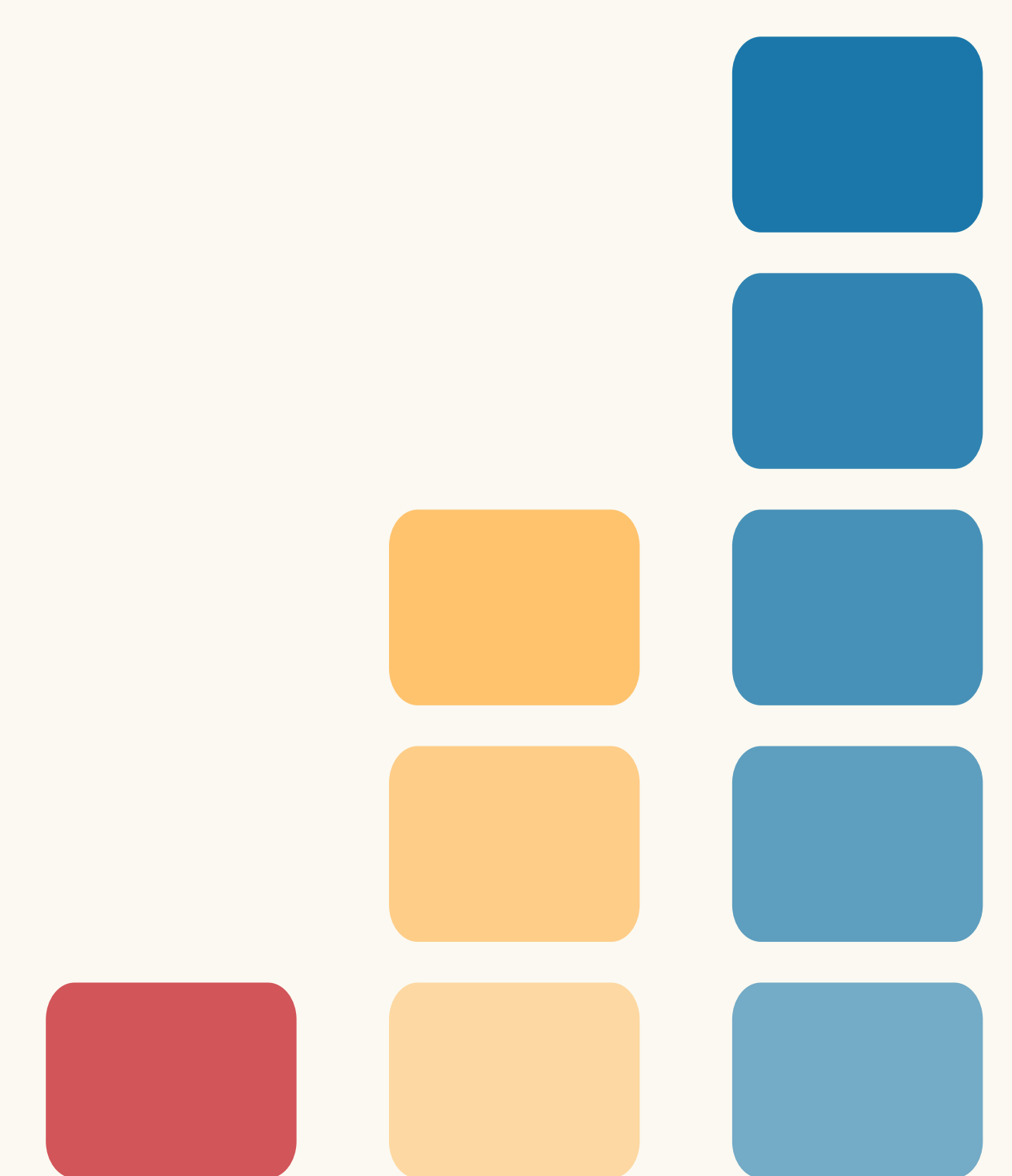
### 1. Traditional Budgeting:

Traditional budgeting involves using historical financial data as a basis for creating the budget. It often includes incremental adjustments to the previous year's budget.

**Pros:** Familiar, simple to implement, and provides stability in budgeting.

**Cons:** May perpetuate inefficiencies, lacks flexibility, and doesn't encourage innovation.

**Real-Life Example:** A manufacturing company uses the previous year's budget as a starting point for the new fiscal year with minor adjustments.



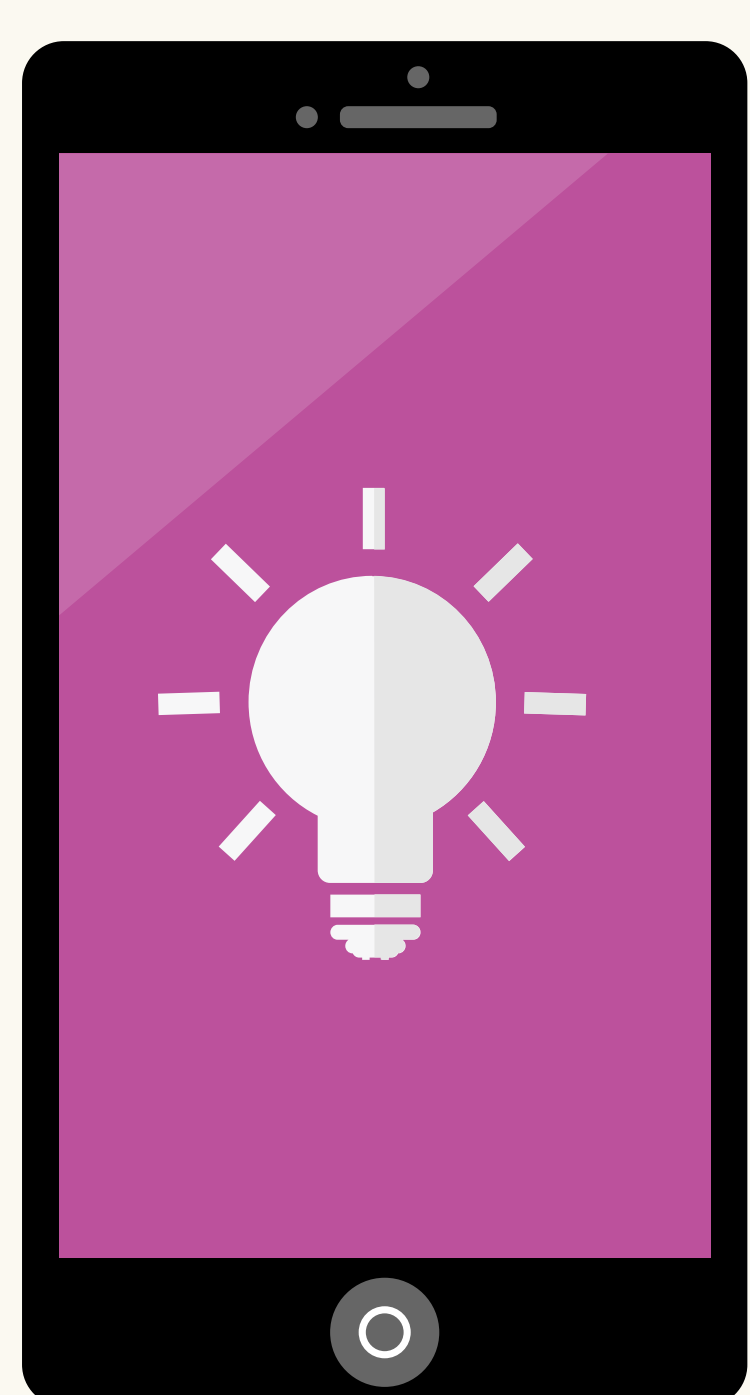
### 2. Zero-Based Budgeting (ZBB):

Zero-based budgeting requires departments to build their budgets from scratch, justifying every expense. It starts with a budget of zero, and each expense must be justified.

**Pros:** Encourages cost control, resource allocation efficiency, and elimination of unnecessary expenses.

**Cons:** Can be time-consuming, may lead to friction within teams, and requires in-depth analysis.

**Real-Life Example:** A technology company implements ZBB by requiring each department to justify its entire budget, resulting in streamlined expenses and cost savings.



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## 3. Rolling Budget (Continuous Budget):

Rolling budgets involve continuously updating the budget, typically on a monthly or quarterly basis, by adding a new budget period as one period expires.

**Pros:** Offers flexibility to adapt to changing circumstances, supports dynamic planning, and minimizes the risk of outdated budgets.

**Cons:** Requires ongoing effort and resources for continuous updates.

**Real-Life Example:** A retail chain maintains a rolling budget, continuously adjusting its projections to account for seasonality and market changes.



## 4. Activity-Based Budgeting:

Activity-based budgeting links budgeting to the activities and initiatives of the company. It allocates resources based on the planned activities and their expected costs.



**Pros:** Aligns budgeting with strategic objectives, improves resource allocation, and supports performance-based budgeting.

**Cons:** Can be complex to implement, requires a deep understanding of activities and their costs.

**Real-Life Example:** A consulting firm allocates budget resources based on specific client projects and the activities involved.

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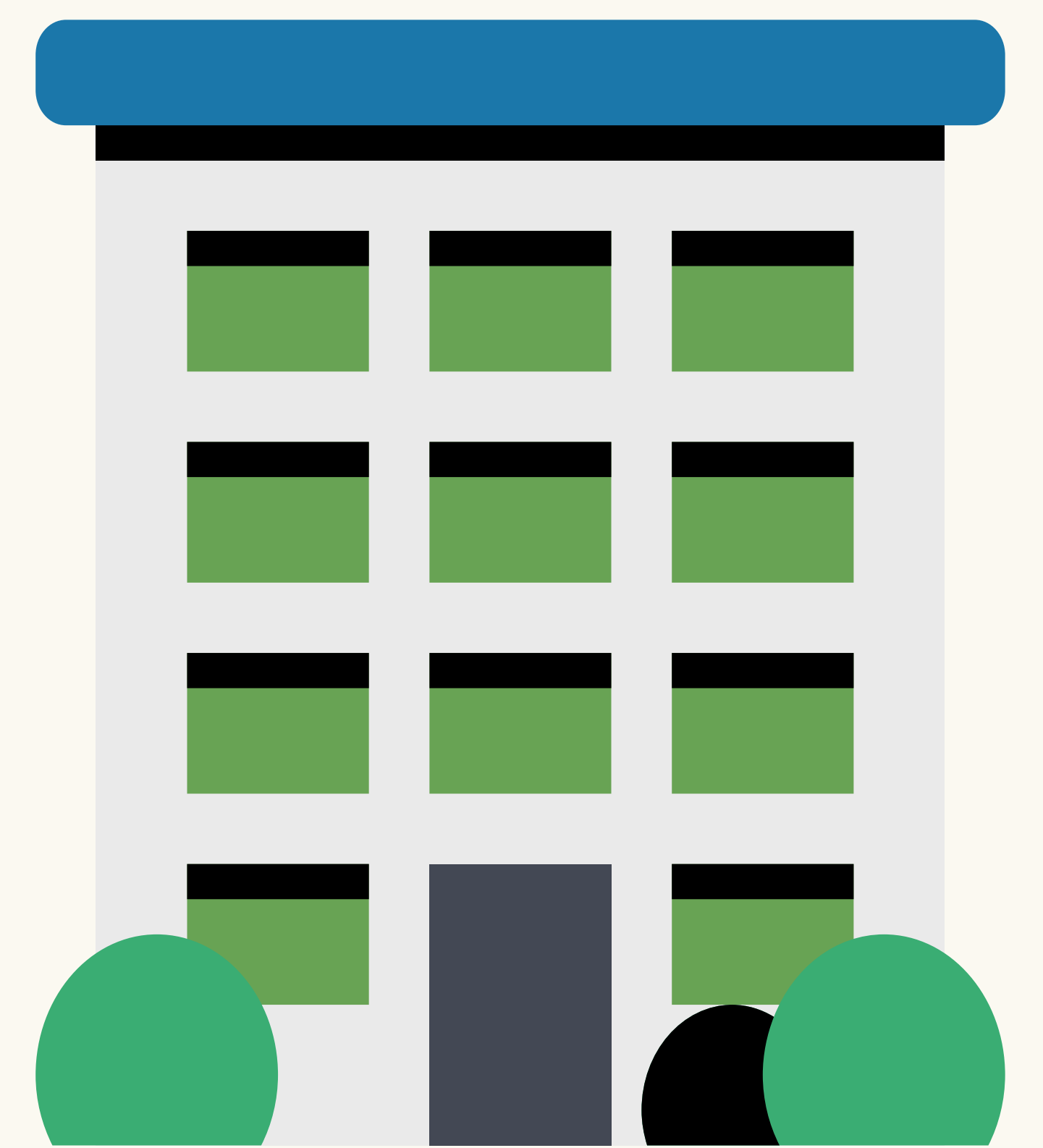
## 5. Beyond Budgeting:

Beyond Budgeting is a decentralized approach that challenges the traditional budgeting process, emphasizing adaptive and flexible management in response to changing conditions.

**Pros:** Promotes agility, adaptive decision-making, and a focus on continuous improvement.

**Cons:** May require a significant cultural shift within the organization, and can be challenging to implement in traditional settings.

**Real-Life Example:** The Scandinavian company Statoil (now Equinor) adopted the Beyond Budgeting approach, emphasizing dynamic resource allocation and performance-driven management.



## 6. Capital Budgeting



Capital budgeting focuses on budgeting for long-term investments and capital projects, such as equipment purchases, facility expansions, and infrastructure improvements.

**Pros:** Ensures proper allocation of resources for long-term growth, aligns with strategic objectives.

**Cons:** Involves complex financial analysis, may delay short-term expenses for long-term investments.

**Real-Life Example:** An automobile manufacturer budgets for a major plant expansion to increase production capacity.



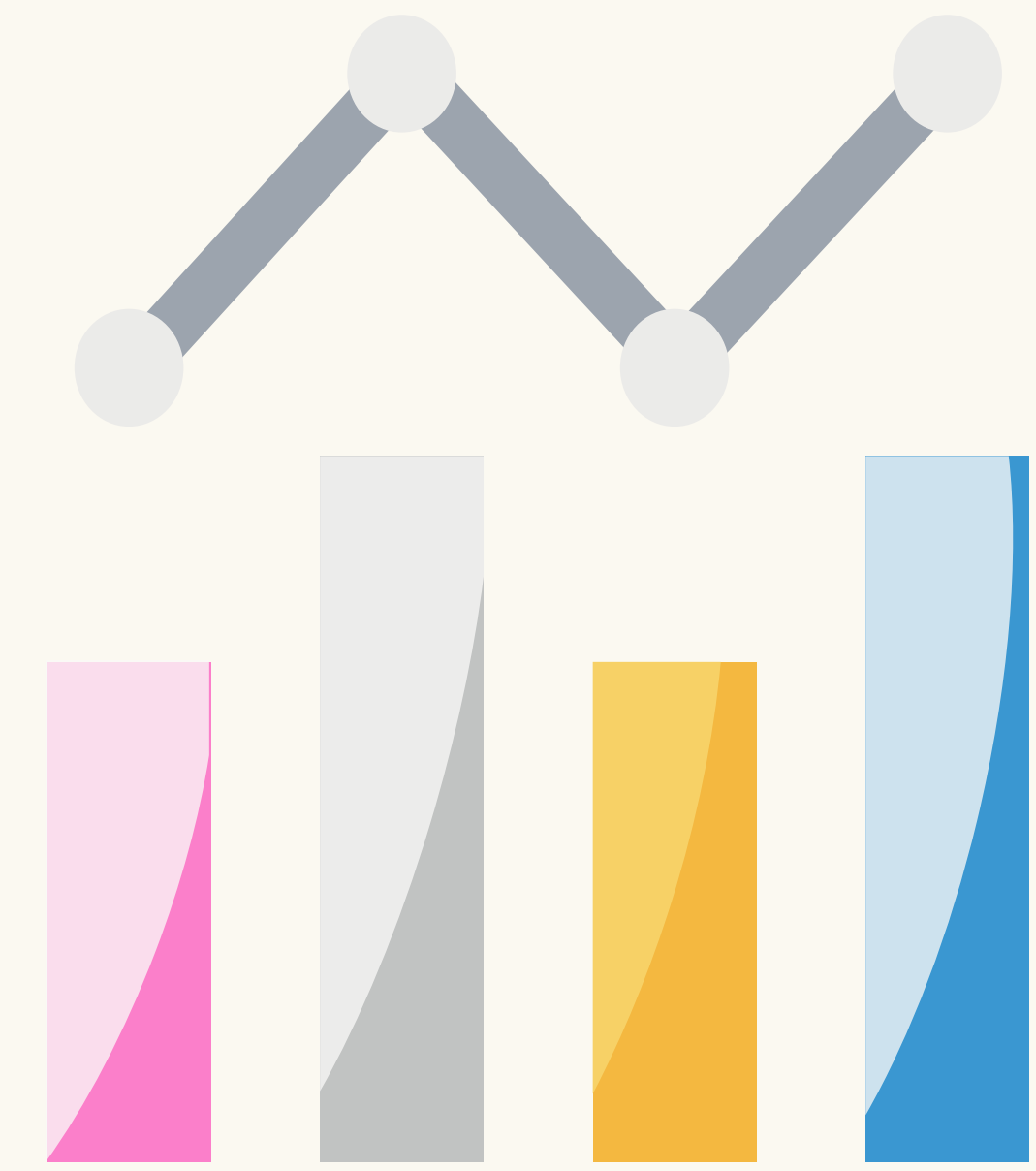
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## Key Benefits

### 1. Financial Control:

It helps companies maintain control over their finances, preventing overspending and financial instability.



### 2. Goal Achievement:

Budgets allow businesses to work toward strategic objectives, such as revenue targets, profit margins, and growth initiatives.

### 3. Resource Optimization:

By allocating resources efficiently, companies can optimize their operations and investments.



### 4. Performance Monitoring:

Budgets provide a basis for measuring performance and making informed decisions to meet financial goals.

### 5. Investor and Stakeholder Confidence:

Transparent budgeting practices can enhance investor and stakeholder confidence in the company's financial stability and growth prospects.



### 6. Regulatory Compliance:

In many industries, companies are required to adhere to budgetary guidelines and demonstrate financial responsibility to regulatory authorities.





# 9.

# INVENTORY VALUATION METHODS

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# INVENTORY VALUATION METHODS

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## LIFO (Last-In, First-Out)

LIFO is an inventory valuation method where the last items added to inventory are the first ones to be used or sold. In other words, the cost of the most recent purchases is matched against revenue, resulting in the assumption that the newest items are sold first.



---

### Usage Methods

LIFO is commonly used in industries where inventory costs tend to rise over time, such as the automotive sector.

It is suitable for companies that want to lower their tax liability by reporting higher cost of goods sold (COGS) during inflationary periods.

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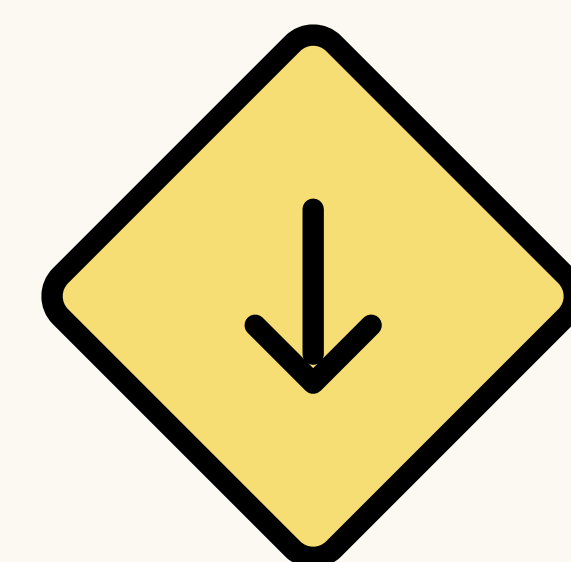
### Advantages

- Reduced tax liability during inflation.
- Matches current costs with current revenues.
- Reflects real-world scenarios in some industries.



### Disadvantages

- May not represent the actual flow of goods.
- Can result in lower reported profits during inflation.
- Complex accounting and tracking of inventory.



---

### Real-life Example

A car dealership may use LIFO during a period of rising car prices. This allows them to lower their tax liability and maintain a more accurate representation of their cost of goods sold.

# INVENTORY VALUATION METHODS

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## FIFO (First-In, First-Out)

FIFO is an inventory management method in which the first items added to inventory are the first ones to be used or sold. It assumes that the oldest items are sold first, and the cost of the oldest items is matched against revenue.



### Usage Methods

FIFO is commonly used in industries with perishable goods, such as food retail.

It is suitable for companies looking to reflect the actual flow of goods.

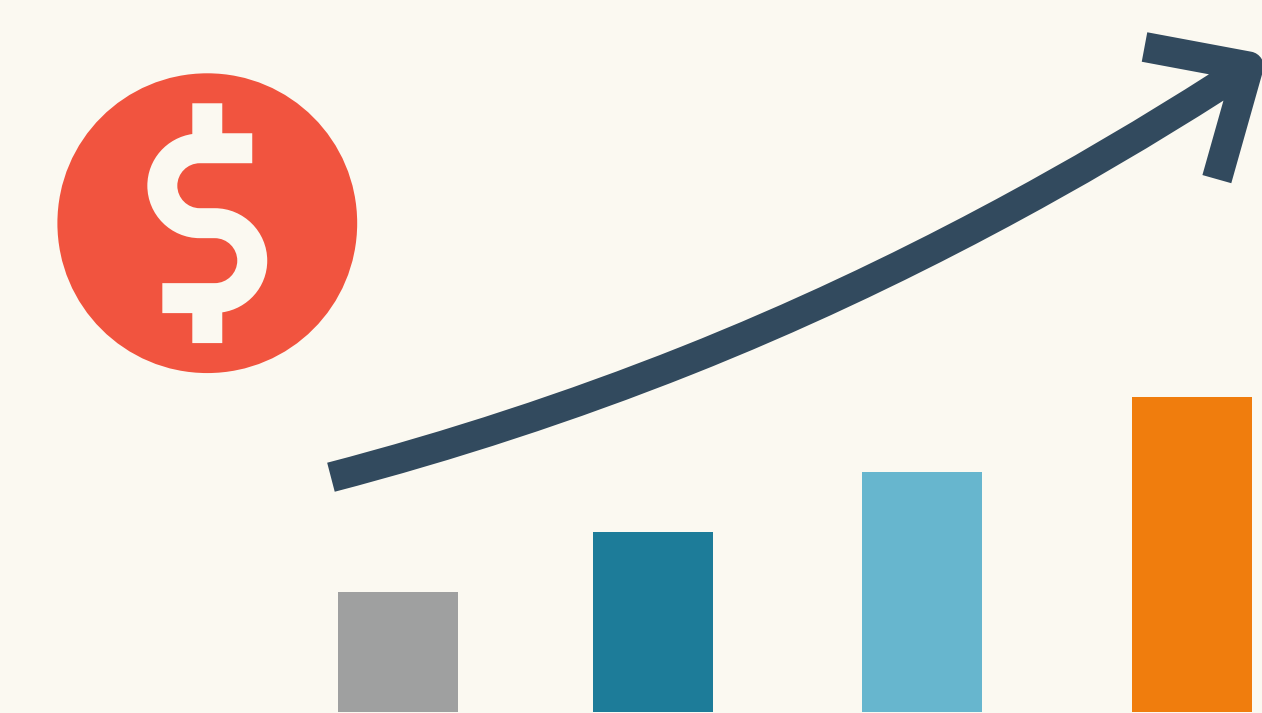
### Advantages

- Matches the actual flow of goods.
- Provides a more accurate reflection of inventory costs.
- Simpler accounting and tracking.



### Disadvantages

- Higher tax liability during inflation.
- May not represent real-world scenarios in some industries.



### Real-life Example

A grocery store typically uses FIFO for items like fresh produce. This ensures that older, perishable items are sold first, reducing waste.



# INVENTORY VALUATION METHODS

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## WAC (Weighted Average Cost)

WAC is a method of calculating the value of inventory by taking the average cost of all items in stock, regardless of when they were purchased. It provides a more balanced approach by considering the total value of inventory divided by the total quantity.



### Usage Methods

WAC is commonly used in industries where inventory costs vary but need to be averaged for simplicity and consistency.

It is suitable for companies seeking a middle-ground approach to inventory valuation.

### Advantages

- Provides a simplified yet reasonably accurate valuation of inventory.
- Reduces the impact of cost fluctuations compared to LIFO or FIFO.



### Disadvantages

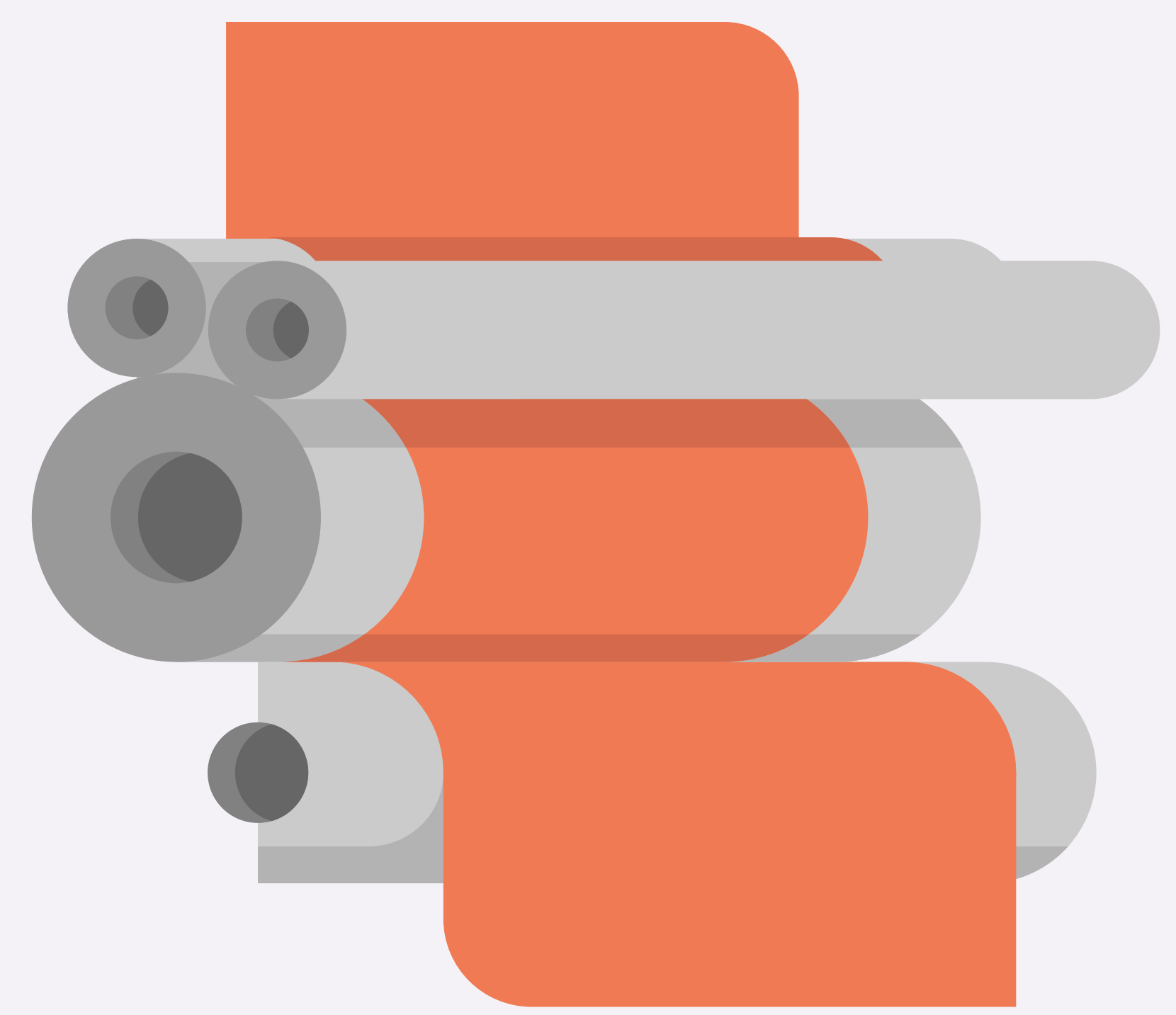
- May not accurately represent the current market value of inventory.
- Does not align with specific purchase or sales transactions.



### Real-life Example

A retail store with a diverse product range may use WAC to calculate the average cost of all items on their shelves. This helps in determining an overall cost structure and pricing strategy.

# 10.



# DEPRECIATION METHODS

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# DEPRECIATION METHODS

## 1 Straight-Line Depreciation

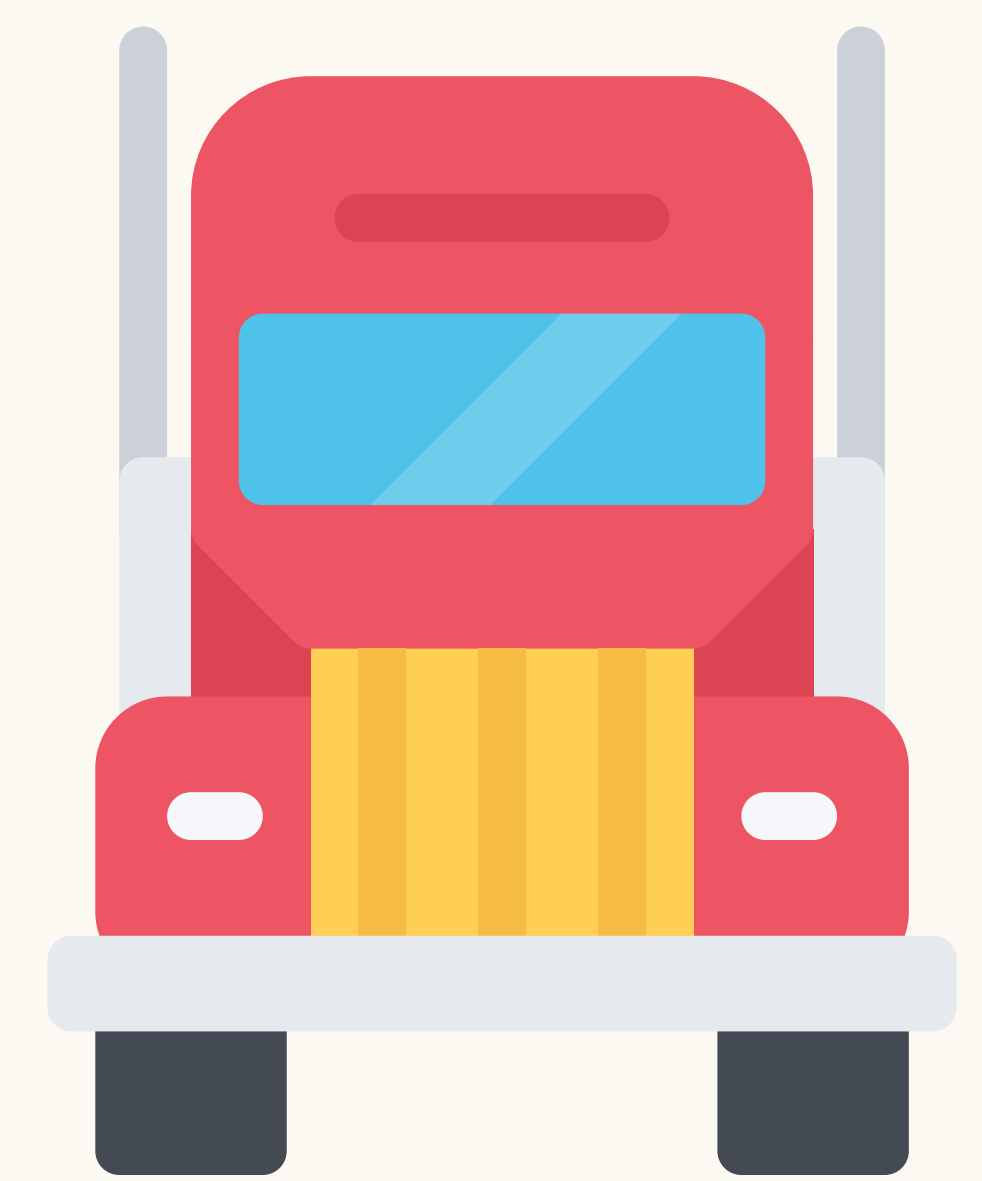
Straight-line depreciation allocates the cost of an asset evenly over its useful life. It's the simplest and most commonly used method.

### Pros

- Easy to understand and calculate.
- Provides a consistent expense over time.

### Cons

- May not reflect the asset's actual wear and tear.



### Real-life Example

A company purchases a delivery truck for \$40,000 with an estimated useful life of 5 years. Using straight-line depreciation, the company records \$8,000 in depreciation expense each year.

---

## 2 Declining Balance Depreciation

Declining balance depreciation front-loads the depreciation expense, with higher amounts in the earlier years and decreasing amounts over time.

### Pros

- Reflects the asset's higher wear and tear in the early years.

### Cons

- Can result in lower book values in later years.



### Real-life Example

A technology firm uses declining balance depreciation for its computers, acknowledging that they become outdated more quickly. This method allows them to account for this obsolescence.

# DEPRECIATION METHODS

## 3 Units of Production Depreciation

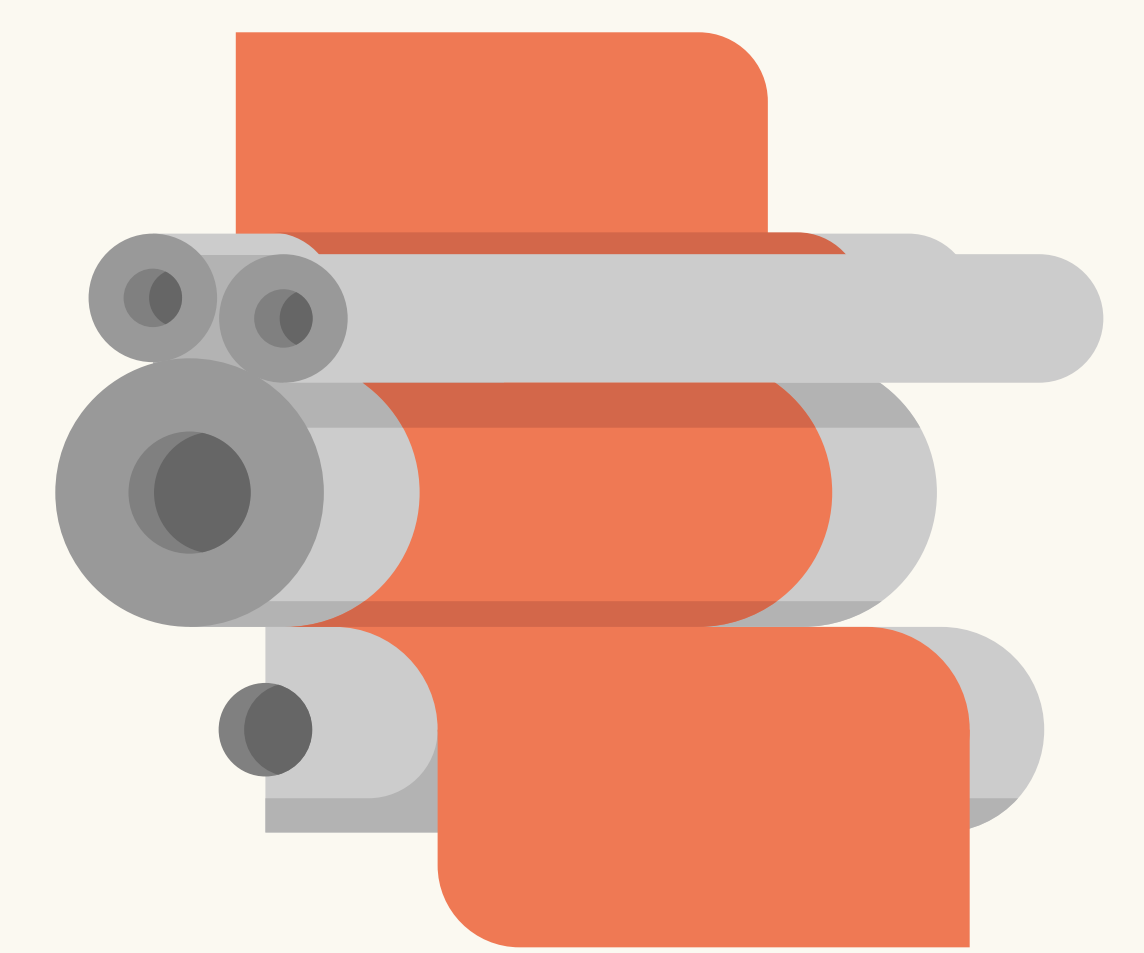
Units of production depreciation ties the depreciation expense to the actual usage or production of the asset.

### Pros

- Matches depreciation to actual asset usage.

### Cons

- Requires accurate tracking of usage.



### Real-life Example

A manufacturing company uses units of production depreciation for its production machinery. It calculates depreciation based on the number of units produced or machine hours used.

## 4 Sum-of-the-Years-Digits Depreciation

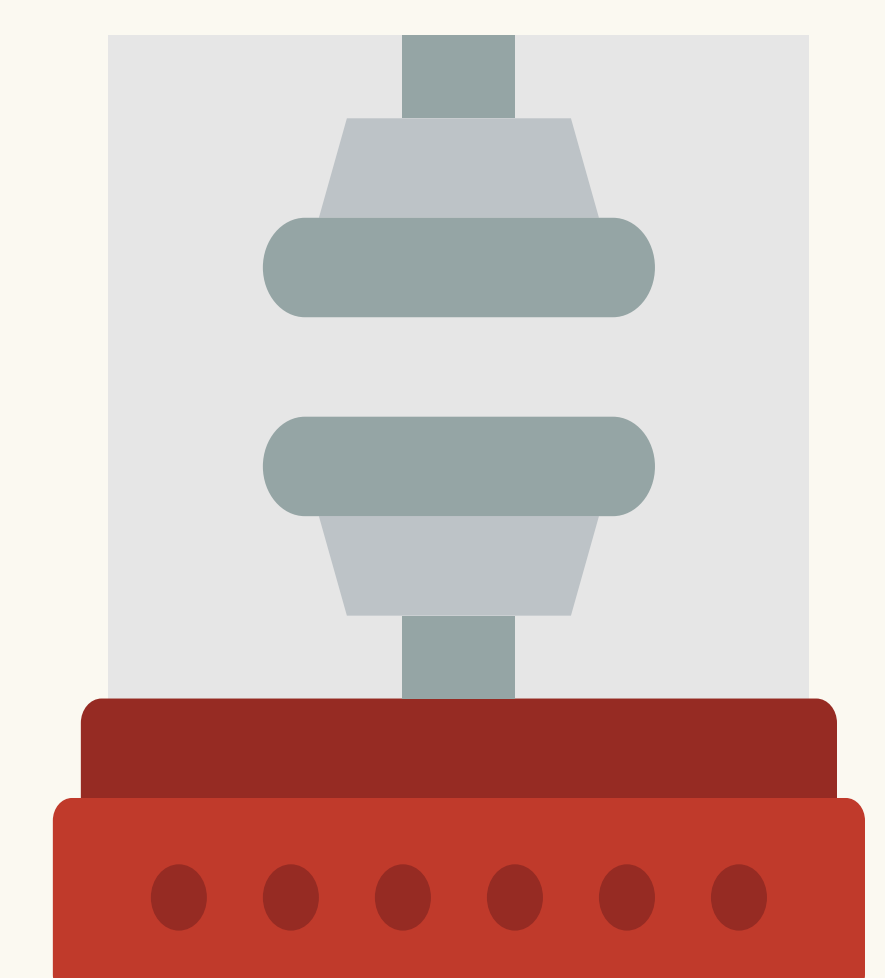
This method accelerates depreciation, with a larger expense in the earlier years and decreasing amounts over time.

### Pros

- Reflects more realistic wear and tear patterns.

### Cons

- More complex to calculate than straight-line depreciation.



### Real-life Example

A manufacturing firm employs the sum-of-the-years-digits method for its machinery, front-loading depreciation in early years to reflect the equipment's greater wear and tear as repair and maintenance costs will rise as the machinery gets old.

# DEPRECIATION METHODS

## 5 Double Declining Balance Depreciation

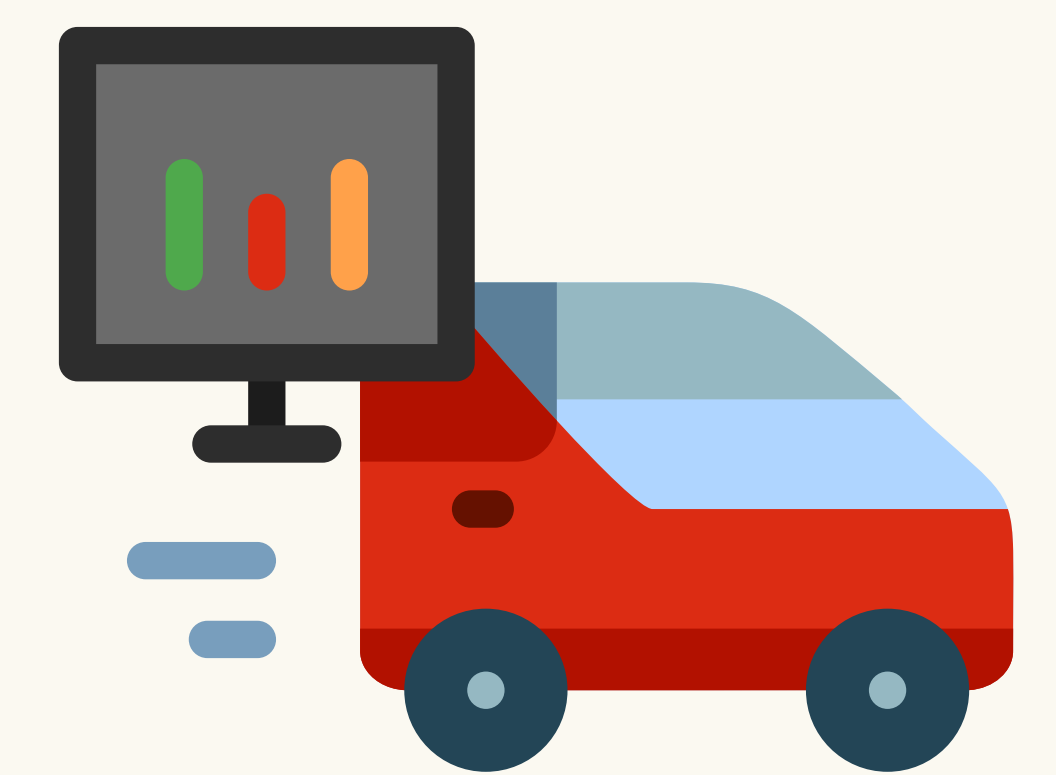
Double declining balance depreciation doubles the straight-line depreciation rate, resulting in a higher depreciation expense in the early years.

### Pros

- Reflects rapid asset obsolescence or wear and tear.

### Cons

- May lead to very low book values in later years.



### Real-life Example

An automobile company uses double declining balance depreciation for its vehicles, allocating more depreciation expense to the earlier years of the asset's life to account for its faster depreciation, which is typical for vehicles due to wear and tear.

## 6 MACRS (Modified Accelerated Cost Recovery System)

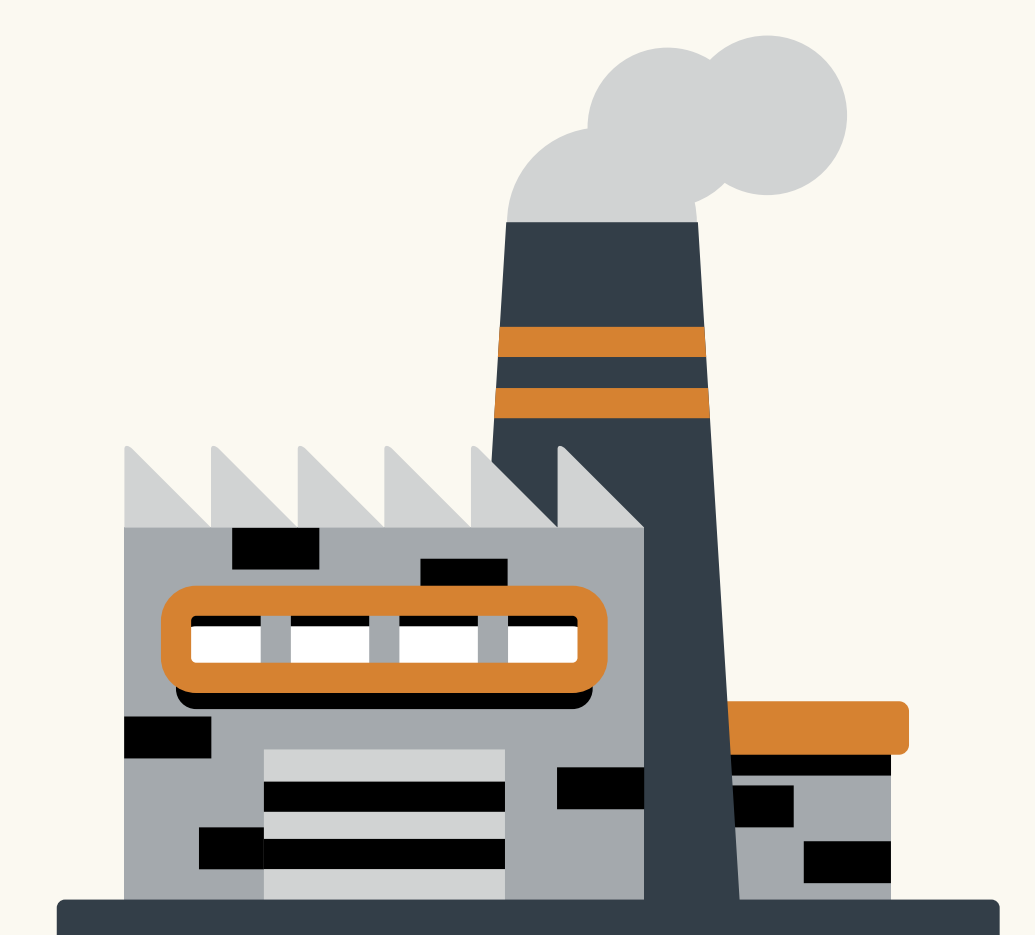
MACRS is a depreciation method used for tax purposes in the United States. It provides specific depreciation rates for various asset categories.

### Pros

- Provides tax benefits and simplifies tax compliance.

### Cons

- May not align with a company's internal accounting. (not accepted by GAAP).



### Real-life Example

An American manufacturing company uses MACRS for tax purposes to accelerate depreciation on its factory equipment.

11.



**FINANCIAL**

RATIOS

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## LIQUIDITY RATIOS

### Current Ratio

Will we have enough money to pay suppliers?

$$\frac{\text{Current Assets}}{\text{Current Liabilities}}$$

Benchmark: at least 1.00, preferably 2.00

### Quick Ratio (Acid Test)

Will we be able to pay our suppliers in the near future?

$$\frac{\text{Current Assets} - \text{Inventory}}{\text{Current Liabilities}}$$

Benchmark: 0.5 - 1.00

### Absolute Liquidity Ratio

How much of our suppliers' debts will we be able to cover with the funds in the account?

$$\frac{\text{Cash and its equivalents}}{\text{Current Liabilities}}$$

Benchmark: 0.05 - 0.20

Do not include such items in your calculations:

- short-term loans from owners,
- payments of the next period,
- unpaid dividends,
- short-term loans to owners,
- liabilities for unused leave, etc.

## BUSINESS ACTIVITY RATIOS

### Debtor Days

How quickly do our debtors pay us after the transaction?

$$\frac{\text{Average Debtors}}{\text{Turnover}} \times 365$$

### Inventory Days

How fast can we sell our stock after purchase?

$$\frac{\text{Average Inventory}}{\text{COGS}} \times 365$$

### Creditor Days

How long do our suppliers allow them to not pay for stocks after purchasing them?

$$\frac{\text{Average Creditors}}{\text{Purchases}} \times 365$$

### Cash Conversion Cycle

How long is cash tied up in inventory before the inventory is sold and cash is collected from customers?

$$\text{Inventory Days} + \text{Debtor Days} - \text{Creditor Days}$$

- To calculate average receivables or stocks, the average between the year-start and year-end balance sheets is used. Accordingly, these indicators are significantly affected by the closing balance! It is worth following them every month in your company.
- Turnover's cost of sales is not equal to production cost - the cost of purchasing and delivering items must be taken into account.
- Accounts payable should only be used for trade receivables. Depending on the situation, the bank's short-term liabilities, which are taken directly to finance inventories, can be used.
- All turnover figures are measurable in days.

# PROFITABILITY RATIOS

## Average Markup

What is the average transaction markup for this company?

$$\frac{\text{Turnover}}{\text{COGS}}$$

## Gross Margin

How many percent remain in circulation after covering all production costs?

$$\frac{\text{Gross Profit}}{\text{Turnover}}$$

## EBITDA Margin or Operating Margin

How many percent remain in circulation after covering all operating costs?

$$\frac{\text{EBITDA}}{\text{Turnover}}$$

## Net Margin

How many percent remain in circulation after covering all costs?

$$\frac{\text{Net Profit}}{\text{Turnover}}$$

## Return on Assets

How profitable are the total assets in the company?

$$\frac{\text{EBIT}}{\text{Average Assets}}$$

## Return on Equity

How profitable is the owners' investment in the company?

$$\frac{\text{Net Profit}}{\text{Average Equity}}$$

All averages are measured as the average between the beginning and the end of the year. The calculation of equity should also include owner loans to the company, unpaid dividends, deferred CIT, provisions, etc.

# CAPITAL STRUCTURE RATIOS

## Equity Ratio

Do we have enough of our own money in the company?

$$\frac{\text{Total Equity}}{\text{Total Assets}}$$

Benchmark: >20%

## Comparison rate

It is worth calculating only for competitors - what could be their interest rate in the bank? You know your own % rate from credit agreements.

$$\frac{\% \text{ payments}}{\text{Average loan balances}}$$



## Debt-Service Coverage Ratio (DSCR)

Do we earn more than we have to pay the bank?

$$\frac{\text{EBITDA}}{\% + \text{principal payments}}$$

Benchmark: >120%

## Debt/EBITDA

In how many years would the company be able to return all its loans to the bank?

$$\frac{\text{Bank loans balance}}{\text{EBITDA}}$$

Benchmark: <4.00, for long-term real estate projects - more.

To calculate the average balance sheet ratios (assets, loan balances), the average between the beginning and the end of the year balance sheet is used. Accordingly, these figures are affected by the closing balance (but not as significant as receivables, inventories or trade receivables)! It is worth following them every month in your company.

**EBITDA = earnings before interest, taxes, depreciation and amortization**

**EBITDA = net profit + CIT + % payments + depreciation + amortization**

## ALTMAN Z-SCORE

### Z-Score

What is the probability of bankruptcy of the company?

$$Z=1.2A+1.4B+3.3C+0.6D+1.0E$$

Z < 1.8. Very high probability of bankruptcy in the near future

1.8 < Z < 2.7. Moderate probability of bankruptcy in the next 2 years

Z > 2.7. Minimal probability of bankruptcy in the next 2 years

### A. Proportion of working capital

$$\frac{\text{Working Capital}}{\text{Total Assets}}$$

Share of working capital in assets

### B. Proportion of retained earnings

$$\frac{\text{Retained Earnings}}{\text{Total Assets}}$$

Proportion of retained earnings in assets

### C. EBIT Yield

$$\frac{\text{Earnings Before Interest and Tax}}{\text{Total Assets}}$$

EBIT to asset ratio

### D. Equity versus liabilities

$$\frac{\text{Market Value of Equity}}{\text{Total Liabilities}}$$

Equity to liabilities ratio

### E. Movement of assets

$$\frac{\text{Sales}}{\text{Total Assets}}$$

Asset turnover ratio

12.

WHAT  
IS **BETA**?

$\beta$

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# What is $\beta$ ?

Beta is a risk management tool, widely used in financial modeling. It demonstrates the volatility (riskiness) of an asset or a portfolio in correlation to the market. In reality, most professionals use some benchmark index, for example, S&P 500.

## Formula

The “textbook” formula for beta is:

$$\beta = \frac{\text{Covariance}}{\text{Variance}}$$

— Measures a security's return relative to the market's.  
— Indicates how the market moves in relation to its mean.

## Interpretation

It is assumed that the market has a beta of 1. If beta of a security is >1, the security is more volatile (more risky) than the market, however, in case it is <1, the stock is less volatile (less risky).

Betas are useful for calculating yields and returns for securities.

## Beta in Excel

Here are the steps to calculate Beta in Excel:

1) **Retrieve the historical price** of a security and the benchmark index in 2 separate columns. You can either export it from online sources or use the =STOCKHISTORY function.

2) **Calculate the price change** for the security in percentage with the use of this formula:

$$\Delta = \frac{\text{Current price} - \text{Price for previous date}}{\text{Price for previous date}} \times 100$$

3) **Calculate Beta** using the SLOPE function. It works the following way: SLOPE (known\_ys; known\_xs). Known\_ys stand for % of equity change range, and known\_xs mean % range of change of index. The returned value is the beta.

## Example

Assuming there is a security with a daily change in price calculated in cells L7:L52 and the daily change of an index calculated in cells Q7:Q52, the formula in Excel should look like =SLOPE (L7:L52; Q7:Q52). The returned value is the beta. In this case, the result is 0.36, implying that this particular stock is less volatile than the market.

STOCK			INDEX		
Date	Close	Change	Date	Close	Change
11.10.2021	\$ 294.23		11.10.2021	\$14,445.00	
12.10.2021	\$ 292.88	-0.4609	12.10.2021	\$14,525.00	0.550775
13.10.2021	\$ 296.31	1.1576	13.10.2021	\$14,800.00	1.858108
14.10.2021	\$ 302.75	2.1272	14.10.2021	\$14,935.00	0.903917
15.10.2021	\$ 304.21	0.4799	15.10.2021	\$14,910.00	-0.16767
18.10.2021	\$ 307.29	1.0023	18.10.2021	\$15,015.00	0.699301
19.10.2021	\$ 308.23	0.305	19.10.2021	\$15,145.00	0.858369
20.10.2021	\$ 307.41	-0.2667	20.10.2021	\$15,190.00	0.296248
21.10.2021	\$ 310.76	1.078	21.10.2021	\$15,285.00	0.621524
22.10.2021	\$ 309.16	-0.5175	22.10.2021	\$15,445.00	1.035034
25.10.2021	\$ 308.13	-0.3343	25.10.2021	\$15,465.00	0.129324
26.10.2021	\$ 310.11	0.6385	26.10.2021	\$15,475.00	0.06462
27.10.2021	\$ 308.13	-0.3343	27.10.2021	\$15,490.00	0.096837
28.10.2021	\$ 324.35	0.3638	28.10.2021	\$15,580.00	0.577664
29.10.2021	\$ 331.62	1.1923	29.10.2021	\$15,605.00	0.160205
01.11.2021	\$ 329.37	-0.6831	01.11.2021	\$15,715.00	0.699968

# 13.

# OPTIONS PRICING



## WHAT ARE OPTIONS?

**Options** are **derivative financial instruments** dependent on the value of **underlying securities**, for example, stocks. The owner of the option has the **right** but **not** the **obligation** to use the option.

## CALL VS. PUT

- A **call** option is a contract giving its owner **the right to buy** shares of a stock at a fixed price.
- A **put** option is a contract giving its owner the **right to sell** shares of a stock at a fixed price.

## AMERICAN VS. EUROPEAN OPTIONS

- If the option can be exercised **any time** before the maturity date it is called an **American** option.
- If it is only possible to exercise it **at the date** of expiration, it is termed a **European** option.

## PAYOFF VS. PROFIT

Option **payoff** implies the **gross value** of an option at the maturity date, excluding the initial transfer of the premium.

Option **profit** means showing the **net gain or loss** of a position in options by also accounting for the costs and gains of establishing the position.

## USEFUL TERMS AND ABBREVIATIONS IN OPTIONS PRICING

$S$  = The current price of the underlying stock

$C$  = The current value of the associated call

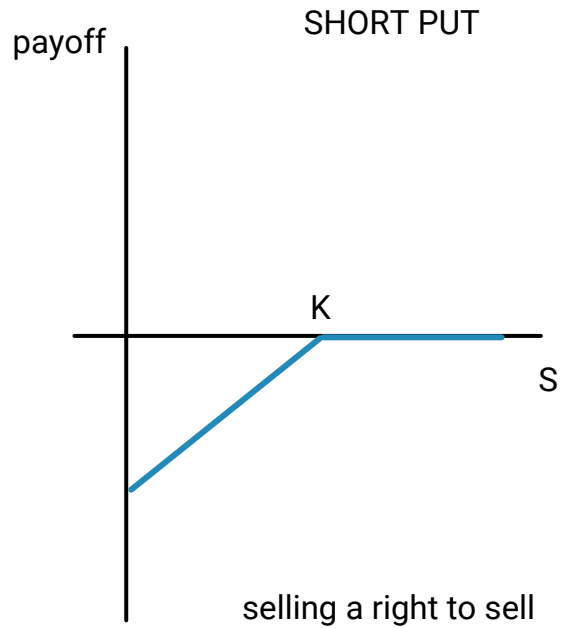
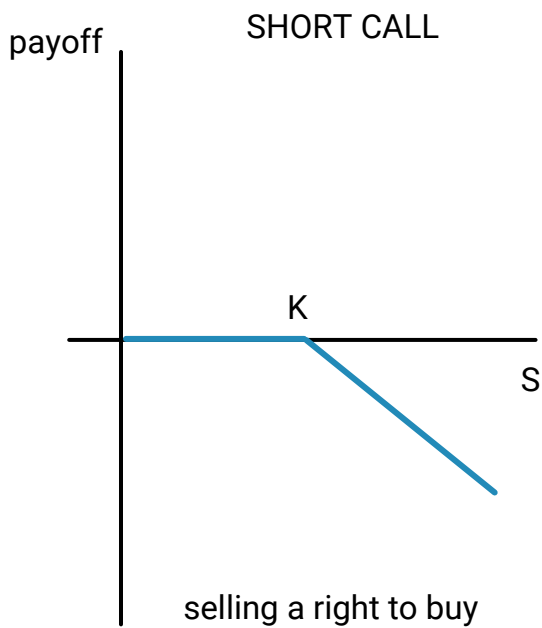
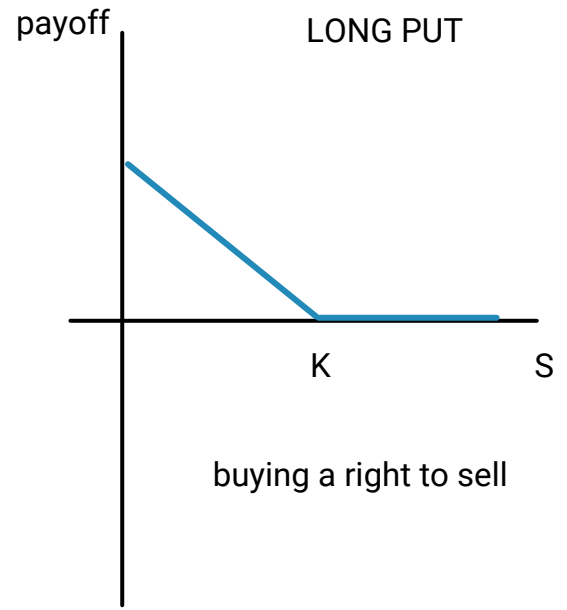
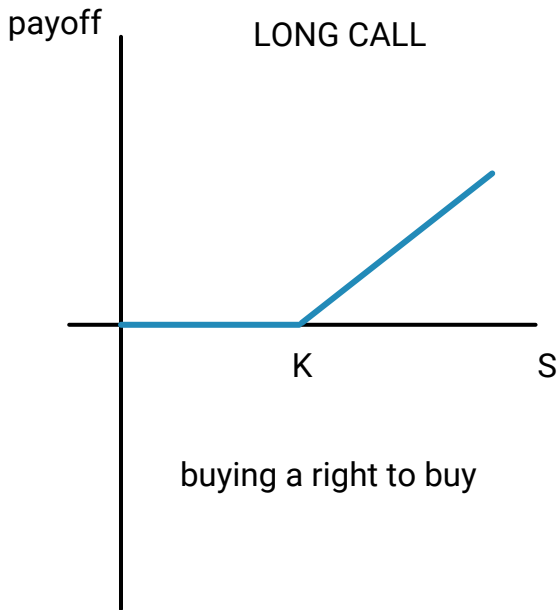
$P$  = The current value of the associated put

$K$  = The exercise price of the option (aka  $E$  or  $X$ ) - the price at which the underlying security can be bought or sold when trading options.

$r_f$  = The risk-free interest rate

$T$  = time to maturity

$\sigma$  = Standard deviation of the price of the underlying stock (not used in this stage case for simplicity)



USEFUL FORMULAS IN OPTIONS PRICING:

$r$  = annual (nominal) interest rate       $e$  = mathematical constant ~ 2.71828

$$u = e^{\text{growth rate}} \quad d = \frac{1}{u}$$

$$P_u = \frac{e^{r_f} - d}{u - d} \quad P_d = 1 - P_u$$

$u$  = upstep     $d$  = downstep     $r_f$  = annual risk-free interest rate  
 $P_u$  = probability of upstep     $P_d$  = probability of downstep

$$\text{Annual Discount Factor} = e^{-r_f}$$

$$\text{Option value} = (\text{payoff from upstep} * \text{probability of upstep} + \text{payoff from downstep} * \text{probability of downstep}) * \text{annual discount factor}$$

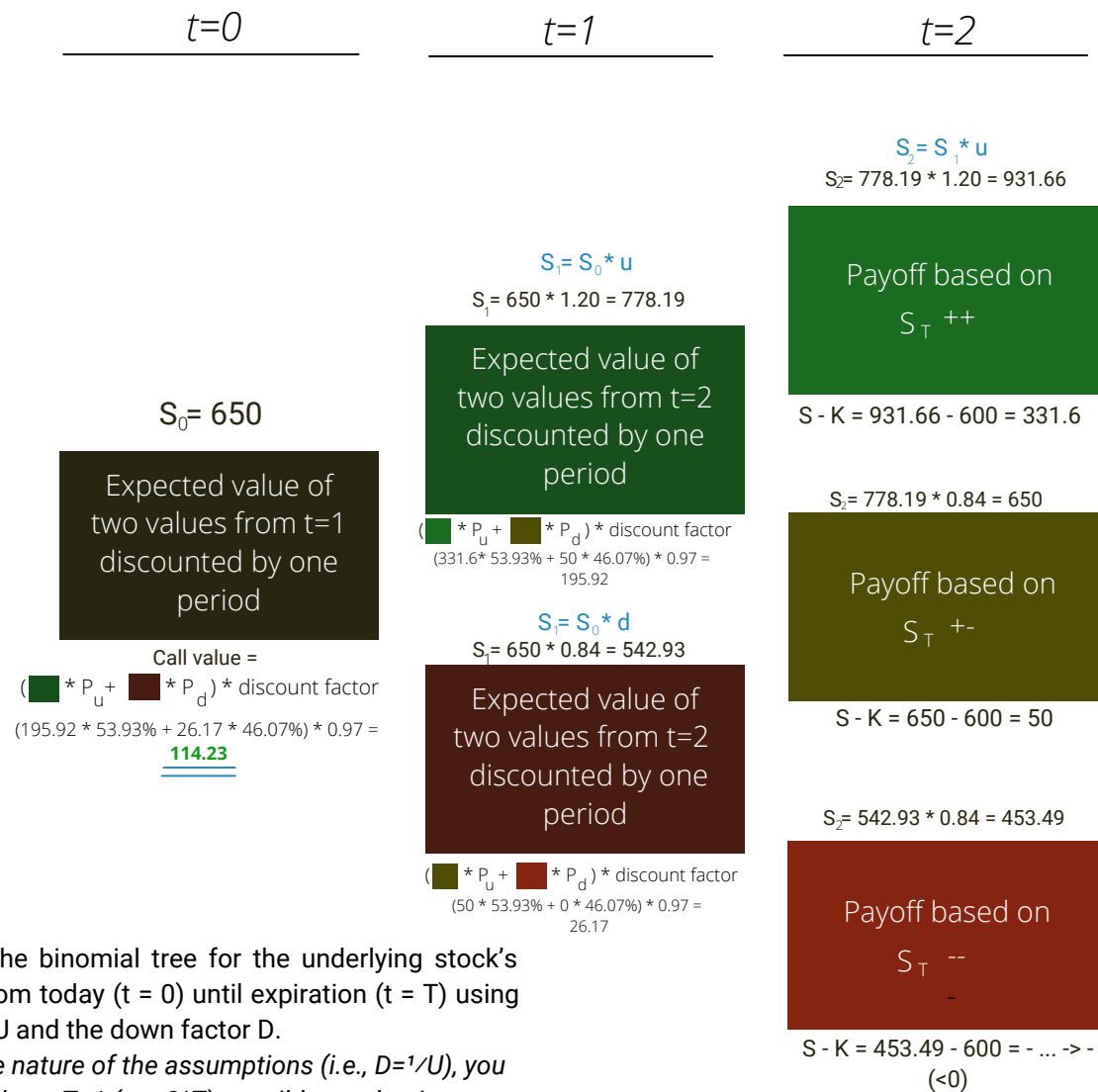
# EXAMPLE - EUROPEAN CALL OPTION

## Assumptions

Stock Price today = **650\$**  
 Annual risk-free rate = **3%**  
 Continuously compounded annualized up and down return = **18%**  
 Annual risk-free rate = **3%**  
 Strike Price = **600 \$**

## Calculations

- Annual up factor ( $u$ ) =  $e^{\text{growth rate}} = e^{18\%} = 1.20x$
- Annual down factor ( $d$ ) =  $1/u = 1/1.20 = 0.84x$
- Annual discount factor =  $e^{-r} = e^{-3\%} = 0.97$
- Up probability =  $(e^{r} - d) / (u - d) = (e^{3\%} - 1.20) / (1.20 - 0.84) = 53.93\%$
- Down probability =  $1 - \text{up probability} = 46.07\%$



1. Calculate the binomial tree for the underlying stock's share price from today ( $t = 0$ ) until expiration ( $t = T$ ) using the up factor  $U$  and the down factor  $D$ .

*NB! Given the nature of the assumptions (i.e.,  $D=1/U$ ), you should only have  $T+1$  (not  $2^T$ ) possible stock prices at time  $t=T$ .*

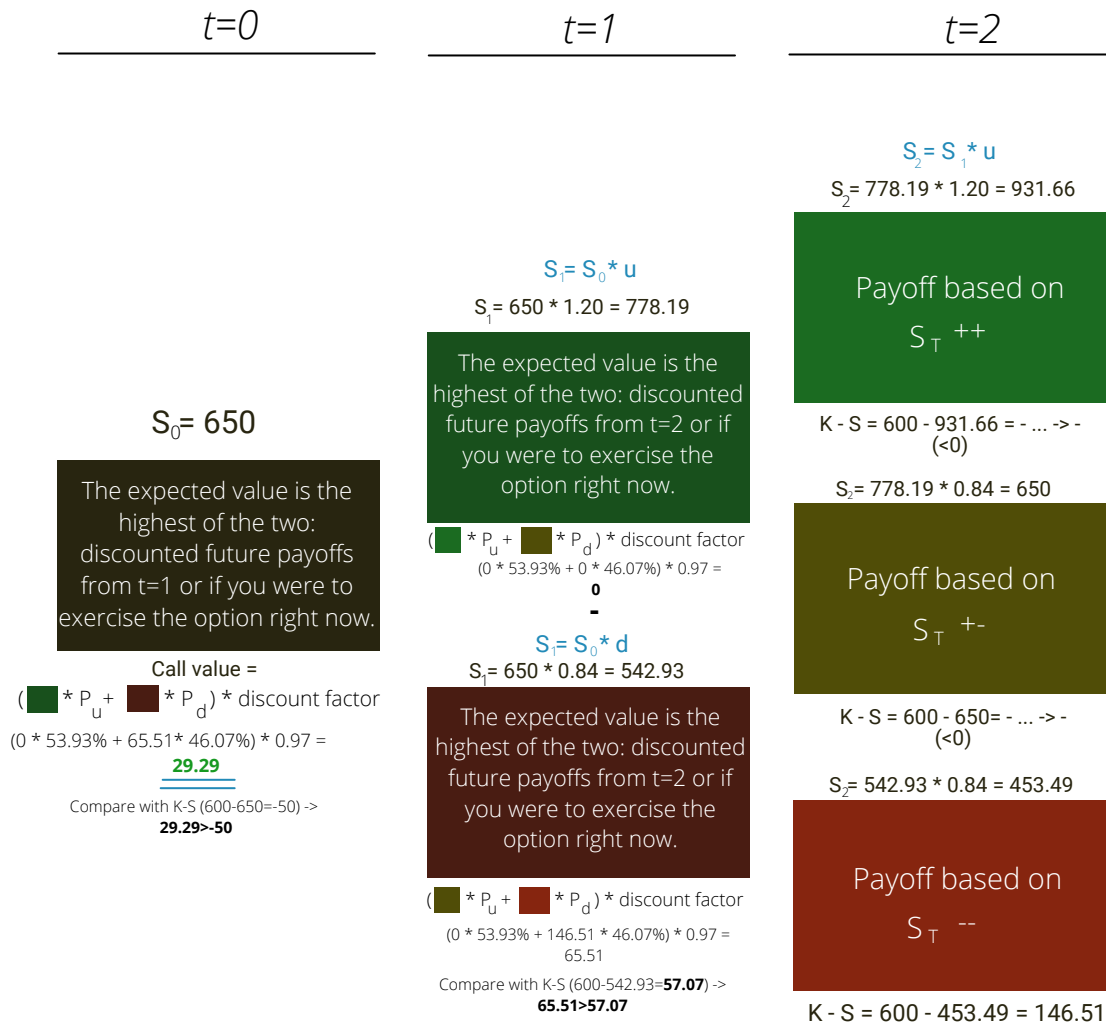
2. At  $t=T$ , compute all the possible payoffs of the option for all potential share prices at expiration based on the strike price and the nature of the option (i.e., call, put, etc.).

3. Calculate the expected option payoff at  $t=T$  using the risk-neutral up and down probabilities. Then, discount these expected payoffs using the risk-free rate ( $r_f$ ) to find the option value at  $t=T-1$  (i.e., one period prior to expiration). This value is called the continuation value of the option at time  $t=T-1$ .

*NB! These risk-neutral up and down probabilities are NOT the market consensus probabilities that the stock will go up or down.*

4. Repeat step 3 for times  $t=T-2, T-3, \dots$  until you find the value of the option at  $t=0$ . This should be the fair price of the option according to the binomial tree model.

# EXAMPLE - AMERICAN PUT OPTION (same assumptions)



1. Calculate the binomial tree for the underlying stock's share price from today ( $t = 0$ ) until expiration ( $t = T$ ) using the up factor  $U$  and the down factor  $D$ .

*NB! Given the nature of the assumptions (i.e.,  $D=1/U$ ), you should only have  $T+1$  (not  $2^T$ ) possible stock prices at time  $t=T$ .*

2. At  $t=T$ , compute all the possible payoffs of the option for all potential share prices at expiration based on the strike price and the nature of the option (i.e., call, put, etc.).

3. Calculate the expected option payoff at  $t=T$  using the risk-neutral up and down probabilities. Then, discount these expected payoffs using the risk-free rate ( $r_f$ ) to find the option value at  $t=T-1$  (i.e., one period prior to expiration). This value is called the continuation value of the option at time  $t=T-1$ .

*NB! These risk-neutral up and down probabilities are NOT the market consensus probabilities that the stock will go up or down.*

4. For American options, as they can be exercised at any time, first calculate the expected value at  $t=T$  by discounting future payoffs (step 3) and compare this value with stock minus exercise price (as if you were to exercise the option at this time). Continue further calculations with the **highest** number from these two.

5. Repeat step 3 and 4 for times  $t=T-2, T-3, \dots$  until you find the value of the option at  $t=0$ . This should be the fair price of the option according to the binomial tree model.



**14.**



**TOP**

**FINANCE KPIs**

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# ACCOUNTING KPIS YOU SHOULD KNOW

Name	Description	Formula
<b>Revenue Growth Rate</b>	Measures the percentage increase or decrease in revenue over a specific period, indicating the company's ability to generate more sales.	$\frac{((\text{Current Period Revenue} - \text{Previous Period Revenue}) / \text{Previous Period Revenue})}{1} \times 100$
<b>Net Profit Margin</b>	Measures the percentage of revenue that remains as net profit after deducting all expenses, providing insights into the overall profitability of the company.	$(\text{Net Income} / \text{Revenue}) \times 100$
<b>Return on Investment (ROI)</b>	Evaluates the efficiency and profitability of an investment by measuring the return generated compared to the initial investment.	$(\text{Net Profit} / \text{Initial Investment}) \times 100$
<b>Return on Assets (ROA)</b>	Determines the profitability of a company's assets by measuring the net income generated per unit of total assets.	$(\text{Net Income} / \text{Total Assets}) \times 100$
<b>Return on Equity (ROE)</b>	Measures the profitability of shareholders' investments by assessing the net income generated per unit of shareholders' equity.	$(\text{Net Income} / \text{Shareholders' Equity}) \times 100$
<b>Equity Ratio</b>	Assesses the proportion of a company's total assets financed by shareholders' equity.	$\text{Shareholders' Equity} / \text{Total Assets}$
<b>Current Ratio</b>	Measures the company's ability to pay its short-term obligations with its current assets, indicating its short-term liquidity position.	$\text{Current Assets} / \text{Current Liabilities}$
<b>Debt / EBITDA Ratio</b>	Assesses a company's ability to manage its debt obligations, and measures how many times the company's earnings can cover its debt payments.	$\text{Total Debt} / \text{EBITDA}$
<b>Debt Service Coverage Ratio (DSCR)</b>	Assesses the company's cash flow available to cover its debt service, including interest and principal payments.	$\text{EBITDA} / \text{Total Debt Service}$
<b>EBITDA Margin</b>	Evaluates a company's profitability and operating efficiency by measuring the percentage of revenue represented by EBITDA.	$(\text{EBITDA} / \text{Total Revenue}) \times 100$



# CASH KPIs YOU SHOULD KNOW

Name	Description	Formula
<b>Cash Flow from Operations (CFO)</b>	Measures the net cash generated or used in the business's regular operations.	Profit before Tax – Tax Paid + Non-cash Expenses (e.g. depreciation) - Changes in Working Capital
<b>Current Ratio</b>	Shows the proportion of current assets to current liabilities and indicates the company's ability to pay off short-term obligations.	Current Assets / Current Liabilities
<b>Quick Ratio (Acid-Test Ratio)</b>	Similar to the current ratio but excludes inventory, providing a more immediate measure of liquidity.	(Current Assets - Inventory) / Current Liabilities
<b>Days Inventory Outstanding (DIO)</b>	Measures the average number of days it takes for a company to sell its entire inventory.	(Average Inventory / Cost of Goods Sold) x Number of Days in the Period
<b>Days Sales Outstanding (DSO)</b>	Measures the average number of days it takes for the company to collect payments from customers.	(Accounts Receivable / Total Credit Sales) x Number of Days in Period
<b>Days Payable Outstanding (DPO)</b>	Measures the average number of days it takes for the company to pay its suppliers.	(Accounts Payable / Total Credit Purchases) x Number of Days in Period
<b>Cash Conversion Cycle (CCC)</b>	Calculates the time it takes for a company to convert its investment in inventory into cash from sales.	DIO + DSO – DPO
<b>Cash Burn Rate</b>	Indicates how quickly the company is using up its cash reserves over a specific period.	(Beginning Cash Balance - Ending Cash Balance) / Number of Months
<b>Cash Runway</b>	Measures the number of months until the cash runs out.	Current Cash Balance/ Cash Burn Rate
<b>Free Cash Flow (FCF)</b>	Represents the cash available to the company after all expenses, investments, and other cash flows have been accounted for.	Cash Flow from Operations - Capital Expenditures



# INVESTORS KPIs YOU SHOULD KNOW

Name	Description	Formula
<b>Earnings Per Share (EPS)</b>	Shows the amount of profit generated for each outstanding share of stock.	$(\text{Net Income} - \text{Preferred Dividends}) / \text{Average Outstanding Shares}$
<b>Price-to-Earnings Ratio (P/E Ratio)</b>	Indicates how much investors are willing to pay for each dollar of earnings.	$\text{Stock Price} / \text{Earnings Per Share}$
<b>Return on Equity (ROE)</b>	Measures the profitability generated from shareholders' equity.	$\text{Net Income} / \text{Average shareholders' Equity}$
<b>Debt-to-Equity Ratio</b>	Evaluates the proportion of debt financing compared to equity financing.	$\text{Total Debt} / \text{Shareholders' Equity}$
<b>Gross Margin</b>	Assesses the percentage of sales revenue remaining after deducting the cost of goods sold.	$(\text{Gross Profit} / \text{Revenue}) \times 100$
<b>Operating Margin</b>	Shows the profitability of core business operations before interest and taxes.	$(\text{Operating Income} / \text{Revenue}) \times 100$
<b>Current Ratio</b>	Measures a company's short-term liquidity and ability to meet immediate obligations.	$\text{Current Assets} / \text{Current Liabilities}$
<b>Quick Ratio (Acid-Test Ratio)</b>	Assesses a company's ability to cover short-term obligations with its most liquid assets (such as cash, cash equivalents, account receivables and marketable securities).	$(\text{Cash} + \text{Accounts Receivables} + \text{Marketable Securities}) / \text{Current Liabilities}$
<b>Return on Investment (ROI)</b>	Evaluates the return earned from an investment relative to its cost.	$(\text{Net Profit from Investment} / \text{Cost of Investment}) \times 100$
<b>Dividend Yield</b>	Measures the annual dividend income relative to the stock price.	$(\text{Annual Dividend Per Share} / \text{Stock Price}) \times 100$



# INVENTORY KPIs YOU SHOULD KNOW

Name	Description	Formula
<b>Inventory Turnover Ratio</b>	Measures how many times inventory is sold and replaced within a specific period.	$\text{Cost of Goods Sold (COGS)} / \text{Average Inventory}$
<b>Days Inventory Outstanding (DIO)</b>	Indicates the average number of days it takes for inventory to be sold.	$365 \text{ days} / \text{Inventory Turnover Ratio}$
<b>Inventory Carrying Cost</b>	Represents the expenses associated with storing and maintaining inventory. Includes costs like storage, insurance, depreciation, and opportunity cost.	$(\text{Inventory Holding Cost} / \text{Total Inventory Value}) \times 100$
<b>Stockout Rate</b>	Measures the frequency of running out of stock on a specific item.	$(\text{Number of Stockouts} / \text{Total Demand}) \times 100$
<b>Fill Rate</b>	Measures the percentage of customer orders that can be fulfilled immediately from available inventory.	$(\text{Total Orders Fulfilled} / \text{Total Orders}) \times 100$
<b>Lead Time</b>	Measures the time it takes to receive inventory after placing an order.	$\text{Order Placed Date} - \text{Order Received Date}$
<b>Inventory Accuracy</b>	Measures the accuracy of recorded inventory levels compared to actual physical inventory.	$(\text{Total Actual Inventory} / \text{Total Recorded Inventory}) \times 100$
<b>Stock-to-Sales Ratio</b>	Measures the ratio of current inventory levels to average daily sales. Helps predict if excess inventory is being held.	$\text{Current Inventory} / \text{Average Daily Sales}$
<b>Obsolete Inventory Ratio</b>	Measures the percentage of inventory that is no longer saleable or usable.	$(\text{Value of Obsolete Inventory} / \text{Total Inventory Value}) \times 100$
<b>Gross Margin Return on Inventory Investment</b>	Measures the profitability of inventory investments relative to their cost.	$(\text{Gross Margin} / \text{Average Inventory}) \times 100$



# GROWTH KPIs YOU SHOULD KNOW

Name	Description	Formula
<b>Revenue Growth</b>	Measures the increase in revenue over a specific period, typically expressed as a percentage.	$\frac{((\text{Current Revenue} - \text{Previous Revenue}) / \text{Previous Revenue}) \times 100}{}$
<b>Customer Acquisition Cost (CAC)</b>	Calculates how much it costs to acquire each new customer.	$\frac{\text{Total Cost of Sales and Marketing}}{\text{Number of New Customers Acquired}}$
<b>Customer Lifetime Value (CLV)</b>	Assesses the total value a customer brings to the company throughout their entire relationship.	$\text{Average Purchase Value} \times \text{Average Purchase Frequency} \times \text{Average Customer Lifespan}$
<b>Churn Rate</b>	Monitors the rate at which customers stop using or subscribing to your product or service.	$\frac{(\text{Number of Customers at the Start of the Period} - \text{Number of Customers at the End of the Period})}{\text{Number of Customers at the Start of the Period}}$
<b>Monthly Recurring Revenue (MRR)</b>	Tracks the predictable and recurring revenue generated.	$\text{Average Revenue Per User} \times \text{Number of Customers}$
<b>Net Promoter Score (NPS)</b>	Measures customer satisfaction and loyalty by asking how likely customers are to recommend your product or service to others.	$(\% \text{ of Promoters}) - (\% \text{ of Detractors})$
<b>Customer Satisfaction Score (CSAT)</b>	Measures the level of satisfaction that customers have with your product, service, or overall experience, typically measured through surveys.	$\frac{(\text{Number of Satisfied Responses} / \text{Total Responses}) \times 100}{}$
<b>Market Share</b>	Evaluates your company's portion of the total market in terms of revenue.	$\frac{(\text{Your Company's Sales} / \text{Total Market Sales}) \times 100}{}$
<b>Customer Retention Rate</b>	Determines the percentage of customers who continue to use your product or service over time.	$\frac{((\text{Number of Customers at the End of the Period} - \text{Number of New Customers Acquired}) / \text{Number of Customers at the Start of the Period}) \times 100}{}$
<b>Gross Margin</b>	Calculates the percentage of revenue remaining after deducting the cost of goods sold (COGS), which reflects your profitability.	$\frac{((\text{Revenue} - \text{Cost of Goods Sold}) / \text{Revenue}) \times 100}{}$

15.



**ACCOUNTING** VS  
**FINANCE**

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# ACCOUNTING VS FINANCE

Focuses on recording, classifying, and interpreting financial transactions.

## Definition

Concentrates on managing assets and liabilities, making investment decisions, and studying market trends.

Prepares financial statements.  
Manages bookkeeping, accounts payable/receivable, and financial record-keeping.

## Core Functions

Manages budgets and financial planning. Evaluates investment opportunities, conducts risk analysis, & makes strategic financial decisions.

Historical in nature, dealing with past transactions and financial events.

## Focus on Time

Forward-looking, concentrating on future financial planning, investment, and risk management

Broad, covering all financial transactions within an organization.

## Scope

Strategic, focusing on optimizing the financial health and wealth of the organization.

Generates reports for internal and external stakeholders, ensuring accuracy & compliance.

## Reporting

Produces reports for management, investors, and regulatory bodies, focusing on financial strategy and decision-making.

Uses standardized principles and accounting standards.

## Tools and Techniques

Involves financial modeling, forecasting, and various valuation techniques.

Careers include roles such as CPA, auditor, or forensic accountant.

## Career Paths

Careers span financial analyst, investment banker, financial planner, and risk manager.

Governed by accounting standards like GAAP.

## Regulation

Adheres to regulatory frameworks and financial market rules.

Provides accurate and reliable financial information for decision-making.

## Main Goal

Maximizes shareholder value, manages risks, and ensures financial sustainability.



16.



**EBIT** vs  
**EBITDA**

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# EBIT vs EBITDA

## Earnings Before Interest and Taxes

## Earnings Before Interest, Taxes, Depreciation, and Amortization

Represents a company's operating profit, excluding interest and taxes.

### Definition

Measures a company's operating performance, excluding interest, taxes, depreciation, and amortization.

$EBIT = \text{Net Income} + \text{Interest} + \text{Taxes}$ .

### Formula

$EBITDA = \text{Net Income} + \text{Interest} + \text{Taxes} + \text{Depreciation} + \text{Amortization}$ .

Measures a company's profitability based on its core operations without the impact of financing decisions or tax considerations.

### Focus

Provides a broader view of a company's profitability by excluding non-cash expenses (depreciation and amortization).

Investors and analysts use EBIT to assess operational efficiency and performance.

### Use

Often used to evaluate a company's cash-generating ability and overall operational performance.

Reflects profit generated from core operations but includes non-cash expenses.

### Cash Flow vs. Profitability

Emphasizes cash-generating ability by excluding both non-cash expenses and financial costs.

Used to assess operating profitability, considering financial structure.

### Financial Structure

Provides a clearer view of operating performance by excluding all financial and non-cash elements.

Commonly used in capital-intensive industries.

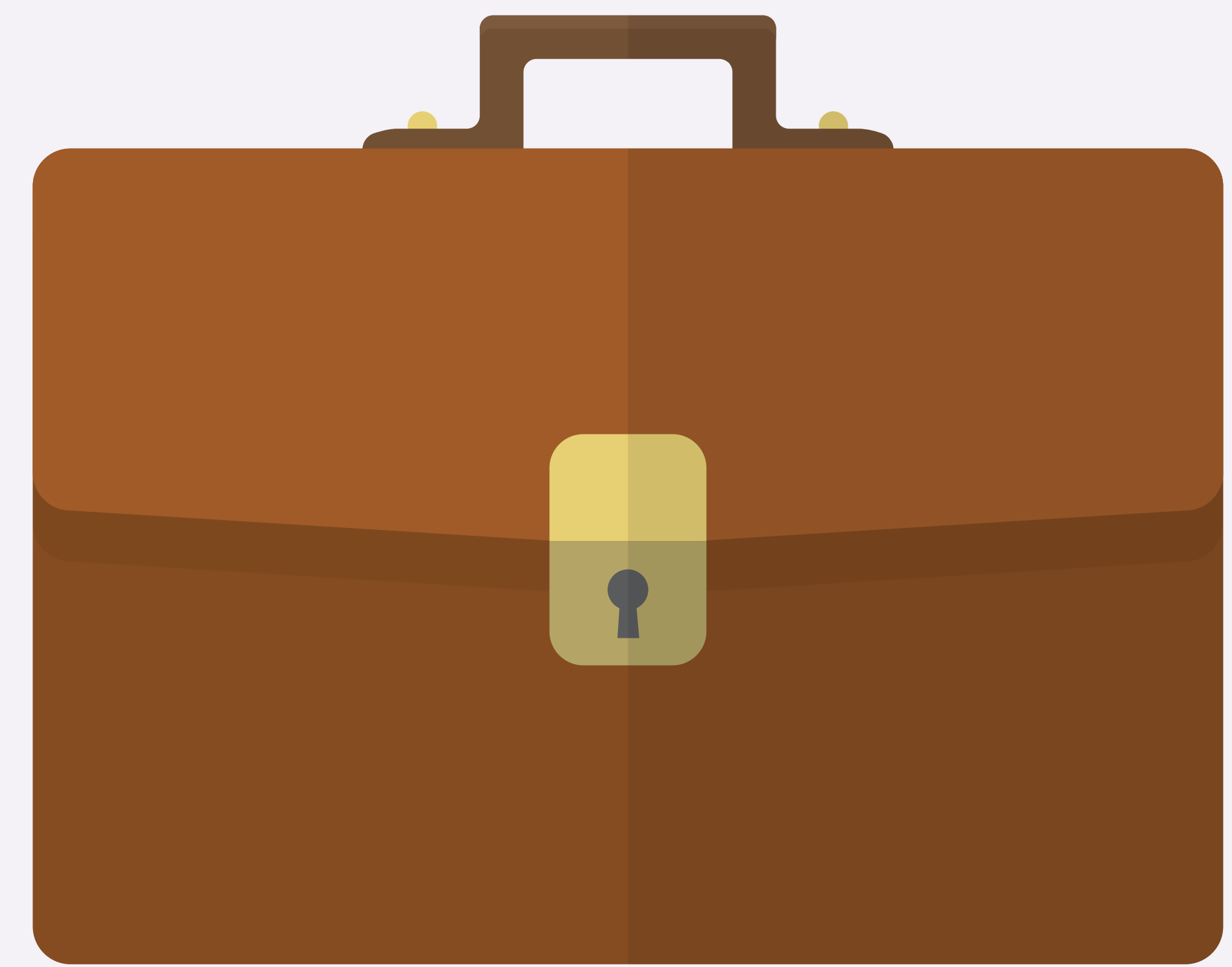
### Industries

Popular in industries with heavy asset use and significant depreciation.

More sensitive to changes in depreciation, amortization, and non-operating items.

### Sensitivity

Less sensitive to changes in non-operating factors due to its exclusion of certain expenses.



# 17.

# COMPANY VALUATION METHODS

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# COMPANY VALUATION METHODS

## 1. Discounted Cash Flow (DCF) Valuation

Estimates the present value of a company's future cash flows, taking into account the time value of money.

$$DCF = \frac{CF_1}{(1+r)^1} + \frac{CF_2}{(1+r)^2} + \dots + \frac{CF_n}{(1+r)^n}$$

### Pros:

- Values a company based on its expected future cash flows.
- Widely used and accepted by financial analysts.

### Cons:

- Requires detailed financial projections and assumptions.
- Sensitive to changes in discount rates and growth projections.

## 2. Comparable Company Analysis (CCA)

Compares a company's valuation metrics to those of similar publicly traded companies to determine its fair market value.

$$\text{Valuation Multiple} = \frac{\text{Company's Metric}}{\text{Comparable Company's Metric}}$$

Various financial ratios like P/E, P/S, or P/B ratios are used for comparison:

$$P/E \text{ Ratio} = \frac{\text{Market Price per Share}}{\text{Earnings per Share}}$$

$$P/S \text{ Ratio} = \frac{\text{Market Price per Share}}{\text{Revenue per Share}}$$

$$P/B \text{ Ratio} = \frac{\text{Market Price per Share}}{\text{Book Value per Share}}$$

### Pros:

- Uses market prices and ratios for valuation.
- Easier and quicker than DCF.

### Cons:

- Relying on market comparables may not account for unique company factors.
- Valuation heavily depends on the accuracy of comparable company data.

## 3. Precedent Transactions Analysis

Examines the target company's financial metrics in relation to metrics from past comparable transactions.

$$\text{Valuation Multiple} = \frac{\text{Transaction Price}}{\text{Company's Relevant Metric}}$$

Similar to CCA, uses financial ratios derived from transaction prices, revenue multiples, or EBITDA multiples.

### Pros:

- Based on prices paid in actual past transactions.
- Reflects market dynamics at the time of the transactions.

### Cons:

- Availability of relevant precedent transactions may be limited.
- Dependent on market conditions at the time of past transactions.

## 4. Asset-Based Valuation

Calculates a company's worth based on its tangible and intangible assets.

$$\text{Asset Value} = \text{Fair Market Value of Assets} - \text{Liabilities}$$

### Pros:

- Focuses on the company's tangible assets.
- Relatively simpler, especially for asset-heavy companies.

### Cons:

- Ignores the value of intangible assets like brand and goodwill.
- May not be suitable for companies in dynamic industries.

## 5. Earnings Multiples

Uses multiples of earnings or EBITDA to value a company in relation to its profitability.

$$P/E \text{ Ratio} = \frac{\text{Market Price per Share}}{\text{Earnings per Share}}$$

$$EV/EBITDA \text{ Ratio} = \frac{\text{Enterprise Value}}{\text{EBITDA}}$$

### Pros:

- Reflects market sentiments and expectations.
- Provides a quick comparison between companies.

### Cons:

- Relies on accurate and sustainable earnings.
- Multiples can vary significantly between industries.

## 6. Liquidation Valuation

Liquidation valuation estimates a company's worth based on the assumption that its assets are sold and liabilities paid off.

$$\text{Liquidation Valuation} = \text{Fair Market Value of Assets} - \text{Total Liabilities}$$

### Pros:

- Provides a valuation based on the assumption of liquidating assets.
- Useful for troubled companies facing bankruptcy.

### Cons:

- Ignores the value of the company as a going concern.
- Market values of assets in a liquidation scenario may differ.

## 7. Weighted Average Cost of Capital (WACC)

Financial metric that represents the average rate of return a company is expected to pay to its investors (both debt and equity) to finance its assets.

$$WACC = \frac{E}{V} \cdot Re + \frac{D}{V} \cdot Rd \cdot (1 - Tc)$$

### Pros:

- Reflects the cost of capital for a company.
- Helps in discounting future cash flows in DCF analysis.

### Cons:

- Requires accurate estimation of the cost of equity and cost of debt.
- Sensitivity to changes in these inputs.

where:

- $E$  is the market value of equity,
- $V$  is the total market value of equity and debt,
- $Re$  is the cost of equity,
- $D$  is the market value of debt,
- $Rd$  is the cost of debt,
- $Tc$  is the corporate tax rate.



18.

**TOP FINANCE**  
CERTIFICATIONS

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# TOP FINANCE CERTIFICATIONS



ACRONYM	FULL NAME	DESCRIPTION	ISSUED BY
<b>CFA</b>	<b>Chartered Financial Analyst</b>	Widely regarded as one of the most prestigious certifications in finance, the CFA program covers investment management, financial analysis, ethics, and more.	CFA Institute
<b>CPA</b>	<b>Certified Public Accountant</b>	While primarily associated with accounting, the CPA certification is highly valuable in finance due to its emphasis on financial reporting, auditing, taxation, and business law.	Various state boards of accountancy in the United States
<b>AFM/ CFM/ MFM</b>	<b>Advanced Financial Modeler/ Chartered Financial Modeler/ Master Financial Modeler</b>	This certificate signifies the highest level of expertise in financial modeling, reflecting exceptional skills, leadership, and significant contributions to the field.	Financial Modeling Institute
<b>FRM</b>	<b>Financial Risk Manager</b>	This certification focuses on risk management, including market risk, credit risk, operational risk, and risk modeling.	Global Association of Risk Professionals
<b>CFP</b>	<b>Certified Financial Planner</b>	Geared towards financial planning and wealth management, the CFP certification covers areas like retirement planning, estate planning, tax planning, and more.	Certified Financial Planner Board of Standards
<b>CAIA</b>	<b>Chartered Alternative Investment Analyst</b>	Concentrating on alternative investments such as hedge funds, private equity, and real assets, the CAIA certification is well-suited for professionals involved in alternative investments.	Chartered Alternative Investment Analyst Association
<b>FMVA</b>	<b>Financial Modeling and Valuation Analyst</b>	This certification covers financial modeling, valuation, Excel skills, and more, making it useful for professionals working in financial analysis and modeling.	Corporate Finance Institute
<b>CMA</b>	<b>Certified Management Accountant</b>	This certification is tailored for management accounting, covering topics like financial planning, analysis, control, and decision support.	Institute of Management Accountants
<b>CIMA</b>	<b>Certified Investment Management Analyst</b>	Suitable for investment consultants and advisors, the CIMA certification focuses on portfolio construction, risk management, and investment strategies.	Investments & Wealth Institute in association with the CFA Institute.
<b>CIP</b>	<b>Chartered Insurance Professional</b>	Geared towards insurance professionals, the CIP program covers various aspects of insurance including underwriting, claims, risk management, and insurance law.	Insurance Institute of Canada
<b>FPA</b>	<b>Financial Planning Association</b>	This program covers various aspects of financial planning and is recognized by the Financial Planning Association.	Financial Planning Association
<b>CTP</b>	<b>Certified Treasury Professional</b>	Aimed at treasury and cash management professionals, the CTP certification focuses on cash flow management, liquidity, risk management, and financial planning.	Association for Financial Professionals
<b>ACCA</b>	<b>Chartered Certified Accountant</b>	Emphasizes financial management, audit and taxation	Association of Chartered Certified Accountants



# 19.

# **17 FINANCIAL MODELING TIPS & TRICKS**

[www.fmworldcup.com](http://www.fmworldcup.com)



## General rules

### 1 Keep your financial model simple

Simplicity reduces the chances of errors. People prefer simple things over complex ones.

### 2 Think of the users

Consider the users' Excel experience when building the model. Protect formulas to prevent mistakes. Be prepared to learn from their usage patterns.

### 3 "Rule of thumb" in financial modeling

Keep formulas concise, not longer than a thumb's length. Split long formulas into helper cells.

### 4 Use consistent project names or codes throughout the model

Name them once on the Assumption sheet and link them to other sheets. Avoid the hassle of renaming projects on every sheet.



## General rules

### 5 Adding rows or columns can introduce errors

Be cautious with VLOOKUP/HLOOKUP functions with fixed parameters. Adding rows might exclude a row from a SUM function range.

### 6 Use placeholders

Instead of adding rows throughout the model for new projects or cost items, include placeholders (extra rows/-columns) for future additions. This saves time.

### 7 Hide these extra rows/columns using the Hide function

Or, even better, the Group/Ungroup function to improve the model's appearance.

### 8 Use separate sheets for inputs, calculations, and outputs

However, some financial modelers argue that placing inputs within calculation sheets is more convenient and transparent.

## Working with several files

### 9 Keep calculations within one file

Linking files together is a source of error and inconvenience, especially if you have various users with different level of experience working on the file.

### 10 Avoid large file sizes in financial models

Models over 40 Mb may work slowly, while those over 200 Mb are nearly unusable. Extremely large models should be avoided.

### 11 Manual recalculation of formulas can save time if a file is slow

Use the "Formulas - Calculation options" to manually recalculate instead of relying on automatic recalculation with every Enter key press.

### 12 When multiple data providers are involved, store all data in one folder and password-protect files they shouldn't access

Alternatively, appoint a key person to consolidate reports from others into the folder.

### 13 Manual recalculation of formulas can save time if a file is slow

This practice helps maintain accuracy and consistency in the model.

## Other financial modeling tips and tricks

### 14 Use super-large numbers to test input impact and model validity.

Input a billion instead of thousands to quickly identify affected cells in the model.

### 15 Excel stores dates as numbers

E.g., Aug 22, 2018 as 43334 (based on days since Jan 1, 1900). Enter dates using regional settings to avoid errors. Data Validation can help control user inputs.

### 16 Use negative numbers

If you construct e.g. a Cash flow statement, show cash outflows as negative numbers for convenience. Sum the range without adjusting signs for each line in the formula. This is particularly relevant in European countries accustomed to positive numbers.

### 17 Follow our LinkedIn page

We post quite a lot of educational content here, so give us a follow for more finance tips and tricks! 😊

# 20.



# EXCEL SHORTCUTS CHEATSHEET



## GENERAL

Ctrl	P	Print
Ctrl	S	Save Workbook
Ctrl	C	Copy
Ctrl	X	Cut
Ctrl	V	Paste
Ctrl	Z	Undo
Ctrl	Y	Redo
Ctrl	E	Flash Fill
Ctrl	K	Insert Hyperlink
Ctrl	N	New workbook
Ctrl	O	Open workbook
F11		Chart in new worksheet
F4		Repeat
Ctrl	W	Close workbook
Alt	F4	Close Excel

## NAVIGATION

Alt	PgDn	One screen right
Alt	PgUp	One screen left
PgUp		One screen up
PgDn		One screen down
Ctrl	→	Right edge of data region
Ctrl	←	Left edge of data region
Home		Beginning of row
Ctrl	End	Last cell
Ctrl	Home	First cell
Ctrl	Tab	Switch Worksheets
Alt	U, V	Toggle Full Screen

## WORKBOOK

Shift	F11	New worksheet	
Ctrl	PgDn	Next worksheet	
Ctrl	PgUp	Previous worksheet	
F6		Next pane	
Shift	F6	Previous pane	
Ctrl	Tab	Next workbook	
Ctrl	Shift	Tab	Previous workbook
Ctrl	F9	Minimize workbook	
Ctrl	F10	Maximize workbook	
Ctrl	F6	Switch Between Open Workbooks	

## FORMATTING

Alt	H	A	C	Align center
Alt	H	A	L	Align left
Alt	H	A	R	Align right
Alt	H	F	G	Increase font size
Alt	H	F	K	Decrease font size
Ctrl	Shift	\$		Currency Format
Ctrl	Shift	%		Percentage Format
Ctrl	Shift	^		Scientific Nb Format
Ctrl	Shift	#		Date Format
Ctrl	Shift	@		Time Format
Ctrl	Shift	!		Number Format
Ctrl	;			Insert Current Date

## FORMATTING

Ctrl	:	Insert Current Time	
Ctrl	B	Bold	
Ctrl	I	Italic	
Ctrl	U	Underline	
Ctrl	Shift	C	Format Painter
Ctrl	+	Insert Rows/Columns	
Ctrl	-	Delete Rows/Columns	
Ctrl	1	Format Cells Dialog Box	
Ctrl	D	Autofill Down	
Ctrl	R	Autofill Right	
Ctrl	Shift	7	Apply Cell Borders
Ctrl	Shift	-	Remove Borders

## DATA ANALYSIS

Alt	D	,	T	Data Table		
Alt	A	,	S	,	G	Goal Seek
Alt	T	,	I	Solver Add-in		
Alt	A	,	B	Subtotal Function		
Alt		,	L	Consolidate Data		
Ctrl	Q			Autofill Right		
Alt	A	,	C	Remove Filter		

21.



**TYPICAL**

**EXCEL MISTAKES**

WHEN BUILDING A

**FINANCIAL MODEL**





# Avoid these Excel mistakes



# Not using the correct data format

It's important to use the correct data type for each column in your spreadsheet, such as text, number, or date. Incorrect data types can result in unexpected errors and formatting issues.





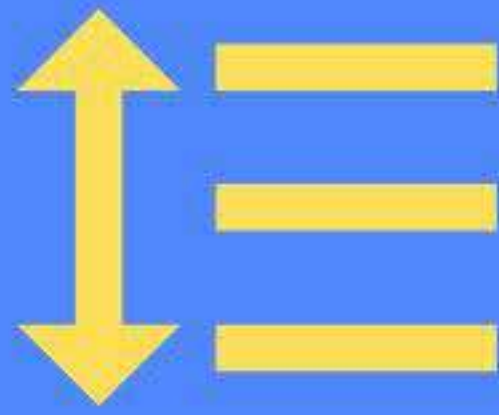
## Not using error-checking functions

Excel has several built-in error-checking functions, such as IFERROR, that can help you avoid common errors and provide more informative error messages.



# Not using data validation

Data validation is a powerful tool that can help you ensure that data entered into your spreadsheet meets certain criteria. For example, you can use data validation to restrict the type of data that can be entered into a cell, or to limit the range of acceptable values.



# Not using conditional formatting

Conditional formatting is a great way to highlight cells that meet certain criteria, such as cells that contain values that are above or below a certain threshold.



# Not using keyboard shortcuts

Keyboard shortcuts can save you a lot of time when working with Excel. For example, you can use the Shift + Spacebar shortcut to select the row, Ctrl+- (plus minus) to delete the row and Ctrl + Shift + "+" to add a row.



# Not using named ranges

Named ranges make it easier to reference cells and ranges in your formulas and macros. By using named ranges, you can make your formulas more readable and easier to understand. It also speeds up your work. Important when competing at Excel Esports tournaments!