Executive Education: Mini MBA Program

Finance and Accounting
for Management Decision-Making

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- Dave Vang is a professor of finance and department chair for the University of St. Thomas. He graduated summa cum laude from St. Cloud State University and received a PhD in Economics from Iowa State University. Besides being an award winning teacher, he has performed over 70 consulting assignments for firms ranging from small businesses to Fortune 100 corporations. He has been a CFO for a technology firm through the process of start up to going public, and this experience led him to co-author the textbook, Entrepreneurial Finance: Applied Approach 3rd ed published by M.E. Sharpe.

- Learning Objectives--by the end of this seminar the participant should be able to:
- (1) Understand the main principles of accounting for transactions.
- (2) What the income statement and balance sheet represent.
- (3) How to analyze financial statements for strengths and weaknesses in an organization.
- (4) Understand how decisions are made in a business setting when the priority is maximizing the value of the business.

Overview

- Welcome and Introductions
- Introduction to accounting concepts and definitions
- Basic Accounting Equation
- Basic Financial Statements
- Recording Transactions
- Analysis of Financial Statements (Ratios)
- Break-even
- Decision making to Maximize Value

Accounting Concepts

- Assets--something one owns
- Liabilities--something that is owed
- Net Worth or Equity--Assets minus Liabilities
- Revenue--income from customers
- Expenses--what is paid to run the business
- Information is recorded at historical cost
- Principle of conservatism
- Cash Accounting--revenues and expenses are recorded only when received or paid
- Matching Principle--Expenses should be recorded at the time that they result in revenue produced and vice versa
- Accrual Accounting--method of recording that attempts to follow the matching principle

Accounting Concepts (Current Assets)

- Cash
- Accounts Receivable--money to be received from the customers
- Inventory--raw materials or finished products
- Other Current Assets--Pre-paid Expenses, etc.
- Current Assets=Cash+Accounts Receivable+Inventory+Other Current Assets

Accounting Concepts (Fixed, Long-term, Capital Assets)

- Property Plant and Equipment
- Accumulated Depreciation Expenses=sum of all depreciation expense to date written against a depreciable asset since it was purchased
- Net Plant and Equipment=Property Plant and Equipment - Accumulated Depreciation

Accounting Concepts (Liabilities)

- Notes Payable -debt
- Accounts Payable--usually owed to suppliers
- Other Current Liabilities--taxes owed, wages payable, etc.
- Current Liabilities=Notes Payable+Accounts Payable+Other Current Liabilities
- Loans--bank or business-to-business or personal loan to the business
- Bonds---marketable debt usually used by the largest companies
- Total Long-term Liabilities=Loans+Bonds+Other Long-term Liabilities

Accounting Concepts (Net Worth or Equity)

- Common Stock--share of ownership
- Retained Earnings--sum of all past profits that have reinvested back into the firm rather than paid out as dividends
- This period's addition to Retained Earnings=Revenue received during period - Expenses for the same period - dividends paid if any
- Equity=Common Stock+ Retained Earnings

Accounting Concepts (Revenue and Expenses)

- Revenue--Money from the customer (Cash Basis vs. Accrual Basis)
- Cost of Goods or Services Sold--sum of wages and materials expenses that went into producing the product or service
- Administrative expense--salaries and other expenses of accounting for and managing the company
- Rent and utilities expenses--other examples of expenses
- Depreciation expense--the allowable per period “write-off” of a long-term asset (matching principle)
- Interest expense--interest to be paid by the company on the liabilities owed
- Taxes

The Accounting Equation

- Assets = Liabilities + Equity
- Current Assets + Net Plant and Equipment=Current Liabilities + Long-term Liabilities + Equity
- Cash+Accounts Receivable+Inventory+ Other Current Assets+Equipment-Accumulated = Notes Payable+ Accounts Payable+Other Current Liabilities+Loans+Bonds+Common Stock +Retained Earnings

Basic Financial Statements

- Balance Sheet--a “snap shot” of what the firm looks like on a specific day.
- Income Statement--a description of revenues and expenses of the firm over a period of time.

Balance Sheet for XX Co.

Assets

- Cash
- Accts. Rec.
- Inventory(supplies)
- Total Current Assets
- Plant & Equip.(pianos)
- Accum. Deprec.
- Net Plant & Equip.
- Total Assets

Liab. & Equity

- Notes Pay.
- Accounts Pay.
- Total Liab.
- Common Stock
- Retained Earnings
- Total Equity
- Total Liab.& Equity

Statement for XX Co.

- Gross Income or Sales or Revenue
- - Cost of Goods Sold
- = Gross Profit
- Operating Expenses
- + Rent Expense
- + Utilities Expense
- + Wages Expense
- + Depreciation Expense
- = Total Operating Expenses
- Earnings Before Interest and Taxes(EBIT)=GP- TOP
- -Interest Expense
- =Earnings Before Taxes

Transactions

Cash+Accounts Receivables+Supplies+Pianos-Accumulated Depreciation=Notes Payable+Accounts Payable+Common Stock+Retained Earning+Revenues-Expenses

- Practice Makes Perfect (PMP) was started on July 1 of the current year. You are the founder, president, etc. Using the equation format, record the transactions and construct a balance sheet and income statement.

Transactions

- (1)You start a company with $100,000 raised by selling stock.
- (2)Bank gives you $50,000 loan at 10 percent
- (3)You purchase three pianos for $16,000 each for cash. You plan to depreciate over 5 years, and then sell them for $1,000 each.
- (4)You buy $2,000 in supplies on account.
- (5)Newspaper bills you $500 for advertising. You plan on paying next month.
- (6)You rent a space for $1,000 per month which you paid in cash.
- (7)The first month you bill students $2,000 for lessons.
- (8)You pay your two piano teachers $500 each at the end of the month.
- (9)One of the students pays $200 towards the invoice billed earlier.
- (10)You write check for interest owed for the month.
- (11)You adjust supplies for $300 in sheet music that you gave to the students.
- (12)You record one month's depreciation on the pianos.

Cash + Accounts Receivables + Supplies + Pianos - Accumulated Depreciation =
Notes Payable + Accounts Payable +Common Stock +Retained Earning +Revenues - Expenses

	C	+ AR	+ S	+ P	- AD	=	NP	+ AP	+ CS	+ RE	+ R	- E
(1)	100000					=			100000			
(2)	50000					=	50000					
(3)	-48000			48000		=						
(4)			2000			=		2000				
(5)						=		500				- 500
(6)	-1000					=						- 1000
(7)		2000				=					2000	
(8)	-1000					=						- 1000
(9)	200	-200				=						
(10)	-417					=						- 417
(11)			- 300			=						- 300
(12)					-750	=						- 750
	99783	+ 1800	+ 1700	+48000	- 750	=	50000	+ 2500	+100000	+ 0	+ 2000	- 3967
			150,533			=			150,533			

PMP Balance Sheet

July 31

Cash	99,783
Accounts Receivable	1,800
Supplies	1,700
Total Current Assets	**103,283**
Pianos	48,000
Less Accum. Deprec.	-750
Net Equipment	**47,250**
Total Assets	**150,533**

Notes Payable	50,000
Accounts Payable	2,500
Total Liabilities	**52,500**
Common Stock	100,000
Retained Earnings	-1,967
Total Equity	**98,033**
Total Liabilities and Equity	**150,533**

Income Statement for PMP
July

Income	2,000
Gross Profit	**2,000**
Operating Expenses	
• Rent Expense	1,000
• Supplies Expense	300
• Wages	1,000
• Depreciation Expense	750
• Advertising Expense	500
Total Operating Expenses	**3,550**
Earnings Before Interest and Taxes (EBIT)	**-1,550**
Interest Expense	417
Earnings Before Taxes	**-1,967**

Analyzing Financial Statements (Ratios)

- Liquidity Ratios
- Asset Management Ratios
- Debt Management Ratios
- Profitability Ratios
- Dupont Method of Trouble Shooting.

Sample Financial Statements

Sales	7035600
Cost of goods	5728000
Other expenses	680000
Depreciation	116980
Total Operating Costs	-6524960
EBIT	510640
Interest Expense	88000
EBT	422640
Taxes (40%)	-169056
Net Income	253584

Assets	
Cash	14000
Short-term investments	71632
Accounts Receivable	878000
Inventories	1716480
Total Current Assets	2680112
Gross Fixed assets	1197160
Less Accum. Deprec.	-380120
Net Fixed Assets	817140
Total Assets	**3497152**
Liabilities and Equity	
Accounts Payable	436800
Notes Payable	600000
Accruals	408000
Total Current Liabilities	1444800
Long-term debt	500000
Common stock	1680936
Retained earnings	-128584
Total Equity	1552352
Total Liabilities and Equity	**3497152**

Liquidity Ratios

- Current Ratio = Current Assets/Current Liabilities = 1.9X ; Industry = 2.7X

- Quick Ratio = (Current Assets-Inventory)/Current Liabilities = .7X; Industry =1.0X

Asset Management Ratios

- Inventory Turnover [ITO] = Sales/Inventory = 4.1X; Industry = 6.1X
- Days Sales Outstanding [DSO] = Receivables/(Sales/360) = 44.9 days; Industry = 32 days
- Fixed Asset Turnover = Sales/Net Fixed Assets = 8.6X; Industry = 7.0X
- Total Asset Turnover [TAT] = Sales/Total Assets = 2.0X; Industry = 2.6X

Debt Management Ratios

- Debt Ratio = Total Debt/Total Assets = 55.6%; Industry = 50%

- Times Interest Earned [TIE] = EBIT/Interest Expense = 5.8X; Industry = 6.2X

Profitability Ratios

- Profit Margin [PM] = Net Income/Sales = 3.6%; Industry = 3.5%
- Basic Earning Power Ratio [BEP] = EBIT/Total Assets = 14.6%; Industry = 19.1%
- Return on Assets [ROA] = Net Income/Total Assets = 7.3%; Industry = 9.1%
- Return on Equity [ROE]= Net Income/Equity = 16.3%; Industry = 18.2%

Dupont Method

- ROE = PM X TAT X Equity Multiplier
- Equity Multiplier = 1/(1-Debt Ratio)
- Our Firm
- 16.3% = 3.6% X 2.0 X 2.3
- Industry
- 18.2% = 3.5% X 2.6 X 2.0
- Low OK Low High

Dupont Conclusions

- Our return to our stockholders is too low.
- Our profit margin is OK, so we do not appear to have a cost control problem.
- Our Total Asset Turnover is low suggesting that we have an asset management problem.
- Our level of debt is high suggesting that we have more risk than our competitors.

Break-even Analysis

- Fixed Costs = Do not change with the level of production or sales (within a year). Examples include administrative expenses, facilities/office rent, and insurance
- Variable Costs = Vary directly with the level of production or sales. Examples include direct labor and material costs.

Rent = $1,000/Month
Administrative Costs = $2,000/Month
Labor + Materials = $10/unit
Selling Price = $110/unit

Quantity	Fixed Cost	Variable Cost	Total Cost	Revenue	Profit
0	$3,000	$0	$3,000	$0	-$3,000
10	$3,000	$100	$3,100	$1,100	-$2,000
20	$3,000	$200	$3,200	$2,200	-$1,000
30*	$3,000	$300	$3,300	$3,300	$0
40	$3,000	$400	$3,400	$4,400	$1,000
50	$3,000	$500	$3,500	$5,500	$2,000

*Break-even occurred at 30 units per month

Break-even quantity = Fixed Cost / (Price – Variable Unit Cost)

30 = $3,000 / ($110 – $10)

Maximizing Value

- Value is created when the return on investment > cost of capital
- Cost of Capital is the minimum rate of return necessary to compensate investors for risk.
- Net Present Value (NPV) = Present Value of Cash Inflows – Present Value of Cash Outflows
- NPV is the change in the value of a firm because of an investment decision
- NPV > 0 means the return on investment is greater than the cost of capital

Cost of Capital

- Cost of Capital = rate the investor would expect from an investment of equal risk to the project in question.
- Risk/Return relationship can be partially described by the Capital Asset Pricing Model (CAPM)
- Required rate of return = Risk Free Rate + Beta X (Market Portfolio Rate – Risk Free Rate)

CAPM

- Risk Free Rate = rate on U.S. Government Security
- Market Portfolio Rate = rate on a widely diversified investment that mirrors the market (i.e. SP 500 index, NYSE index, etc.)
- Beta = a measure of volatility relative to the market portfolio = change in asset return/change in market portfolio return
- Beta<1 low risk stock
- Beta=1 average risk stock
- Beta>1 high risk stock

CAPM example

- Suppose T-bills earn 2%, the SP 500 yields 12% and a stock has a beta of 1.5 (its 150% as volatile as the market), what return do investors expect from this stock?
- 2% + 1.5X(12% - 2%) = 17%

Managing for Value

- An investment decision will add to the value of this company if it earns more than 17%.
- Suppose a project costs $600 and will generate $200 per year for the next 5 years, should we buy it?

Calculation of NPV

Year	Cash Flow		Present Value
0	-600		-$600
1	200	200(1/1.17)to 1 power	$170.94
2	200	200(1/1.17)to 2 power	$146.10
3	200	200(1/1.17)to 3 power	$124.87
4	200	200(1/1.17)to 4 power	$106.73
5	200	200(1/1.17)to 5 power	$ 91.22

- Sum of Present Values = NPV = +$ 39.86

- NPV>0 so project does earn more than 17%. Actually the project earns the 17% on the $600 invested and also exceeds that 17% return requirement by enough to increase the value of the company by $39.86.

Decision Rules for Maximizing Value

- Accept independent projects with NPV >0.
- Reject independent projects with NPV < 0.
- On mutually-exclusive projects that are both positive accept the one with the highest NPV.

- Suggested Reading—Entrepreneurial Finance and Applied Approach by Cornwall, Vang, and Hartman 3rd ed (2012) M.E. Sharpe.

The End