DECISION-MAKING AND SCENARIOS
MODULE 3.2 – Expressing Business Strategies In Financial Terms

Balance Sheets and Income Statements

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Agenda

- We're going to look at a series of common transactions and events and see how they impact the financial statements
- We'll focus on the Balance Sheet and Income Statement first
- Then do the Cash Flow Statement and how it relates back to the other two

What Makes Balance Sheet Accounts Change Over Time?

Beginning Balance	Business Activities, Transactions and Events During the Period		Ending Balance
$Cash_{Beg}$	+ Receipts - Payments	=	$Cash_{End}$
$Accts\ Rec_{Beg}$	+ Sales - Collection	=	$Accts\ Rec_{End}$
$Inventory_{Beg}$	+ Purchases – Cost of Goods Sold	=	$Inventory_{End}$
PPE_{Beg}	+ Purchases – Deprec - Disposals	=	PPE_{End}
$Accts\ Pay_{Beg}$	+ Purchases – Payments to Suppliers	=	$Accts\ Pay_{End}$
$Wages\ Pay_{Beg}$	+ Wage Expense – Wages Paid	=	$Wages\ Pay_{End}$
$Contributed\ Capital_{Beg}$	+ Stock Issuance – Stock Repurchases	=	$Contributed\ Capital_{End}$
$Retained\ Earn_{Beg}$	+ Net Income - Dividends	=	$Retained\ Earn_{End}$

We Could Analyze Each Account Independently, But

- We can learn even more if we understand how the changes in accounts are related to each other
- This is governed by the Balance Sheet Equation
  - Assets = Liabilities + Owners' Equity
- This equation is going to impose a discipline and consistency across accounts that is going to
  - Help us make fewer mistakes and
  - Help us Identify the Relation between the Cash Flow Statement and the other two statements

Implications of Balance Sheet Equation

- **Assets = Liabilities + Owners' Equity**
- Any transaction or event that is recorded in the financial statements must preserve the balance sheet equation
- This means each transaction itself must balance
- If one account is impacted, at least one other must be as well
- Example: Suppose an asset account goes UP, then at least one of the following also happens
  - Another asset account has to go DOWN, or
  - A liability account goes UP, or
  - An owners' equity account goes UP

Financial Statement Impact of Transactions and Events

- For each transaction or event, we will
  - Determine which "accounts" (if any) are affected
  - Make sure that the balance sheet still balances

    Assets = Liabilities + Owners' Equity

- Most of these transactions and events are part of the New Product Venture example we will be analyzing in Module 4.
- Any transaction or event that impacts the Income Statement will flow into Retained Earnings
  - A real accounting system would keep a more detailed record of the types of revenues and expense

Issue Shares (A Financing Transaction)

a) **Raise $240,000 of cash in exchange for shares of common stock.**

ASSETS = LIABILITIES + OWNERS' EQUITY

	Cash				Contributed Capital
Issue Shares	+$240,000				+$240,000

Cash Goes Up, but there is no Impact on Income

We want to distinguish between Owners' Equity going up because of profits and Owners' Equity going up because of new contributions.

This is a financing transaction; It is not a measure of how well the project is performing

Long Term Assets - PPE

a) **Purchase PPE for $70,000 Cash**

b) PPE expected to last 7 years and be worth $0 at that time

ASSETS = LIABILITIES + OWNERS' EQUITY

	Cash	PPE				Retained Earnings
Purchase	**-$70,000**	**+$70,000**				
Depreciation Expense (each year)		-$10,000				-$10,000

PPE is not charged entirely to income immediately because it will benefit many periods.

Purchasing PPE

- Even though it uses up cash, it's not all charged to that period's income statement
- This is because we can use it for many periods
- PPE is an asset because it has future benefits
- If instead PPE was leased or rented, no asset would be recorded. Instead there would be a (smaller) recurring cash outflow that was charged to that period's income statement.

Long Term Assets - PPE

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ASSETS = LIABILITIES + OWNERS' EQUITY

	Cash	PPE				Retained Earnings
Purchase	-$70,000	+$70,000				
Depreciation Expense (each year)		**-$10,000**				**-$10,000**

Depreciation Expense = $70,000 / 7 years = $10,000 per year. This reduces our income in those years. Hopefully the benefits from using the asset outweigh this expense.

Depreciation of PPE

- Straight line Depreciation – a common way to spread the purchase price over the useful life
- Depreciation per Year =

$$\frac{\text{(Purchase Price – Expected Salvage Value)}}{\text{Expected Useful Life}}$$

- The book value of the PPE generally does not match what you could sell it for
- At the end of the asset's life, we sell it (or dispose of it) and record that cash inflow or outflow in that period.

Inventory Transactions

a) **Buy $99,000 of inventory on credit**
b) Make a payment of $94,000 to the supplier
c) Sell Inventory that Cost $90,000

ASSETS = LIABILITIES + OWNERS' EQUITY

	Cash	Inventory		Accounts Payable		Retained Earnings
Purchase		**+$99,000**		**+$99,000**		
Payment	-$94,000			-$94,000		
Sale		-$90,000				-$90,000

If we purchase more inventory than we sell, Inventory goes up

If we purchase more inventory than we pay for, Accounts Payable goes up

Inventory Transactions

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	Cash	Inventory		Accounts Payable		Retained Earnings
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Payment	-$94,000			-$94,000		
Sale		**-$90,000**				**-$90,000**

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Inventory

- Inventory is carried on the books at what you paid for it, not what you expect to sell it for
- When you sell inventory, you take the inventory off the books (at cost) and replace it on the books with the cash (or receivable) you get when you sell it
- The difference is the profit on the sale

Sales and Collection

a) **Sell $200,000 of products on credit**

b) Collect $180,000 from Customers

ASSETS = LIABILITIES + OWNERS' EQUITY

	Cash	Accounts Receivable				Retained Earnings
Sale		**+$200,000**				**+$200,000**
Collection	+$180,000	-$180,000				

Sales make Income go up; Collections make Cash go up

If Sales exceed Collections, then Receivables have a net increase

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Wages and Benefits

a) **Employees Earn $55,000 of Wages and Benefits**

b) Of this, $46,000 is paid and the rest is deferred

ASSETS = LIABILITIES + OWNERS' EQUITY

	Cash		Wages Payable		Retained Earnings
Wages Earned			**+55,000**		**-$55,000**
Wages Paid	-$45,000		-$45,000		

Earning the benefits lowers income, paying the benefits lowers cash

If more benefits are earned than paid, the Wages Payable account goes up

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ASSETS = LIABILITIES + OWNERS' EQUITY

	Cash		Wages Payable		Retained Earnings
Wages Earned			+55,000		-$55,000
Wages Paid	**-$46,000**		**-$46,000**		

Earning the benefits reduces income, paying the benefits reduces cash

If more benefits are earned than paid, the Wages Payable account goes up

Pay Dividend – A Financing Transaction

a) Pay Cash Dividend of $5000

ASSETS = LIABILITIES + OWNERS' EQUITY

	Cash				Retained Earnings
Dividend Paid	-$5,000				-$5,000

Retained Earnings Go Down, because some of our earnings are no longer retained!

But Dividends are not an expense; they're not a cost needed to generate revenues.

We want to distinguish between how much the project generates in profits and what the firm does with those profits (pay out a dividend or re-invest them in the firm)

Summary of All Transactions (so far)

		Assets					Liabilities		Owners' Equity	
Transaction or Event		**Cash**	**Accounts Receivable**	**Inventory**	**PPE**		**Accounts Payable**	**Wages Payable**	**Contributed Capital**	**Retained Earnings**
Beginning Balance		**$0**	**$0**	**$0**	**$0**		**$0**	**$0**	**$0**	**$0**
Investment By Owners		$240,000							$240,000	
Purchase of PPE		-$70,000			$70,000					
Depreciation of PPE					-$10,000					-$10,000
Purchase Of Inventory on Credit				$99,000			$99,000			
Payment for Inventory Purchases		-$94,000					-$94,000			
Sale of Inventory				-$90,000						-$90,000
Sales Revenue			$200,000							$200,000
Collects from Customers		$180,000	-$180,000							
Wages and Benefits Expense								$55,000		-$55,000
Payment for Wages and Benefits		-$46,000						-$46,000		
Payment of Dividend		-$5,000								-$5,000
Payment of Taxes (see Below)										
Ending Balance		**$205,000**	**$20,000**	**$9,000**	**$60,000**		**$5,000**	**$9,000**	**$240,000**	**$40,000**
Totals for				**Assets**	**$294,000**		**Liabilities**	**$14,000**	**Owners' Equity**	**$280,000**

Income Statement (so far)

Sales Revenue	$200,000
Cost of Goods Sold	($90,000)
Gross Profit	$110,000
Depreciation Expense	($10,000)
Wage Expense	($55,000)
Pre-tax Income	$45,000

Now we need to calculated Income Tax Expense!

Taxes

- Calculation of Taxes can be complicated – when in doubt, consult a tax professional
- There is usually a different set of rules for calculating taxable income than for calculating income on the firm's "regular" accounting books
- We'll examine one of those differences – Depreciation

Depreciation – Book Purposes

- For accounting purposes (called BOOK purposes), firms generally use Straight Line Depreciation
- For our $70,000 purchase of PPE and a 7 year useful life, Book Depreciation is $70,000 / 7 = $10,000 a year
- If this was also used for tax purposes, this would lower taxable income by $10,000.
  - If the tax rate is 40%, this would lower our taxes by $4,000

Depreciation – Tax Purposes

- But for tax purposes, firms are often allowed to use **ACCELERATED DEPRECIATION**
- The purpose of this feature of the tax code is to help stimulate investment
- Accelerated Depreciation means that more depreciation than $7,000 is allowed in the early years and less than $7,000 in the later years
- This means that you get more of your tax deduction early.
- Given the time value of money, the PV of your tax payments is lower, so this makes the after-tax cost of purchasing the PPE lower!

Back To Our Example

- Suppose that for tax purposes, instead of depreciating 1/7th of the cost of $70,000, we're allowed to deduct 29% of $70,000 in the first year
- This means Tax Depreciation = .29 x 70,000 = $20,300 (about double the straight-line amount)
- Assuming everything else on the tax return is the same as on our book income statement, our tax return would be as follows:

Taxable Income	
Sales Revenue	$200,000
Cost of Goods Sold	-$90,000
Depreciation Expense	-$20,300
Wages and Benefits	-$55,000
Taxable Income	$34,700
Tax at 40%	**$13,880**

- Let's assume that the tax of $13,800 is paid in cash

Summary of All Transactions (including taxes)

		Assets					Liabilities		Owners' Equity	
Transaction or Event		**Cash**	**Accounts Receivable**	**Inventory**	**PPE**		**Accounts Payable**	**Wages Payable**	**Contributed Capital**	**Retained Earnings**
Beginning Balance		**$0**	**$0**	**$0**	**$0**		**$0**	**$0**	**$0**	**$0**
Investment By Owners		$240,000							$240,000	
Purchase of PPE		-$70,000			$70,000					
Depreciation of PPE					-$10,000					-$10,000
Purchase Of Inventory on Credit				$99,000			$99,000			
Payment for Inventory Purchases		-$94,000					-$94,000			
Sale of Inventory				-$90,000						-$90,000
Sales Revenue			$200,000							$200,000
Collects from Customers		$180,000	-$180,000							
Wages and Benefits Expense								$55,000		-$55,000
Payment for Wages and Benefits		-$46,000						-$46,000		
Payment of Dividend		-$5,000								-$5,000
Payment of Taxes		-$13,880								-$13,880
Ending Balance		**$191,120**	**$20,000**	**$9,000**	**$60,000**		**$5,000**	**$9,000**	**$240,000**	**$26,120**
Totals for				**Assets**	**$280,120**		**Liabilities**	**$14,000**	**Owners' Equity**	**$266,120**

Balance Sheet

Assets			Liabilities and Owners' Equity	
Cash	$191,120		Accounts Payable	$5,000
Accounts Receivable	$20,000		Wages Payable	$9,000
Inventory	$9,000		Total Liabilities	$14,000
Current Assets	$220,120			
Property Plant and Equipment, Net	$60,000		Contributed Capital	$240,000
			Retained Earnings	$26,120
			Total Owners' Equity	$266,120
Total Assets	$280,120		Total Liabilities Plus Owners' Equity	$280,120

Income Statement (Including Taxes)

Sales Revenue	$200,000
Cost of Goods Sold	($90,000)
Gross Profit	$110,000
Depreciation Expense	($10,000)
Wage Expense	($55,000)
Pre-tax Income	$45,000
Tax Expense	$13,880
Net Income	**$31,120**

Next – The Cash Flow Statement

- And How it Relates to the Income Statement and Change in Balance Sheet accounts


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