Agenda

1) Comments on the Midterm Exam

2) Cash Flow Analysis (Financial Strategy)

3) Project
   - Phase II Feedback
   - Phase III Assignment
1. Comments on the Midterm Exam

Graded midterm exam will be returned Thursday of next week (5/15/14)

Corrections will due the following Thursday (5/22/14)

Final Score on the midterm = Original Score + 0.6 x (Corrections - Original)

Or 0.4 x Original + 0.6 x Corrections

Corrections are an opportunity to learn:

- Course material (FAST, ES, MM, etc)
- Planning / Time Management
- Applying the course material to new problems

An important part of planning is adjusting level of detail to task / problem you are working on.

FAST diagram:

In-class Exam ——> 5-10 minutes
Homework ——> 20 minutes
Project ——> 1 hour +
Creating a Start-up ——> 1 week +
2. Cash Flow Analysis

Motivation: Before we can create a financial strategy for start-up we first need to understand the cash flows.

5 Step Process for Cash Flow Analysis

Step 1: Make a list of all relevant cash flows ($) for the start-up.

Cash flowing in (not including funding):
- Revenue from selling product (Sales)
- Licensing technology (Patents) to other companies

Cash flowing out:
- Facilities: building, office supplies, food, etc.
- People: management, product development, marketing/Sales, finance, etc.
- Equipment: computers, lab equipment, etc.
Step 2: Determine the timing of the cash flows. (Usually done quarterly)

- Facilities: $200 to rent and furnish the new office building
- People: $500 hire product development team
- Equipment: $100 for new servers

Step 3: Determine the net cash flow for each period (quarters)
Step 4: Compute the present value for the net cash flow for each period (quarter).

Present Value: The value of a future amount of money ($), in today's dollars.

Money depreciates (loses value) over time due to inflation, i.e., $1M in 2014 → $2M in 2015.

We need to discount the future value of a cash flow in order to get its present value.

Let:

\[ FV = \text{future value} \]
\[ PV = \text{present value} \]
\[ d = \text{discount rate (inflation rate)} \]
\[ n = \text{number of periods FV is in future} \]

\[ PV = \frac{FV}{(1+d)^n} \]

present \( \rightarrow n = 0 \)
Example: Venture Capital Firm has promised you a $1M investment 3 years in the future. How much is this investment worth in today’s dollars?

\[ FV = \$1M \]
\[ d = 10\% \text{ per a year (industry standard)} \]
\[ n = 3 \]

\[ PV = \frac{\$1M}{(1 + 0.1)^3} \approx \$750,000 \]

Question: What if the investment is going to be in 3 quarters?

\[ d = \frac{10\%}{4} = 2.5\% \text{ per a quarter} \]

\[ PV = \frac{\$1M}{(1 + 0.025)^3} \approx \$930,000 \]

also written as

\[ PV = \frac{\$1}{(1 + 0.00625)^3} \]
Example: Based on cash flow analysis, you promise the venture capitalists a $3M return on their $1M investments in 3 years. How much is that return actually worth?

\[ FV = \$3M \]
\[ d = 10\% \text{ annual} \]
\[ n = 3 \text{ years} \]

\[ PV = \frac{\$3M}{(1+0.1)^3} \approx \$2,250M \]

\[ RoI = \frac{\text{Return} - \text{investment}}{\text{investment}} \]

\[ RoI = \frac{\$2,250 - \$1M}{\$1M} = 1.25 = 125\% \]

\[ RoI = \frac{\$3M - \$1M}{\$1M} = 2 = 200\% \]
**Step 5**: Compute the Net Present Value (NPV) of the start-up by summing all present value (discounted) cash flows.

**Present Values assuming Q1 Y1 start date and 10% annual discount rate**

<table>
<thead>
<tr>
<th>Quarter</th>
<th>FV (net)</th>
<th>PV (net)</th>
</tr>
</thead>
<tbody>
<tr>
<td>n=0</td>
<td>Q1, Y1</td>
<td>$1M</td>
</tr>
<tr>
<td>n=1</td>
<td>Q2, Y1</td>
<td>$1.5M</td>
</tr>
<tr>
<td>n=2</td>
<td>Q3, Y1</td>
<td>$1M</td>
</tr>
<tr>
<td>n=3</td>
<td>Q4, Y1</td>
<td>$2M</td>
</tr>
<tr>
<td>n=4</td>
<td>Q1, Y2</td>
<td>$0.5M</td>
</tr>
<tr>
<td>n=5</td>
<td>Q2 Y2</td>
<td>$1M</td>
</tr>
</tbody>
</table>

\[ \text{NPV} = -3.9 \text{ M} \]

**General Rule**

After 3-5 years

\[ \text{NPV} > 0 \rightarrow \text{Start-up will get funding} \]

\[ \text{NPV} < 0 \rightarrow \text{No funding} \]
Project

Phase II: Overall the work on Phase II was good

Fair         Excellent

General Comments

- Conceptual Design: Most groups have a good design concept but need to work on showing your work (FAST, FS, MM, Selection Criteria).
- Market Strategy: If startup is in a large industry/market (e.g., CE), first do a high-level revenue map to determine what part of the market you are in (Tablet Computers). Then doing a low-level (detailed) revenue map for that part of the market to determine the target segments (College Students, productivity tablet space).
Business Strategy: Make sure your Park model clearly differentiates between competitors and suppliers.

Phase III

1) Finishing backlog from Phase I and Phase II
   - Product Strategy
   - Market Strategy
   - Business Strategy

2) Business Plan: Organize and integrate the work from Phase I and Phase II into a professional document, i.e., something you could show to investors.

3) Cash Flow Analysis for 3-5 years