

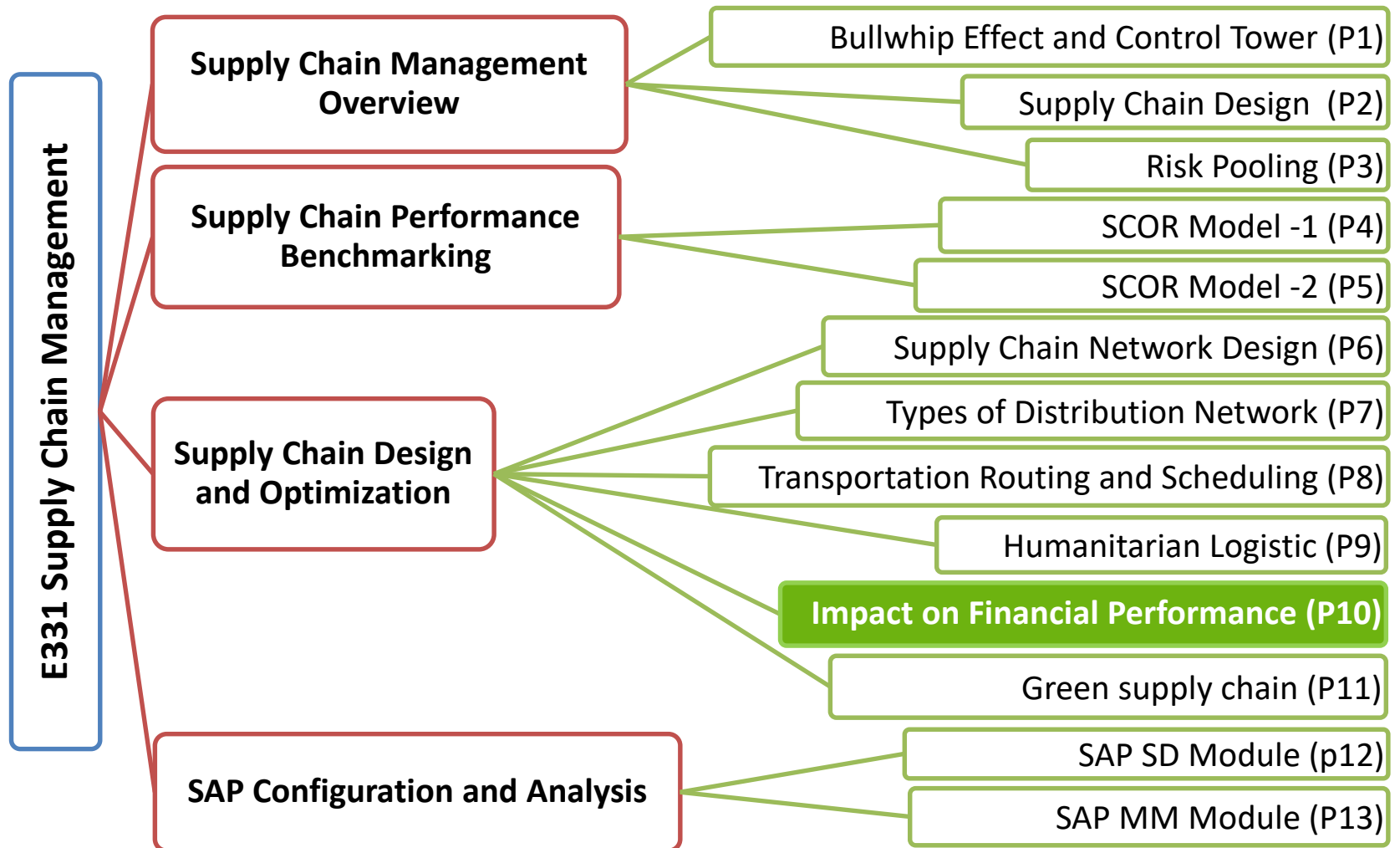
P10

Financial Impact of SCM

E331 – Supply Chain Management

Diploma in Supply Chain Management

E331 Module Overview



Supply Chain Impacts on Financial Performance

- The performance of a supply chain affects a company's financial performance:
 - **More inventory** translates to **higher costs** to a company, thus **lower profits**
 - *Is this the only impact of inventory level on a company's financial performance?*
- Shareholders expect the companies that they invest in to deliver superior returns on their investments. How can we measure a company's financial performance?
- Some common measures of financial performance:
 - *Profit & Loss Account (P&L) i.e. Income Statement*
 - *Balance Sheet*
 - *Return on Assets (ROA)*
 - *Return on Capital Employed (ROCE)*
- How exactly do the supply chain/logistics strategies affect a company's financial performance?



Profit & Loss Account (P&L)



- Also known as **Income Statement**, is a company's financial statement that indicates **how the revenue is transformed into net income**.
- It displays the **revenues** recognized for a specific period, and the **cost** and **expenses** charged against these revenues, including **write-offs** and **taxes**
***Revenue:** money received from the sale of products /services before expenses are taken out*
***Net Income:** the result after all revenues and expenses have been accounted for*
- The purpose of the P&L is to show managers and investors whether the company made or lost money during the period being reported.
- It summarizes the financial transactions for a business over a specific period of time. Can be reported yearly, half yearly or even quarterly
- The important thing to remember about a P&L is that it represents a **period of time**. This contrasts with the Balance Sheet, which represents a single moment in time.

COGS and Profits







- **Cost of Goods Sold (COGS)**
 - ❖ An Income Statement figure which reflects the cost of obtaining raw materials and producing finished goods or services that are sold to consumers.
 - ❖ equal to the **beginning inventory plus the cost of goods purchased during some period minus the ending inventory.**
- In general, **Profit = Revenue – Cost**
- **Gross profit**
 - ❖ how much money a business would have made if it didn't pay any other expenses such as salary, income taxes, etc.
 - ❖ **Gross profit = Total Revenue - Cost of Goods Sold (COGS)**
- **Operating Profit**
 - ❖ Earnings or income after all expenses (selling, administrative, depreciation)
 - ❖ **Operating Profit = Total Revenue – total operating expense**
- **Net Profit**

Earnings or income after subtracting miscellaneous income and expenses (patent royalties, interest, capital gains) and tax from operating profit



Impacts of SCM on Profit & Loss Account



Revenue & Cost Component	Business Decision Competitive Variable	SCM Variable/Influence
Sales Revenue 	Price x Volume Volume Discount Customer Service Solutions	
Cost of Goods Sold 	Sourcing & Procurement Manufacturing Selling & Sales Admin Distribution Depreciation Inventory carrying cost Own/lease facilities & vehicles	Procurement Policies and Process Materials Management SCM (outbound) Order processing mgmt & handling Transportation (include packing) Warehousing Inventory Management Facility utilization & management Storage, Transportation & Systems required
Operating Profit 		
Interest on borrowings 		
Net Profit Contribution		

Balance Sheet



- A Balance Sheet is a summary of a company's balances.
 - ✓ Consists of 3 parts: assets, liabilities and equity.
 - ✓ These 3 parts are listed as of a specific date, such as the end of its financial year. Hence, a Balance Sheet is often described as a **snapshot** of a company's financial condition.
- The main categories of assets are usually listed first, and typically in order of liquidity.
- Assets are followed by the liabilities.
- The difference between the assets and the liabilities is known as **equity** or the net assets or the net worth or capital of the company. This is according to the accounting equation: net worth must equal assets minus liabilities.
- Another way to look at the same equation is that **assets equals liabilities plus owner's equity**. Looking at the equation in this way shows how assets were financed: either by borrowing money (liability) or by using the owner's money (owner's equity).

Balance Sheet



- A Balance Sheet is usually presented with **assets** in one section and **liabilities and equity** in the other section with the two sections "**balancing**" each other

Balance Sheet			
Assets		Liabilities & Equity	
Current Assets		Liabilities	
	Cash 7		Payables 12
Lower Inventory	Receivables 34		Loans 20
means more {	FGI 6		Taxes Due 0
cash to invest {	WIP 24		
in company's {	Raw Materials 12		
core	Total Current Assets 83		Total Liabilities 32
competencies			
Fixed Assets		Shareholders' Equity	
	Machines 8		Capital Stock 80
	Property (Land & Buildings) 20		Retained Earnings (1)
	Total Fixed Assets 28		Total Shareholders' Equity 79
	Total Assets 111		Total Liabilities & Equity 111




Return on Assets (ROA)



- The Return On Assets (ROA) measures a company's **earnings in relation to all of the resources** it has at its disposal
- The ROA percentage shows how profitable a company's assets are in generating revenue:
 - For example, how many dollars of earnings that a company derives from each dollar of assets the company controls.
 - It is a useful number for comparing competing companies in the same industry.
 - ROA gives an indication of the capital intensity of the company
- ROA percentage depends on the industry.
- Usually, companies that require large initial investments will generally have lower ROA
- For example, BMW has a ROA of 3.7% in 2018, while H&M has a high ROA of 22% in 2018

Return on Assets (ROA)



 Return on Assets (ROA)	=	 Net Profit Margin × Asset Turnover	
		$\frac{\text{Net Profit}}{\text{Average Total Assets}}$	

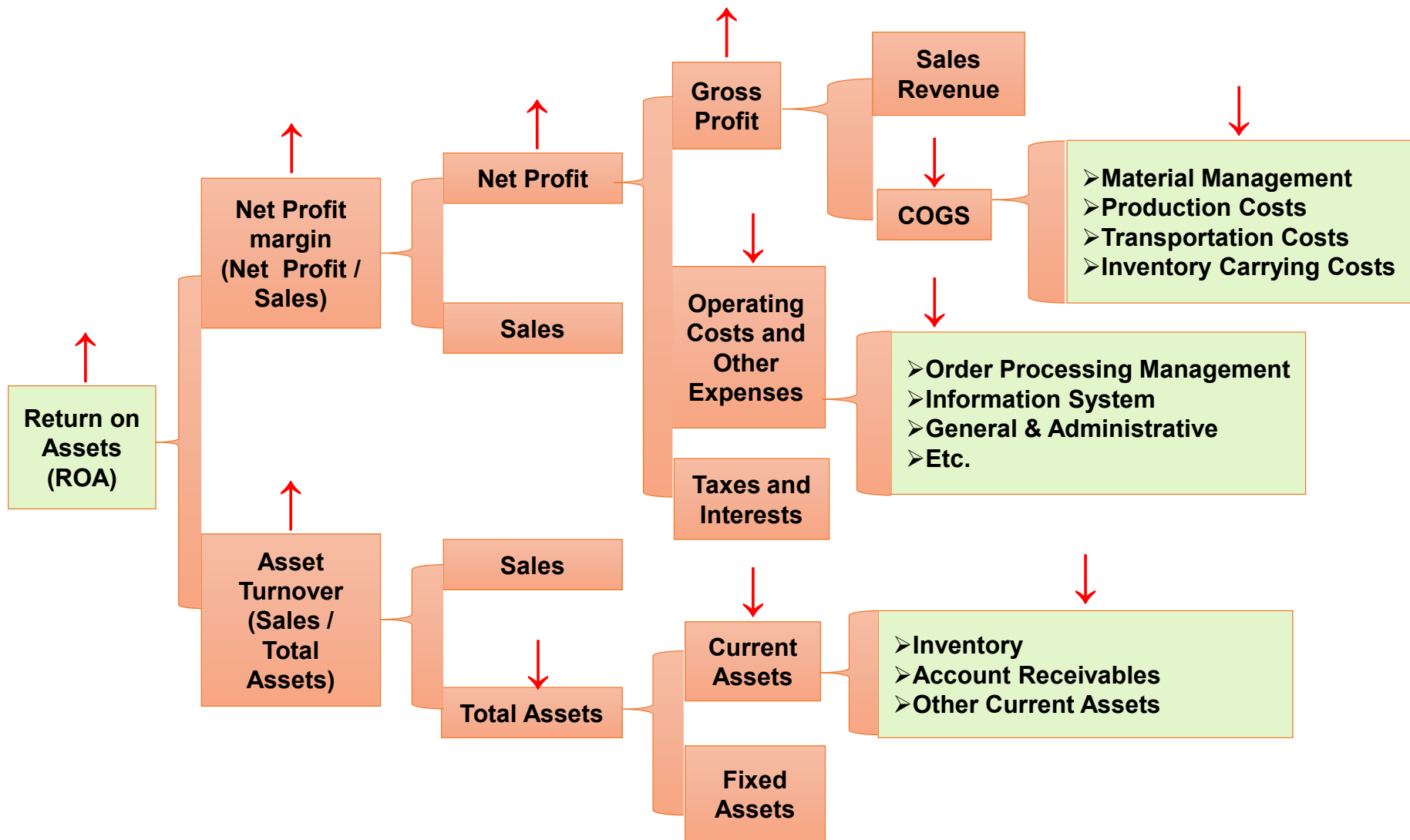
Refer to the Balance Sheet:

- Total Assets in 2017 = 133,992 (in US\$ millions)
- Total Assets in 2018 = 142,801 (in US\$ millions)
- Average Total Assets for FY 2018 = 138,396.5 (in US\$ millions)

Refer to the Profit and Loss account:

- Net Profit in FY 2018 = 8883 (in US\$ millions)
- ROA in FY 2018 = Net Profit for FY 2018 / Average Total Assets
= 8883/138,396.5 = 6.42%
- Compared with its key competitor with ROA=10%, the company's ROA performance is a bit lower.

Impacts of SCM on Return of Assets (ROA)



Return on Capital Employed (ROCE)



- ROCE is a ratio that indicates the efficiency and profitability of a company's capital investment
- ROCE is used to prove the value the business gains from its assets and liabilities
→ a business which owns lots of land but has little profit will have a smaller ROCE as compared to a business which owns little land but makes the same profit.
- ROCE is basically can be used to show how much a business is gaining for its assets, or how much it is losing for its liabilities

$$\text{Return on Capital Employed (ROCE)} = \frac{\text{Operating Profit}^*}{\text{Capital Employed}}$$

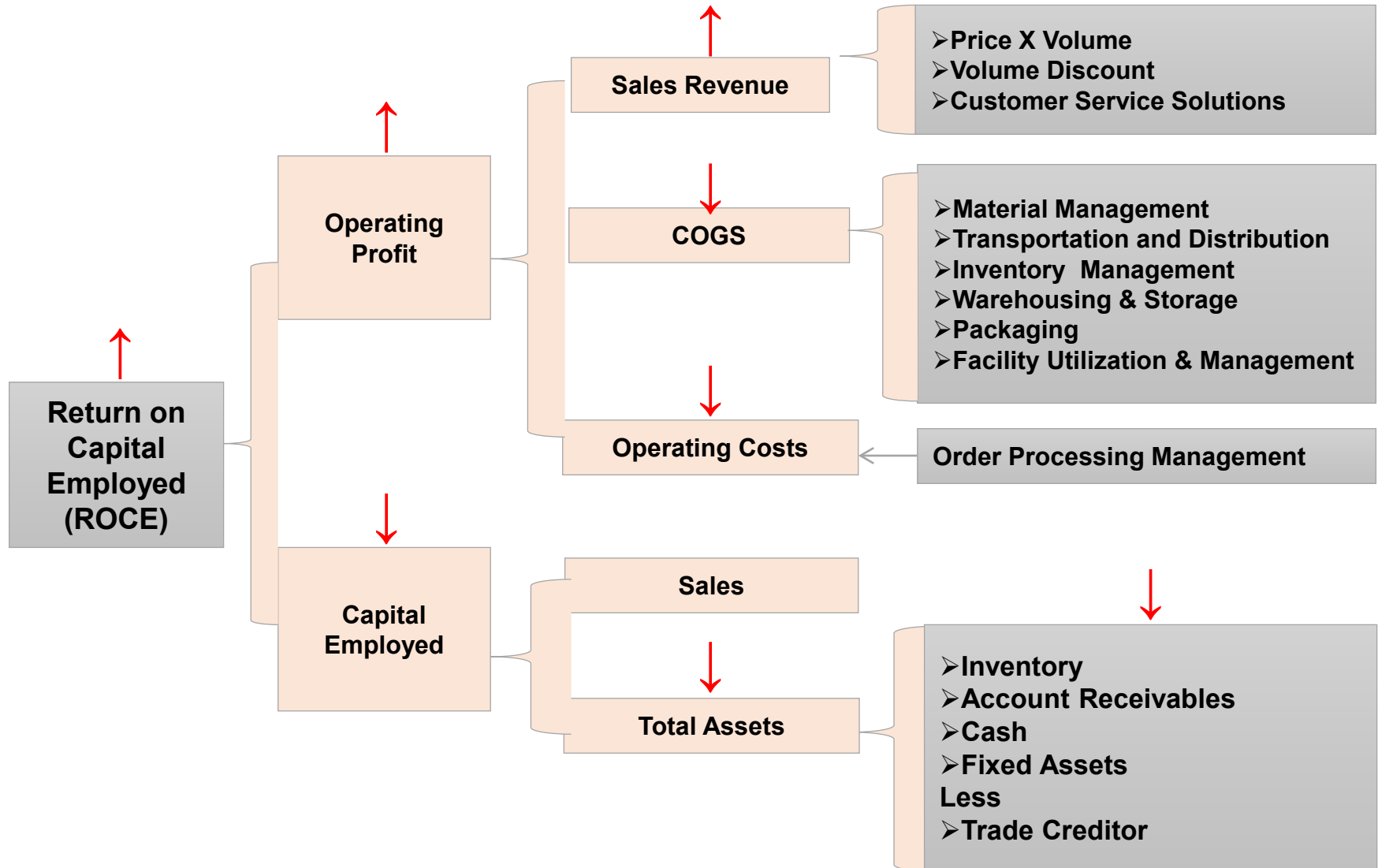
* Operating Profit is also known as Earnings Before Interest & Taxes(EBIT)

Return on Capital Employed (ROCE)

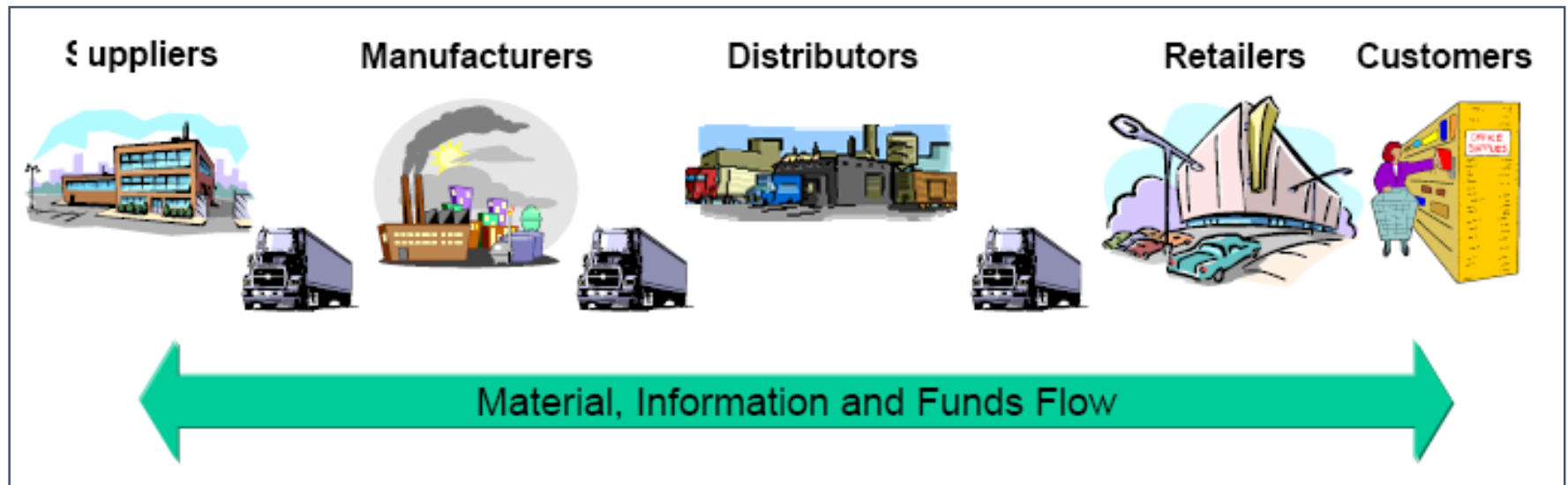


- Operating Profit (Operating Income) for FY 2018
= 13,163 (in US\$ millions)
- Capital Employed in 2018 = Total Assets – Current Liabilities
= 105,284 (in US\$ millions)
- ROCE for FY 2018 = Operating Profit / Capital Employed
= 13,163 / 105,284 = 0.125 (or 12.5%)
- Higher ROCE means more cash
 - Increase Profit (to make even more cash)
 - Reduce Working Capital (to use lesser cash)

Impacts of SCM on ROCE



Overview of Supply Chain - Follow the Money

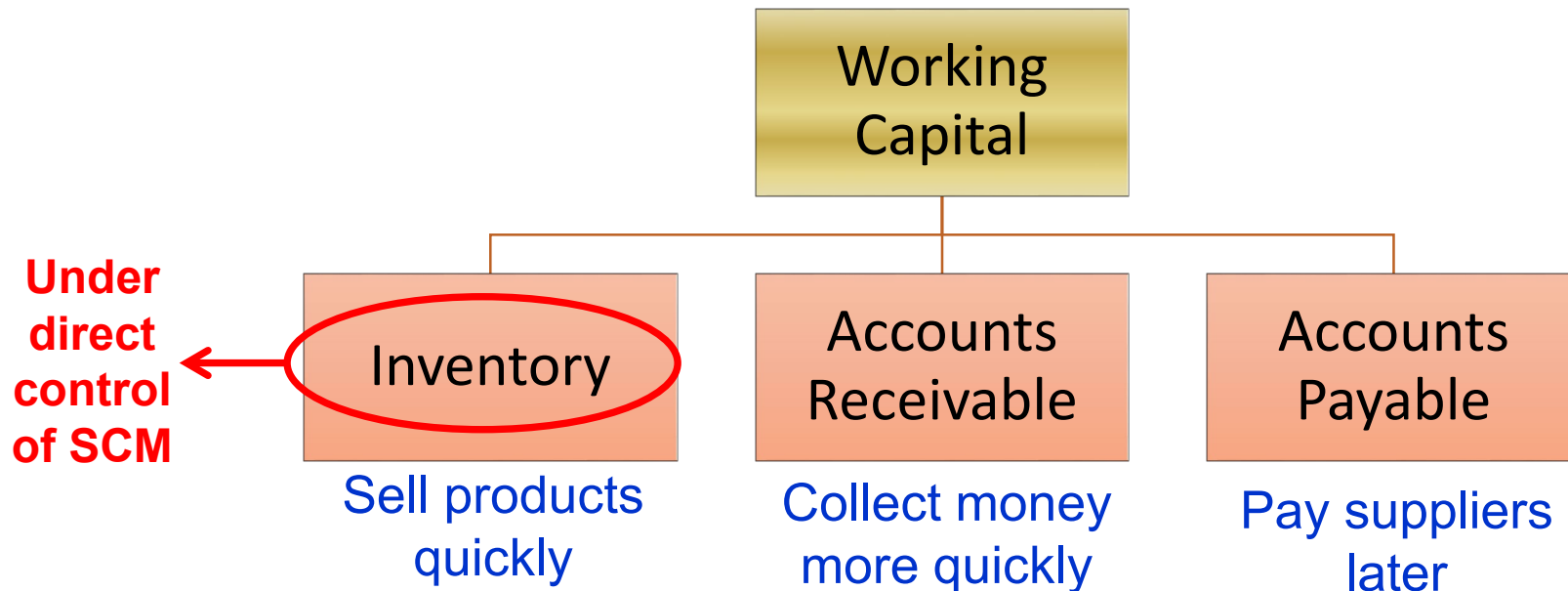


- **Invoices and Payments** are included in the financial flow.
- Any single organization in the supply chain has both **Accounts Payable (A/P)** and **Accounts Receivable (A/R)** activities.
- Each invoice is an A/P from the downstream buyer's perspective and an A/R from the upstream seller's viewpoint.

Working Capital



- A company's cash (working capital) is tied-up in 3 areas:



Working capital, also known as *Net Working Capital (NWC)* or *operating capital*, is a financial metric which represents the amount of day-by-day operating liquidity available to a business.

Working Capital



Working Capital = Current Assets - Current Liabilities

or Working Capital = $A/R + Inv - A/P$ where:

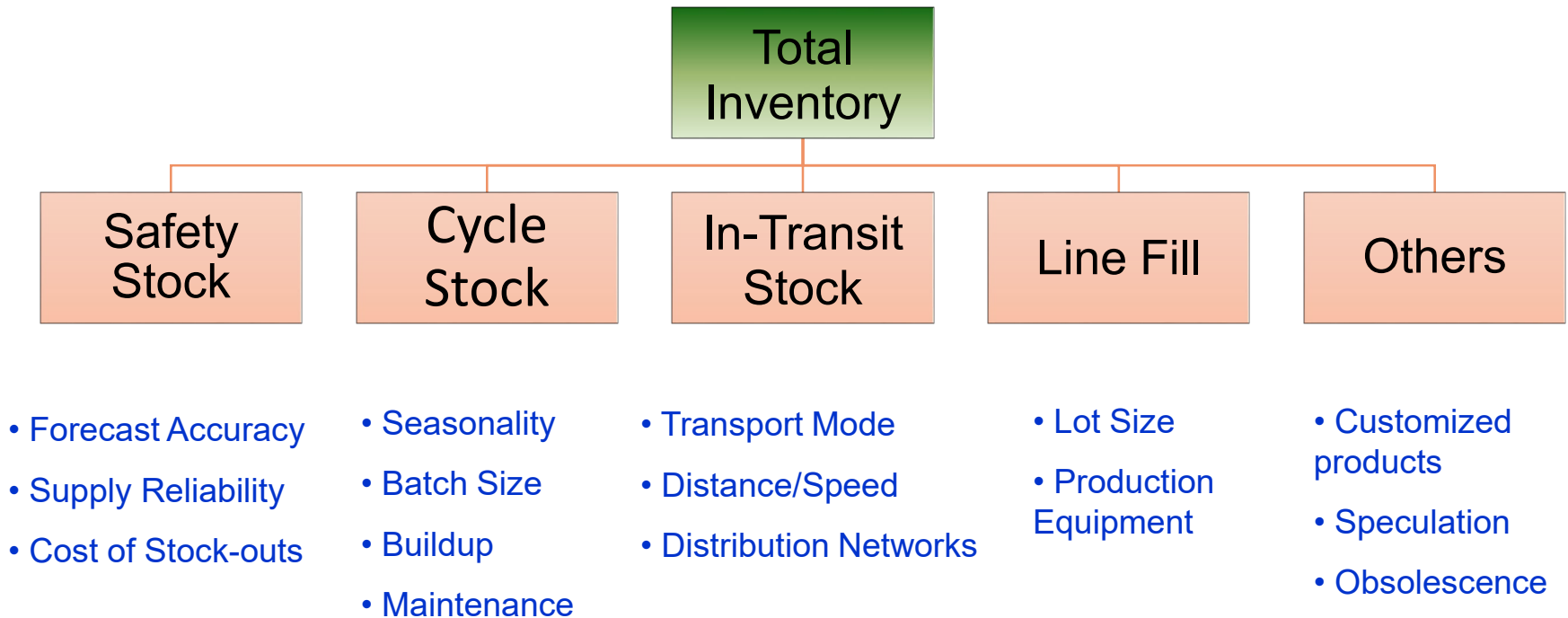
- A/R stands for Accounts Receivable (the amount that customers owe a business)
 - Inv is the Inventory Value
 - A/P is Accounts Payable (payments to suppliers for goods and services purchased)
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- Working Capital for FY 2018
= Current Assets - Current Liabilities
= \$42,942 - \$37,517 = \$5425 (in US\$ millions)



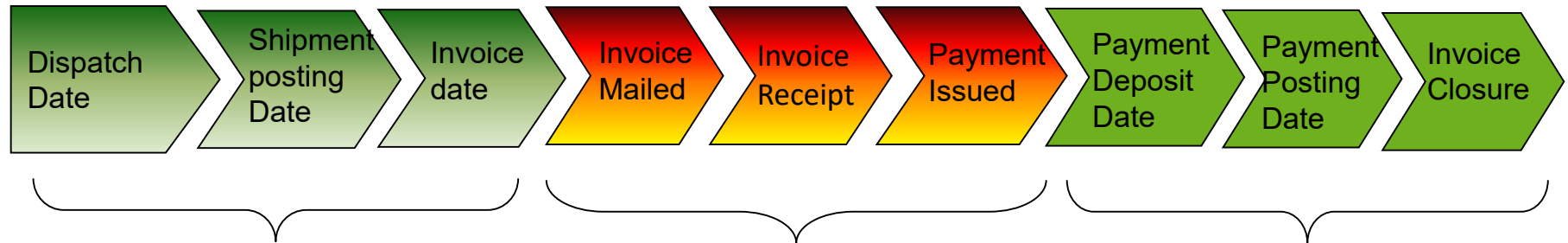
Inventory



- Inventory is one of the 3 areas that a company's cash is tied-up in



Accounts Receivable (A/R) & Accounts Payable (A/P)



Shipment to invoicing

- Delays in establishing posting data
- Delays in invoicing
- Delays in finalizing pricing

Invoice Date to Customer Payment

- Delays in following up with customer on payment

Payment to Closure

- Inaccurate invoices & slow resolution

- AP (Accounts Payable) is money owed by a business to its suppliers and shown on its balance sheet as a liability.
- AR (Accounts Receivable) is money owed by suppliers to a business and shown on its balance sheet as an asset.

Inventory Reduction and Controlling



- Many SCM techniques and practices exist to size it, optimize it and reduce it.
- Segment finished goods inventory based on the financial performance, such as ABC analysis if it has not been done.
- Sustainable savings will most likely require fundamental improvements in demand planning, inventory and safety stock policies, production planning and scheduling, lead time compression and SKU rationalization, etc.
- Calculate financial impact of inventory decisions and link these two together.

Managing and Expediting Receivables



- Companies tend to get lax about receivables when credit is easy and the economy is booming. But once things have tightened up, it's worth taking a hard look at how your receivables are being managed.
- A/R can be positively affected through supply chain activities such as providing more reliable transit times and shorter lead times.
- In order to positively impact A/R, the SC plays a role by delivering products in the right quantity and with the right specs.

Extending Payables Intelligently



A/P is a purchasing manager's job, aimed at extending payment terms by contract. Such as what was previously paid after 30 days is now paid in 45.

Negative Impact

- Some companies have unilaterally decided to delay their payments and force the extension on their suppliers. Of course, such an approach is likely to damage your supply relationships. Even worse, it might deprive supply chain partners of the cash they need to maintain their operations, which could lead to late deliveries and quality problems.



Positive Impact

- Work with suppliers to establish an agreement that both of you can live with
- Better forecast accuracy and demand reliability represent a practical way through which supply chain practices impact AP.
- Reliable production planning and scheduling together with agreed quality assurance protocols can surely improve the quality of the relationship with suppliers. That enables the purchasing department to close better deals once a win-win and trustworthy collaborative environment has been established

Cash-to-Cash Cycle Time (C2C)



- A unique financial performance metric that indicates how well an entity is managing its capital
- C2C, or cash conversion cycle, is “the length of time a company’s cash is tied up in working capital before that money is finally returned when customers pay for the products sold or services rendered
- It is a catch-all measure of how well a company manages the entire product lifecycle, from demand anticipation, to materials procurement, to the manufacture, sale, delivery and ultimate purchase of the product by the customer.

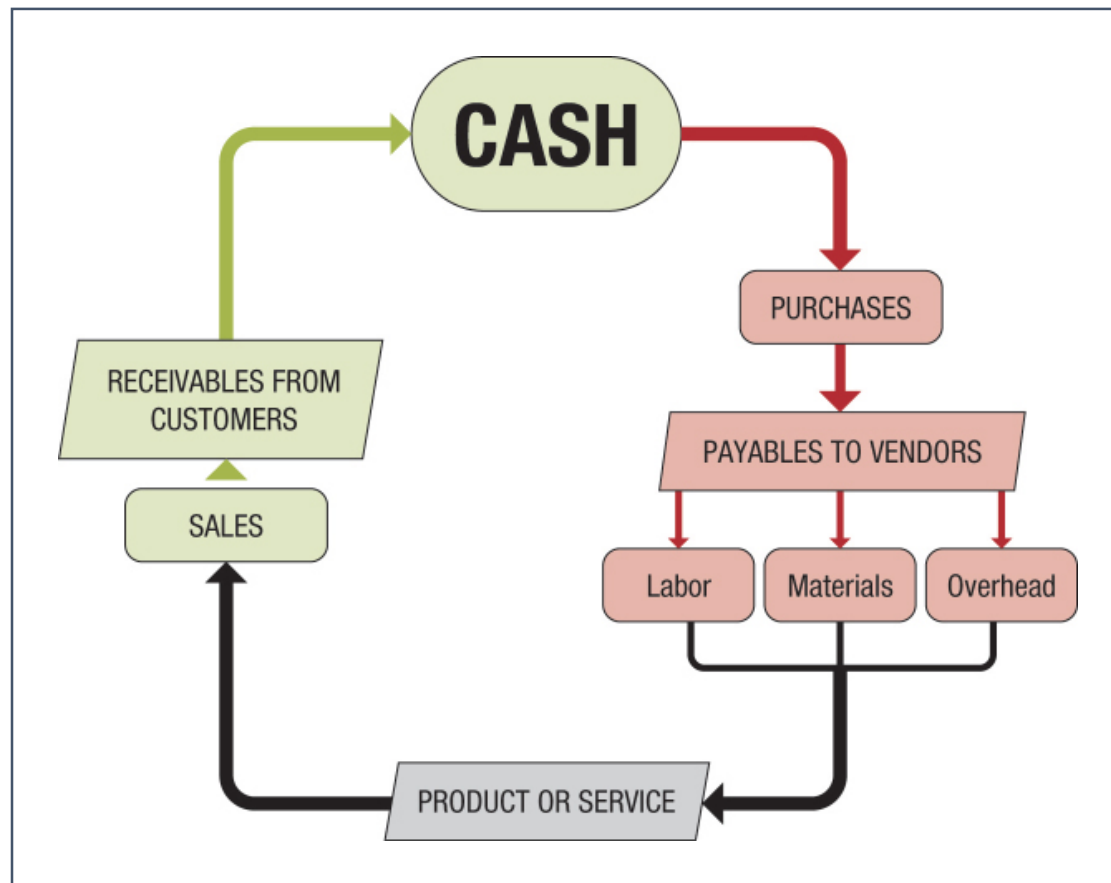


Cash-to-Cash Cycle Time (C2C)



- It provides a link between supply chain operations and the business environment

Cash Conversion Cycle



Compute the Cash-to-Cash Cycle Time



- $C2C = \text{Inventory days of supply} + \text{Accounts Receivable (A/R) days} - \text{Accounts Payable (A/P) Days}$
 - $\text{Inventory days of supply} = (\text{Inventory} / \text{Cost of Goods Sold}) \times 365$
 - $\text{Accounts Receivable (A/R) days} = (\text{A/R} / \text{Net Sales}) \times 365$
 - $\text{Accounts Payable (A/P) days} = (\text{A/P} / \text{Cost of Goods Sold}) \times 365$

Noted: **A/R days** is also known as **Days Sales Outstanding**;
A/P days is also known as **Average Payment Period**.

- A positive result indicates the number of days a company must borrow or tie up capital while awaiting payment from a customer
- A negative result indicates the number of days a company has received cash from sales before it must pay its suppliers for inventory

C2C Cycle Time for Problem Statement



For FY2019

- Inventory days of supply
= (Average Inventory/Cost of Goods Sold) x 365
= **162**
- Accounts Receivable (A/R) days
= (A/R/Net Sales) x 365
= **55**
- Accounts Payable (A/P) days
= (A/P/Cost of Goods Sold) x 365
= **154**

C2C = Inventory days of supply + Accounts Receivable (A/R) days -
Accounts Payable (A/P) Days = **63**

Recommendations to Today's Problem



- The company can focus on any combination of the three key variables to improve their C2C.
- Ultimately the goal for most of the companies is a C2C that is as low or even negative as is reasonable.
- We can address from these 3 areas:
 - Inventory days of supplies
 - A/R days
 - A/P days

Recommendations to Today's Problem



Inventory days of supply

We can take a similar time-based approach to measure SCM's impact on inventory value using the Inventory Days of Supply. There are many glitches that can occur in SCM that will increase inventory:

- Excess time required to receive and process items
- Excess time required to move materials in the factory
- Delays in managing purchase and sales orders
- Excess time spent preparing merchandise
- Low efficiency of the distribution channel
- Poor demand forecast and planning
- Incorrect parameters used to establish stock levels
- Purchase goods based on price volumes instead of what is really needed
- Component, in-process and finished inventory are all created too early in the supply process. Should find ways to postpone the completion of a product to reduce the total amount of inventory

Recommendations to Today's Problem



A/R days

- To more accurately assess the impact of SCM operations on receivables, and to highlight the importance of the time factor in SCM, it is useful to use the time-related figure for Days Sales Outstanding (DSO)
- This figure represents the amount of time required to collect an outstanding bill and, therefore, measures the speed with which customers are invoiced and payment is received.
- The crucial point sits with the sales function. By investigating how malfunctions in SCM operations impact the sales process we can better identify those areas in which SCM affects DSO or A/R days.

Recommendations to Today's Problem



A/P days

- If the C2C is too long and a company's resources are tied up for long periods, then supply chain managers, working alongside purchasing managers, should turn their efforts to adjusting the A/P figure by postponing payment terms to suppliers.
- Longer terms of payment can be negotiated only if there is an appealing counter-offer to the supplier. Typically, this takes the form of offering the supplier better visibility, more reliable scheduling and/or sharing best practices to improve currently inefficient supply chain processes such as lean manufacturing or Six Sigma practices.
- A/P can also be affected by other improvements in SCM, such as greater accuracy of forecasts and clearly established parameters for materials management, such as daily delivery quantities, minimum/maximum quantities and delivery time windows, as well as agreed quality assurance protocols, are further steps that can be taken to enable a company to alter its A/P figure and negotiate better (delayed) terms with suppliers.

Financial-SCM Connection



Financial Metric	Examples of How SCM Adds Value
Inventory Days	<ul style="list-style-type: none">✓Transportation Mgt.✓Warehouse Mgt.✓Network Design✓Inventory Visibility✓Forecasting Accuracy✓Demand Planning
A/R Days (Days Sales Outstanding)	<ul style="list-style-type: none">✓Shipment Integrity✓Fill Rate✓Proof of Delivery✓Invoicing Accuracy✓Internal Communications
A/P Days (Average Payment Period)	<ul style="list-style-type: none">✓Procurement Terms✓Payment Practices
Fixed Asset Utilization	<ul style="list-style-type: none">✓Warehouse Management✓Transportation Management✓IT Management✓Selective Outsourcing

Financial-SCM Connection



Financial Metric	Examples of How SCM Adds Value
Revenue Growth	<ul style="list-style-type: none">✓ Fill rates✓ Forecasting✓ Customer Service✓ Lead times✓ New Product Speed to Market
COGS as a Percentage of Revenue (Gross Profit Margin)	<ul style="list-style-type: none">✓ Inbound Transportation Mgt.✓ Inventory Mgt.✓ Network Design✓ Procurement✓ Reverse Logistics✓ Selective Outsourcing
SG&A as a Percentage of Revenue	<ul style="list-style-type: none">✓ Warehouse Mgt.✓ Outbound Transportation✓ Logistics Administration✓ Customer Service✓ Information Technology

SG&A : Selling, General & Administrative Expense

Insights for Today's Problem



- A lower C2C suggests that a company is more efficient in managing its cash flows, because it turns its working capital over more times per year and generates more sales per dollar invested.
- Businesses may focus on any combination of the three key variables to improve their C2C. It is difficult to estimate the effect of a change from adjusting an individual variable, because all three are interrelated, but improving any one will result in a shorter C2C cycle for a company.
- The key supply chain management objectives for Nature-Food are to improve the Inventory days, Account Receivable and maintain Account Payable days.

Formulas



- $\text{Return on Assets (ROA)} = \frac{\text{Net Profit}}{\text{Average Total Assets}}$
- $\text{Return on Capital Employed} = \frac{\text{Operating Profit}}{\text{Capital Employed}}$
 - $\text{Capital Employed} = \text{Total Assets} - \text{Current Liabilities}$
- $\text{Working Capital} = \text{Current Assets} - \text{Current Liabilities}$
- $\text{Working Capital} = \text{Accounts Receivable} + \text{Inventory} - \text{Accounts Payable}$
- $\text{C2C Days} = \text{Inventory days} + \text{AR days} - \text{AP days}$
 - $\text{Inventory days} = \frac{\text{Inventory}}{\text{Cost of Goods Sold}} \times 365$
 - $\text{AP days} = \frac{\text{Accounts Payable}}{\text{Cost of Goods Sold}} \times 365$
 - $\text{AR days} = \frac{\text{Accounts Receivable}}{\text{Net Sales}} \times 365$

Learning Outcomes



- Interpret the Profit and Loss Account (P&L) and Balance Sheet of a typical company
- Calculate Return on Assets (ROA) and Return on Capital Employed (ROCE) and interpret the results
- Describe the impacts of effective supply chain strategies on a company's financial performance
 - Describe the concept of working capital and its various components (inventory, accounts receivable, accounts payable)
 - Describe strategies to improve the working capital from the supply chain perspective
 - Describe the concept of cash-to-cash cycle time and calculate the C2C cycle time for a given business case-study
 - Describe how SCM practices affect the C2C cycle time of a company