TIM 80C Lecture (5/13/14)

Agenda

1) Project Phase III: Cash Flow Analysis

2) Financial Strategy: How a business works
   - Capital Structure
   - Business Cycle
   - Financial metrics

3) Return Graded, Homework 2

4) Work on Project (time permitting)
1) Project Phase III: Cash Flow Analysis

Need estimate costs (negative cash flows) and revenue (positive cash flows) for the startup for 3-5 years.

Costs: Organize by activity

1) **Product Development**
   - People (e.g. engineers): how many (~5-10) and Salary (~$50K - $100K)
   - Equipment: software, desktop/laptop, servers, 3D printers, prototype
   - Facilities: 100-200 sq ft per person, cost (~$25/sq ft per month)

2) **Product Manufacturing**
   - Number of units
   - Manufacturing cost per unit
   - Transportation cost

   :
3) Marketing and Sales
   - People (sales people): how many and Salary
   - Advertising Campaigns: how many impressions, Cost impression

4) Management and Support
   - People (e.g. CEO, CFO, etc.): how many and Salary
   - Legal
   - HR

Revenue: estimate based Business Goals, Market Strategy, and Product Strategy

1) Estimate our total target market size ($) for 3-5 years

Source: Market Strategy (Revenue Map)

\[ \sum \text{target market segment size} \times (1 + \text{growth rate})^n \]

\[ n \text{: number of years in the future} \]
2) Forecast revenues for 3-5 years

Source: Business Goals (Market Share)

\[ \text{total market size} \times \text{desired share of the market} \]

3) Determine the price per a unit

Source: Product Strategy, Market Strategy

4) Determine Sales Volume

\[ \text{Revenue} = \text{Sales Volume} \times \text{price per unit} \]

When estimating Sales Volume the product life cycle must be taken into account.
Suggestions:

- First, replicate the Polaroid cash flow analysis handout in Excel.
- Change the numbers in the spreadsheet to create cash flow analysis for your start-up.

The capital structure of a company refers to how the company is financed.

Companies are financed from 2 sources:
- Donations
- The company's owners (shareholders)
- Financial institutions, banks or individuals that lend money to the company (debt holders)

Cash contributed by shareholders is called Equity Capital.
Cash contributed by debt holders is called Debt Capital.

The capital structure of a company:
- Debt Capital
- Equity Capital

High debt/equity ratio → More earning potential, more risk
Business Cycle: 1 year
(All numbers in $1,000s)

Capitol Structure
\[
\text{debt : 1}
\]
\[
\text{equity : }
\]

Loan Interest

Step 1: Raise Capital
\[
\text{Debt : $500}
\]
\[
\text{Equity : $500}
\]
\[
\text{Total : $1,000}
\]

Step 2: Create Assets
Product Development
Product Manufacturing
Equipment
Facilities
\[
\text{Total : $1,000}
\]

Step 3: Make Sales
Sale of Product
Licensing Technology

Total Revenue: $500

Dividends to Shareholders
$50

Reclaim Earnings
$50

Step 4: Profit
Revenue - Cost
(Cost of goods + Operating Cost)
Total: $100
Metrics to assess the financial health of a company

1) Capital Structure = \( \frac{\text{debt}}{\text{equity}} \)

\[
\frac{500}{500} = 1
\]

2) Return on Assets = \( \frac{\text{Revenue}}{\text{Asset (Asset Turnover)}} \)

\[
= \frac{500}{1000} = 0.5 \quad \text{or} \quad \frac{500}{600} = 83.33\%
\]

3) Profit Margin = \( \frac{\text{Profit}}{\text{Revenue}} \)

\[
= \frac{100}{500} = 0.2 \quad \text{or} \quad \frac{500}{200} = 25\% \quad \text{(very good)}
\]

4) Retention Rate = \( \frac{\text{Retained Earnings}}{\text{Profit}} \)

\[
= \frac{50}{100} = 0.5 \quad \text{or} \quad \frac{500}{100} = 50\%
\]
5) Return on Invested Capital (ROIC) = \frac{\text{Profit}}{\text{Invested Capital}}

= \frac{\$100}{\$1000} = 0.1 \ or \ 10\% \quad \text{(good)}

6) Return on Equity (ROE) = \frac{\text{Profit}}{\text{Equity Capital}}

= \frac{\$100}{\$500} = 0.2 \ or \ 20\% \quad \text{(very good)}

7) Return on Debt (ROD) = \frac{\text{Profit}}{\text{Debt Capital}}

= \frac{\$100}{\$500} = 0.2 \ or \ 20\%

8) Weighted Average Cost of Capital (WACC)

\text{WACC} = \frac{\text{Equity Capital}}{\text{Invested Capital}} \times \text{Equity Cost (\%)} + \frac{\text{Debt Capital}}{\text{Invested Capital}} \times \text{Debt Cost (\%)}

= \frac{\$500}{\$1000} \times 10\% + \frac{\$500}{\$1000} \times 5\%

= 7.5\%
9) Economic Value Added (EVA) = P0E/C - WACC

= 10% - 7.5% = 2.5%

EVA must be greater than 0 for the company to add economic value.
Overall the work was very good

General Comments:

1) Use structured problem solving
   separate the plan from the execution of the plan

2) Explain your work (So what)
   - diagrams
   - design concepts

3) Make sure your solutions have enough detail

Corrections due Thursday (5/21/14)