



BUSINESS SIMULATION (EM)BA 528 SUMMER 2015

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Simulation Objectives

This course uses the *The Marketplace Live* business simulation. In this simulation, you will start up and run your own company; you are given control of a simulated business and must manage its operations through several decision cycles.

The simulation scenario revolves around the microcomputer industry. The marketplace is global in its scope and is in its introductory stage of the product life cycle. Within this new industry, you and your classmates will form the new venture firms, which will be developing the market. There are no other firms in the market and all teams start out with the same resources so as to ensure a level playing field.

In six decision rounds representing a one-and-a-half year period of compressed time, you must evaluate the market opportunity, choose a business strategy, evaluate the tactical options and make a series of decisions with profitability in mind. Your decisions are combined with the decisions of your competitors and run through the marketplace simulator. The results are fed back to the teams for the next round of decision-making.

The learning strategy is to gradually build the business and thus, the simulation gradually introduces new issues, which must be mastered by you and the other players. Each quarter or decision period has a dominant activity and a set of decisions linked to it. These dominant activities take you through the business life cycle from start-up, to development, to growth, and ultimately to near maturity. As you work through the business life cycle, new decisions and managerial content is phased in as it becomes relevant to the current decisions.

The specific goal of the simulation is to develop your management skills by giving you an integrated perspective of the entire business operation. More specifically, the simulation is designed to:

- Develop strategic planning and execution skills within a rapidly changing environment.
- Crystallize the linkages between business decisions and financial performance.
- Instill a bottom line focus and the simultaneous need to deliver customer value.
- Internalize how important it is to use market data and competitive signals to adjust the strategic plan and more tightly focus business tactics.
- Develop teamwork across functions and thus promote better decision-making by helping you see how your decisions can affect the performance of others & the organization as a whole.
- Experience the challenges and rewards of the entrepreneur by starting up and running a new business venture

Simulation Registration

You will receive instructions from me via email on how to sign up for the simulation. Please register **prior to class on 6/19/15**.

Simulation Deliverables

Final grades will be based upon the successful completion of the following deliverables, weighted as specified:

Q1-Q6 Decisions.....	25%
Cumulative Balanced Scorecard.....	25%
VC Pitch	25%
Final Report	<u>25%</u>
Total	100%

All deliverables are at the team-level. With the exception of the Cumulative Balanced Scorecard, the deliverables are evaluated on a “pass/fail” basis. That is, the team will receive an “A” on each of these deliverables for which the criteria are satisfactorily met and will receive a “C” on those deliverables that are not satisfactorily met. Your final individual grade will then be based upon the team scores as adjusted by the team members’ confidential evaluations (see details below).

Q1-Q6 Decisions. The simulation consists of six decision periods (quarters 1 through 6). Each quarter has a dominant activity and a set of decisions that are linked to it. Appendix

1 provides a detailed list of these activities/decisions. Satisfactory completion of this deliverable consists of completing these activities/decisions and submitting them by the following specified due dates:

Quarter	Work time	Decision deadline
Quarter 1	6/19 (3:45-5:45)	6:00pm, Friday 6/19
Quarter 2	6/19 (7:00pm+)	11:45pm, Friday 6/19
Quarter 3	6/20 (1:00-4:00pm);	4:00pm, Saturday 6/20
Quarter 4	6/20 (4:00-5:15 pm)	
Quarter 4/VC Pitches	7/10 (3:45-5:45pm)	11:45pm, Friday 7/10
Quarter 5	7/11 (1-3:15pm)	3:15pm, Saturday 7/11
Quarter 6	7/11 (class, 3:30-5:15pm)	5:30pm, Saturday 7/11
Final Report due by 5:00pm, Sunday 7/19/15		

Cumulative Balanced Scorecard. The Cumulative Balanced Scorecard will be the measure used to evaluate your overall performance at the end of the six quarters. The cumulative scorecard score will be based upon an average of your balanced scorecard scores over the final four quarters (i.e., Q3-Q6). Appendix 2 provides a detailed description of the Balanced Scorecard dimensions and their calculations.

Grades for this deliverable will be based upon the final distribution of the teams' cumulative balanced scorecard scores, subject to the following guidelines:

- First place team will receive an “A”
- Teams that go bankrupt will receive either a “C” (bankrupt; hopeful future) or a “D” (bankrupt; dismal future).

VC Pitch. Each team will present a business plan to a panel of “Venture Capitalists” (comprised of me and few other guest judges) during the Q4 decision period (on Friday, July 11). **Each team will be allotted 15 minutes for their presentations during the class period on 7/10/15 (3:45-5:45pm).** Further details on the contents of the presentations and funding ramifications will be provided as the course unfolds. Satisfactory completion consists of delivering a presentation at the designated time, regardless of its funding implications.

Final Report. Each team will provide a final report—in the form of a power point presentation. These will be posted as a form of debrief for all teams to review and should roughly contain the following three points (and their associated mini RMs): 1) key elements of the business plan that you presented to the venture capitalists, 2) how did your actual performance meet/exceed/fail to meet your plan during Q4-Q6?, and 3) what adjustments you would make going forward? Satisfactory completion consists of delivering the presentation by the **due date of Sunday, July 19, 2015 at 5pm.**

Confidential Team Member Evaluations. Each team will receive one grade for each of the just described deliverables, respectively. As stated above, your individual final grade for each deliverable will be based upon your contribution to these collective efforts as deemed warranted by your team members' evaluations: Each student will submit an evaluation of each team members' contribution (including their own) to me for each of the four deliverables.

Evaluations are confidential and should be guided by the team's "pact". That is, I require each team to come up with a set of rules, or "pact", which will govern their group for this simulation. The only stipulation is that it must be a consensus decision and all team members must sign the list of criteria before I will accept it. This pact should be viewed as a "living" document in that you may change the rules as necessary throughout the simulation, as long as the change is a consensus decision, is put in writing, and everyone signs off on the new document.

Based upon this pact each member will rate their fellow team members by assigning to them the % of the team's score for each deliverable. Any deviations from 100% require an explanation. Ratings can be < or > than 100%. The only way that I will recognize > 100 is if someone else gets < 100 (i.e. this is a zero-sum method). A rating of < .8 is only possible if the team member in question was formally confronted (i.e., in writing) in a manner that both specifies the remedial action required and allows sufficient time to enact it. To calculate each team members' final deliverable scores, I will use the average of all team member evaluations. For example, Team A consists of 5 members and receives an "A" for the particular deliverable. Team members 1 through 4 all receive a rating of 100% from all team members for this deliverable, while team member 5 receives an average rating of 90% (i.e. this team member did not live up to their expected contribution). Note that even though I don't give higher than an "A", if one particular team member picked up the shortfall caused by team member 5, that extra contribution should also be recognized—for in the event that the team gets a "C" on the particular deliverable, that would help the person who gave forth the extra effort). The final scores received by each group member in this example for this deliverable would be as follows:

<u>Team member</u>	<u>Deliverable Score</u>
1 - 4	95 (95 * 1.0); an "A"
5	85.5 (95 * .90); a "B"

Team member evaluations for each deliverable should be turned in (I will set up a drop box in ANGEL for each) according to the following schedule:

Deliverable:	Evaluation Due Date:
Q1-Q6 Decisions/Cumulative Balanced Scorecard Score (one evaluation)	Midnight, Sunday, 7/12/15

VC pitch	
Final Report	Midnight, Monday, 7/20/15

Note: those team members that do not turn in evaluations by the designated due dates give up their voice in the process and this will be interpreted as though they concur with the average evaluations provided by those team members that did turn in evaluations.

Academic Integrity

According to the Penn State Principles and University Code of Conduct:

Academic integrity is a basic guiding principle for all academic activity at Penn State University, allowing the pursuit of scholarly activity in an open, honest, and responsible manner. According to the University’s Code of Conduct, you must neither engage in nor tolerate academic dishonesty. This includes, but is not limited to cheating, plagiarism, fabrication of information or citations, facilitating acts of academic dishonesty by others, unauthorized possession of examinations, submitting work of another person, or work previously used in another course without informing the instructor, or tampering with the academic work of other students.

Any violation of academic integrity will be investigated and, where warranted, corrective academic and/or disciplinary action will be taken. For every incident where a penalty is assessed, an Academic Integrity Incident Report form must be filed. The form can be found on the Smeal College Intranet at this URL: <https://intranet.smeal.psu.edu/students/integrity/index.html>. This form is to be used for undergraduate courses. The report must be signed and dated by both the instructor and the student, and then submitted to Gus Colangelo, Interim Associate Dean for Undergraduate Programs, 202 Business Building.

In addition, the Smeal College has adopted the following Honor Code:

We, the Smeal College of Business Community, aspire to the highest ethical standards and will hold each other accountable to them. We will not engage in any action that is improper or that creates the appearance of impropriety in our academic lives, and we intend to hold to this standard in our future careers.

Some comments on applying integrity to the simulation: every team member is expected to participate fully in each of the team deliverables and that deviances are handled through the team member evaluations. That is, those who don’t contribute fully shall get less than 100% of the team score. Furthermore, the expectation is that team members will make responsible attempts to communicate with the problem team member(s) and to attempt to rectify the situation before it gets out of hand. Confrontation works best if it is early and often. In all cases, I am available to help if needed. Ideally, no one should be surprised by the final scores they receive. Finally, this all means that including a team member’s name that under contributed on an

assignment without giving a requisite evaluation is a breach of academic integrity for everyone on the team.

Affirmative Action & Sexual Harassment

The Pennsylvania State University is committed to a policy where all persons shall have equal access to programs, facilities, admission, and employment without regard to personal characteristics not related to ability, performance, or qualifications as determined by University policy or by Commonwealth or Federal authorities. Penn State does not discriminate against any person because of age, ancestry, color, disability or handicap, national origin, race, religious creed, gender, sexual orientation, or veteran status. Related inquiries should be directed to the Affirmative Action Office, 328 Boucke Building.

Americans with Disabilities Act

The Smeal College of Business welcomes persons with disabilities to all of its classes, programs, and events. If you need accommodations, or have questions about access to buildings where Smeal College activities are held, please contact us in advance of your participation or visit. If you need assistance during a class, program, or event, please contact the member of our staff or faculty in charge. Access to Department of Management and Organization courses should be arranged by contacting the Department of Management and Organization's Office: (814) 863-4503.

An Invitation to Students with Learning Disabilities

It is Penn State's policy to not discriminate against qualified students with documented disabilities in its educational programs. If you have a disability-related need for modifications in your testing or learning situation, your instructor should be notified during the first week of classes so that your needs can be accommodated. You will be asked to present to the Office of Disability Services (located in 116 Boucke Building (814) 863-1807) documentation that describes the nature of your disability and the recommended remedy. You may refer to the Nondiscrimination Policy in the *Student Guide to University Policies and Rules*.

Appendix 1: Balanced Scorecards

Review your balanced scorecard for each quarter. Check how well you performed relative to your score in the previous quarter, and to the industry as a whole. The industry scores represent your benchmark on how well you should be doing, and will be used to measure your firm's performance in comparison to the other firms participating in the exercise. Your firm should be above average in all areas measured. If not, try to find the weaknesses and correct them.

Total Business Performance

A quantitative measure of the executive team's ability to effectively manage the resources of the firm. It considers both the historical performance of the firm as well as how well the firm is positioned to compete in the future. As such, it measures the action potential of the firm.

Total Business Performance = Financial Performance * Market Performance * Marketing Effectiveness * Investment in Future * Wealth * Human Resource Management * Asset Management

If one of the performance measures is less than zero, then the total overall performance measure will be zero.

The following is a summary of the measure of the firm's Total Business Performance and its key performance indicators. The computational details follow.

Financial Performance

Measures how well the executive team has been able to create profits for its shareholders. A positive number is always desired and the larger the better. It is computed in three steps. First, the net profit from operations is computed by taking the operating profit shown in the income statement and adding back investments in the future that are expensed in the current quarter. It measures how well the managers are able to create revenue from the current quarter's marketing, sales and manufacturing activities.

Note that the income statement includes expenditures for R&D, new sales offices and quality control. However, this money is spent to create future business opportunities. Thus, these expenses are added back to the operating profit so that the financial performance measure is entirely focused on current quarter revenues and expenses.

Second, the total number of shares of stock is computed by adding all forms of equity investment. If an emergency loan has been taken out, shares of stock will automatically be issued to the loan shark and they become a permanent part of the equity financing.

Third, the net profit from current operations is divided by the number of shares of stock issued to determine the net profit from current operations per share of stock.

Financial Performance = Net profit from current operations / Total shares issued

Net profit from current operations = Operating profit + Investments in firm's future

Investments in firm's future = Cost to open new sales offices and new web center + R&D investment in new brand features and new brands + R&D licenses

Total shares issued = Number of shares issued to executive team + Number of shares issued to venture capitalists + Number of shares issued to loan shark

Market Performance

Is a measure of how well the managers are able to create demand in their primary and secondary segments. The firm's market share in two target segments is used to measure this demand creation ability. The market share score is adjusted downwards if there were any stock outs. This penalty for stock outs is to underscore two points. First, unnecessary resources have been spent to generate more demand than can be satisfied. Second, ill will has been created by having potential customers become frustrated when they do not find the products that they have been persuaded to buy. The score ranges from 0 to 1.0 and will depend upon the number of competitors. If there are 3 firms, a good score would be greater than 0.5. If there are 8 teams, a good score would be greater than 0.35.

*Market Performance = Average market share in targeted segments / 100 * Percent of demand actually served / 100*

Average market share in target segments = (Market share in first segment + Market share in second segment) / 2

Percent of demand actually served = ((Total net demand after ill will - Number of stock outs) / Total net demand after ill will) * 100

Marketing Effectiveness

Is a measure of how well the managers have been able to satisfy the needs of the customers as measured by the quality of their brands and ads. Customer perceptions of the firm's brands and ads in its primary and secondary segments are used to measure customer satisfaction. The two scores are then averaged to obtain the indicator for marketing effectiveness. The score ranges from 0 to 1.0. A good score would be greater than 0.8

Marketing Effectiveness = (Average brand judgment / 100 + Average ad judgment / 100) / 2

Average of best brand judgments in target segments = (Highest brand judgment in first segment + Highest brand judgment in second segment) / 2

Average of best ad judgments in target segments = (Highest ad judgment in first segment + Highest ad judgment in second segment) / 2

Investments in the Firm's Future

Reflect the willingness of the executive team to spend current revenues on future business opportunities. They are necessary but risky. In the short-term, these expenditures can cause large negative profits on the income statement. As a result, the retained earnings may become highly negative, thus indicating that a substantial portion of the stockholder's investment has disappeared into the operations of the firm. In the long-term, these investments are absolutely necessary if the firm is to be competitive. Thus, there is a need to balance the loss of stockholder's equity against investments which could create even greater returns for the investors in the future. The score is always greater or equal to 1.0 and a good score would be greater than 3.0.

*Investments in the firm's future = (Current expenditures that benefit firms future / Net revenues) * 10 + 1*

Current expenses that benefit firm's future = Cost to open new sales offices and new web regional centers + R&D investment in new brand features and new brands + R&D licenses

Net revenue = Sales revenue - Rebates + Interest income

Creation of Wealth

Is a measure of how well the executive team has been able to add wealth to the initial investments of the stockholders. During the start-up phase of the company, it is expected that the initial stockholders' investments will be used to create new brands, open sales offices, conduct R&D on new brand features and make process improvements in the factory. Expenses will greatly exceed revenues leading to large losses and retained earnings figures that are largely negative.

To compute the creation of wealth measure, the net equity of the firm is first computed by adding the retained earnings to the total of the investments from all of the stockholders. The retained earnings figure is the sum of all profits from the inception of the firm. As noted above, the retained earnings will be negative in the early quarters as the firm invests money to startup and grow the business.

In later quarters, a firm might elect to pay dividends to its stockholders. If dividends are paid, they will be added back into the net equity of the firm for purposes of calculating the Creation of Wealth because they represent wealth that has been created and distributed to the stockholders.

Next, the net equity is divided by the total of all equity investments to obtain a ratio of wealth creation. A value of zero or less indicates bankruptcy. A value greater than zero and less than one indicates the executive team is relying upon the initial stockholder's investments to pay day-to-day expenses plus invest in the future. A value greater than one indicates the firm is adding wealth to the stockholders.

$$\text{Creation of wealth} = \text{Net equity} / \text{total stockholders equity}$$

$$\text{Net equity} = \text{Retained earnings} + \text{Common stock} + \text{Dividends paid to date}$$

$$\text{Total stockholders investment} = \text{Common stock}$$

Human Resource Management

Is a measure of how well the executive team is able to recruit the best employees, satisfy their needs and motivate them to excel. Sales force productivity and factory worker productivity are averaged together to obtain a single score. High performance is only possible if the firm's compensation packages is competitive and in tune with what is important to employees over time. The scores range from zero to 1.00 and a good score would be greater than 0.80.

$$\text{Human Resource Management} = (\text{Sales force productivity} / 100 + \text{Factory worker productivity} / 100) / 2$$

Asset Management

Is a measure of the executive team's ability to use the firm's assets to create sales revenue. The first step in measuring asset management is to compute the asset turnover of the firm. Effective managers are able to use the assets to create sales which are two or three times the value of the assets. Thus, a very good score would be 3.0.

In addition to asset turnover, ending inventories are also measured and included. To avoid stock outs, and their associated penalties, managers might be inclined to produce excessive inventory. To discourage large ending inventories, there is a penalty for producing more inventory than is needed to meet demand. The penalty increases as the proportion of ending inventory to production increases.

$$\text{Asset Management} = \text{Asset turnover} * \text{Penalty for excess inventory}$$

$$\text{Asset turnover} = \text{Net revenue} / \text{Total assets}$$

$$\text{Net revenue} = \text{Sales revenue} - \text{Rebates} + \text{Interest income}$$

$$\text{Penalty for excess inventory} = (1 - \text{Ending inventory} / \text{Production})$$

Cumulative Balanced Scorecard

The final evaluation will be based upon an average of your performance over the final four quarters. Here is how the cumulative score is computed for the last quarter of play, which we will call Q_t :

Total Cumulative Overall Score in Q_t =
Cumulative Financial Performance in Q_t
x Cumulative Market Performance in Q_t
x Cumulative Marketing Effectiveness in Q_t
x Cumulative Investment in Future in Q_t
x Cumulative Wealth in Q_t
x Cumulative Human Resource Management in Q_t
x Cumulative Asset Management in Q_t

Where,

Cumulative Financial Performance in Q_t = (Financial Performance in Q_{t-3} + Financial Performance in Q_{t-2} + Financial Performance in Q_{t-1} + Financial Performance in Q_t) / 4

Cumulative Market Performance in Q_t = (Market Performance in Q_{t-3} + Market Performance in Q_{t-2} + Market Performance in Q_{t-1} + Market Performance in Q_t) / 4

Cumulative Marketing Effectiveness in Q_t = (Marketing Effectiveness in Q_{t-3} + Marketing Effectiveness in Q_{t-2} + Marketing Effectiveness in Q_{t-1} + Marketing Effectiveness in Q_t) / 4

Cumulative Investment in Future in Q_t = (Investment in Future in Q_{t-3} + Investment in Future in Q_{t-2} + Investment in Future in Q_{t-1} + Investment in Future in Q_t) / 4

Cumulative Wealth in Q_t = Wealth in Q_t (note that this is already cumulative).

Cumulative Human Resource Management in Q_t = (Human Resource Management in Q_{t-3} + Human Resource Management in Q_{t-2} + Human Resource Management in Q_{t-1} + Human Resource Management in Q_t) / 4

Cumulative Asset Management in Q_t = (Asset Management in Q_{t-3} + Asset Management in Q_{t-2} + Asset Management in Q_{t-1} + Asset Management in Q_t) / 4