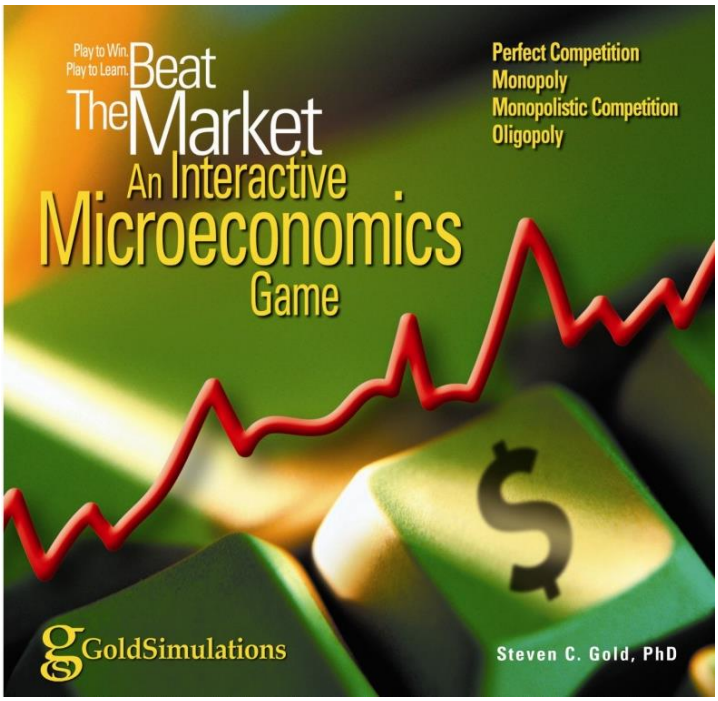
Instructor Manual

Managerial Economics

An Online Computer Simulation Game

Make Economics Fun & Improve Learning



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FOURTH EDITION

Steven C. Gold

Gold Simulations Educational Software

Beat The Market On Line: An Interactive Microeconomics Game

INSTRUCTOR MANUAL

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An Online Computer Simulation Game

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www.goldsimulations.com

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OVERVIEW

Description of the Online Game

Beat The Market is an online simulation that enables your students to learn managerial economics by **applying practical business management skills** in a "real life" environment. The simulation focuses on the application of economic principles to the problem of the firm. It puts students inside the world of the textbook **incorporating active and collaborative learning**. Students are given an opportunity to manage a firm and try to maximize profits under one or all of the different market structures: perfect competition, monopoly, monopolistic competition and oligopoly. Students may play as individuals (single player) or in teams, against each other (multi-player) or computer managed firms. We encourage teams of students, as opposed to individuals, to manage firms and compete, as this allows issues of **organizational design** to be experienced. Students make demand and supply decisions each period of play within a dynamically changing marketplace. The program rates student performance from 0 to 100% based on their firm's profits relative to the best firm. Financial reports are generated each period that itemize the revenues, costs, and profits of the firm.

The use of our simulation in Managerial Economics is similar to our Principles of Economics simulation but the level of the game assignments and exercises are more advanced. At your "option", you can assign simulation game activities & simulation exercises that fit your time frame and curriculum level. The **game activities** ask students to take information from the games and evaluate the demand and cost relationships embodied in the games, using either statistical techniques, like regression analysis, or other non-statistical methods. The students can then apply the results of their analysis to make more effective decisions in the games. *All the data from the simulation games can be exported to "Excel", making data collection unnecessary, and graphical techniques such as trend-line analysis or regression easily accessible.* Theoretical concepts become more meaningful and relevant when student can actually measure and apply them, such as price elasticity, marginal and marginal cost to improve their performance in the game. It is a true motivator.

Students may also learn the major microeconomics concepts by assigning a set of simulation **game exercises** by topic area that are provided with our software. Each simulation exercise has a pre-set game where students observe the market dynamics and then answer a set of multiple choice questions to determine their understanding of the specific topic. These exercises are automatically graded by the software and appear in a consolidated Instructor Grade Book which may be exported. The combination of simulation games and exercises creates an enhanced learning environment.

Learning Objectives

It is clear from our observations that the simulation game makes learning microeconomics more fun and meaningful. It ***captures student interest and motivates students*** to learn economics to do well in the game. We have observed students reading chapters in advance and raising many more

questions. The game enhances learning by reinforcing textbook theories and providing a hands-on "learning-by-doing" exercise.

By participating in the game, students:

- Develop decision-making skills needed to improve the firm's performance.
- Gain a much clearer understanding of microeconomics concepts & how to apply them to develop effective business strategies; these include: market equilibrium, demand and supply analysis, elasticity, revenue maximization, production and cost relationships, economies of scale, and how different market structures influence business strategy including gaming theory.
- Learn how to measure and apply the tools of economic analysis to properly allocate resources.
- Improve critical thinking skills as they try to solve problems and achieve objectives.
- Experience the issues of organizational design. As part of a team, organizational questions will need to be addressed by the students, such as: who makes the decisions, what information is needed to make a good decision, and what incentives are there fore team members to perform.

Support Provided to Instructor

- **Help to set up your course games & exercises – we can do it for you!**
  We are pleased to discuss Beat The Market's use to meet your needs and provide a web demo. You can be up and running within an hour! We are ready to help in any way possible and make your use of this game an outstanding success for your teaching and student learning. You can find our contact information on our website www.goldsimulations.com.

- **Guided Tours online about game use for students and instructors**
  There are a set of guided tours on our website that explain to instructors how to setup and use the game; and students to explain how to register and use the game. This avoids the need for instructors to lecture on the details of how to register and use the game.

- **Instructor Website with progress reports of each student's performance**
  The instructor website allows the teacher or administrator to see the performance and grades of all the work done by students in the class. A progress report is available for each assigned game that shows how each student is doing and how much of that game has been completed. A chart on the progress report page summarizes this data. The instructor can enter a student's game by clicking the "view" button. Once inside the game you can see everything the student sees when they enter the game including the decisions they have made and what the consultant recommends.

- **Automated online Computerized Consultant built into the game**
  Our computer simulation game has an "on-line consultant" that suggests to students what they should look at in the game to help them improve. This avoids the need for students to contact the instructor with questions on how to improve performance. The consultant does not provide answers but provides sufficient insight to guide the students. You have complete access to what the computerized consultant is telling the students by simply viewing their game from your "instructor" course management system. The consultant only provides direction based on standard economic theory taught in the textbook.

- **Automatic Grading of Games and Exercises**
  The simulation games are automatically graded based on the profits of the student's firm or team. The same is true with the additional, but optional, exercises that are also provided for the instructor to assign at his/her discretion. The answers to the exercise multiple choice questions and problems may be obtained by instructors. Just go to our website, www.goldsimulations.com, and click on "contact us" to request them. Once we certify that you are an instructor, we will give you access to the answers online in the game website.

  Students will automatically receive the answers on-line to the exercise questions only *after* the due date you provided on-line, unless you specify that students may receive their feedback immediately after completing an exercise.

- **Solutions to all Activities provided to instructor**
  In addition to the "exercises" described above, a set of additional activities are provided to the instructor with solutions. The game "activities" ask students to take information from the games and evaluate the demand and cost relationships embodied in the games, using either statistical techniques, like regression analysis, or other non-statistical methods.

- **Explanation of Game Cost & Demand relationships to understand results**
  To help understand the results of the game, we will reveal to the instructor the firm cost and demand relationships embodied in the game, and the profit-maximizing short and long-run equilibrium in each of the markets in the game, including perfect competition, monopolistic competition, monopoly, and oligopoly. This should help the instructor in answering student questions about the game results, without the instructor having to study or play the game. To get this information, just go to our website, www.goldsimulations.com, and click "contact us". We will send them to you electronically. We recommend professors keep this information confidential, and allow the student to "discover" the cost and demand relationships and how they impact the optimal decisions of the firm. Learning-by-doing or experiential learning is argued by educators to be one of the most effective pedagogical approaches.

Options for Integration of the Simulation into your course

There are three distinct options: capstone, full integration throughout course, or some mix between the two.

1. **Capstone Approach**
   Near the end of the semester set up a simulation competition where student teams compete against each other. With this approach, students have an opportunity to apply the economic theories and tools they have learned all semester within a decision-making setting. ***This has proven to be an exciting & meaningful way to wrap up the course.***

   A sample course outline using the Capstone Approach is given below.

2. **Use throughout the course - Full Integration**
   Early in the semester, begin the simulation game competition, and assign exercises and activities that will reinforce what students are learning in class. With this approach Students have the opportunity to practice the economic theories and tools within a business setting as they learn them in class. Practice "by doing" is considered the most important aspect of the LEARNING PYRAMID. Learning economic concepts also becomes much more relevant and engaging because they are used by students during the class to improve the performance of their firm by making better decisions.

   With this approach we recommend and provide additional exercises and activities to further supplement the simulation game. The additional exercises are available online and are automatically graded. The "activities" required students to develop models to predict demand, costs, and profit in the game; and experience market behaviors like, for example, collusion in oligopoly markets. These activities are highlighted below in the course outline for this approach. Solutions are provided to instructors for all activities.

   A sample course outline using the Full Integration Approach is given below.

3. **Mix of options 1 and 2**
   The game can be integrated in a number of ways based on your teaching style and the objectives of the course. Below we will present course outlines for options 1 and 2, and then based on this you should be better able to decide which option or combination is best for you.

Simulation Games vs. Simulation Exercises

Before proceeding to show the example course outlines, we want to clarify the major differences between the two types of student assignments.

-**For simulation games**, students manage a firm, making decisions to maximize profits. Results are automatically graded based on cumulative profits compared to the best firm in the marketplace.

-**For simulation exercises**, students learn by observing the marketplace dynamics within a game and then demonstrate they understand the major concepts by answering multiple choice questions or problems on topics such as: market equilibrium, demand and supply, elasticities, cost & revenues, and profit maximization under different market structures. Exercises are automatically graded.

Example Course Outlines - Capstone and Full Integration

Capstone Approach – Schedule of Games and Exercises

Weeks	Activity	Game Assignments	Simulation Exercises
1-9	No simulation activities	None	None
10	Student's register & learn basics of game	View online guided tours; read student manual; and play practice games**	*Introduction Exercise
11	Students divided into teams to prepare for the competition. Oligopoly game recommended.	Teams organize, review game reports, and prepare strategies	
12	Team competition begins	Teams enter decisions and play quarters 1 to 4 of the game***	
13	Team competition completed	Teams enter decisions and play quarters 5 to 8 of the game	
14	WRAP UP: Class Discussion	**Teams prepare Reports** and present their learning lessons	

* Introduction Simulation Exercise will familiarize the students with the reports and information within the game.

** Practice games can be assigned to the individual or team. We recommend individually played practice games set up to mirror the Team game.

***If the class meets twice a week, we recommend that each week two quarters be played during class and two quarters are played outside of class on different days.

Use throughout Course -Schedule of Games & Exercises

When the simulation is used throughout the course we have added a set of simulation game "activities" that are shown in the course outline below under the "game assignments" column. The simulation activities ask students to take information from the games and evaluate the demand and cost relationships embodied in the simulation, using either statistical techniques, like regression analysis, or other non-statistical methods. The results of the student analysis can then be applied to help predict demand, costs, and profits and make more effective decisions. *All the data from the simulation games can be exported to "Excel", making data collection unnecessary.*

Weeks	Activities	Game Assignments	Simulation Exercises
1	Students register online	View online tutorials	
2	Students learn basics of game	View guided tour & read Student Manual	* Introduction
3	Divide class into teams to prepare for Competition (students organize & develop strategies)	Practice Game**	
4	Team competition begins	Team Decisions Quarter 1	
5	Students estimate demand in simulation	***Evaluate Demand Activity****** Team Decisions Quarter 2	Law of Demand
6	Students verify their demand model and adjust	Team Decisions Quarter 3	Price Elasticity
7	Students estimate production costs in simulation	***Evaluate Cost Activity****** Team Decisions Quarter 4	Short-run Cost
8	Students verify their cost model and adjust	Team Decisions Quarter 5	Long-run Cost
9-10	Students apply profit maximization rule	***Profit Maximization Activity****** Team Decisions Quarters 6 &7	Revenue Maximization
11	Students consider gaming theory and cartels	***Collusion Activity***Team Decisions Quarter 8	
12	Students experience gaming theory	Collusion Activity continued; Team Decisions Quarter 9 - the end	
13	Teams meet to evaluate performance and learning lessons	***Prepare Team Reports** on game***	
14	WRAP-UP: Team Presentations	***Team Reports* due**	

***** Introduction Simulation Exercises require no knowledge of economics. The objective is to learn about the reports/information within the game. Exercises are automatically graded but we recommend this exercise not be counted toward the student grade.

******Practice games can be graded or not graded, and assigned to the individual or team. We recommend individually played practice games set up to mirror the Team game or build up to it. (i.e. level 1 game with only two decisions, to a level 2 with four decisions). We also recommend the first practice game not be graded.

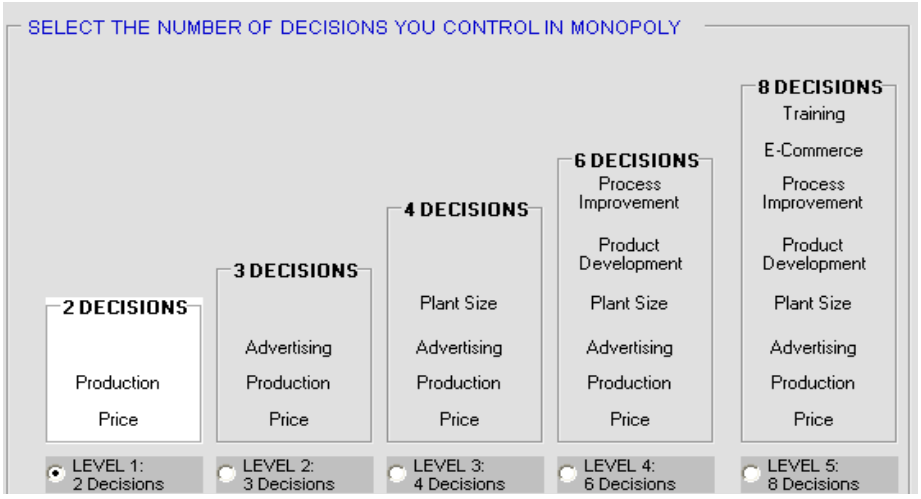
***Copies of the student activities are given near the end of this manual. The solutions to all activities are made available to instructors.

Simulation Game Selections to fit your course

Learning Levels

Students may learn the microeconomic relationships in the game in steps by limiting the number of controllable decisions, holding the other decisions constant. This option allows you to adjust the complexity of the game and is a powerful learning tool. There are five learning levels in the game to choose (see Figure 1). Each market structure has similar learning levels. The bar in white indicates the current choice, which is level 1 consisting of only two decisions.

Figure 1: Learning Levels



In the **managerial economics course** it is recommended that students start at level 3 and move to higher levels. In the more advanced courses such as Managerial Economics it is still useful for students to start at the lower levels, but they can move more quickly to the higher learning levels. The ability to limit the number of decisions shows students the power of ceteris paribus analysis in understanding and learning economic relationships.

Number of Periods of play

You can select from 1 to 20 quarters. For most games a selection of 4 to 8 periods (quarters in time) is chosen.

Test Mode vs Practice Mode

At the start of a new game, you have the option of selecting either the "Practice Mode" or the "Test Mode". The Practice Mode is used when you want all students to begin each new game with the same starting environment in terms of demand, costs, production, plant size, and all other factors. The purpose of the Practice Mode is to give students an opportunity to learn by repeating the same game to improve their performance. Student feedback clearly indicates that they can more easily learn the economic relationships and how to apply the economic tools of analysis by repeating the same game. Once the students have practiced with the learning mode, they will be better prepared to try the "Test Mode" to confirm their understanding of economics. In the "Test Mode" a unique starting environment is created with each new game. Starting demand, production, plant size, costs, and many other factors are different with each new game in "Test Mode". Because of this, a student cannot just copy the winning decisions from another game.

Single Player or Multi-Player Game

Single player and multi-player options are available in the game. In the **single player** game, a single student or team of students manages a firm and competes against the computer-managed firms. The **multi-player game** allows individuals or teams to compete against each other in a given market. Each player represents a different firm in the market. A player could be an individual student, or a player could represent a team of students working together to manage a firm in the game. The multi-player game works the same as the single player game except that decisions must be entered for each player. The computer simulation does all the work of setting up the team structure, you just enter the number of teams and you are done!

Market Structure

Any of the four market structures may be selected including Perfect Competition, Monopoly, Monopolistic Competition or Oligopoly.

Macro Economy & Economic Events

You may select from Stable, Growth, Business Cycles or Unknown. The simplest choice is to have a stable economy and the most difficult would be unknown. Economic events are either YES or NO.

It is recommended that STABLE be selected the macroeconomy with NO random events until the students become more proficient.

Simulation Exercise Selections to fit your course

You select the exercises you want to assign (listed below) by clicking on choices in the instructor website and specifying the DUE DATE. All exercises are automatically graded & appear in your on-line Grade Book next to the simulation game scores. At your option, you may allow the Students to repeat the exercise and automatically receive the answers online *before or after* the due date you specify online. When the exercise is "repeated", students will get games of the same complexity but with different initial data/information so they cannot just copy the correct answers.

The major difference between an "exercise" and playing a game, is that the exercises focus on learning specific concepts (i.e. market equilibrium, elasticity, production and cost relationships, etc) by instructing students to enter specific decisions in a simulation game, observing the results, and then answering a set of multiple choice questions to indicate they understand the concepts. The exercises are automatically graded and the answers to the questions are available for the students to review in their own accounts. The grades are also reported in the instructor's account.

Assign some or all of the following simulation exercises in coordination with class schedule.

The list of exercises and learning objectives is given in the chart on the next page.

TOPICS	EXERCISE	LEARNING OBJECTIVES
Getting Started	Introduction	To master the mechanics of the game's economic information
Markets	Market Equilibrium	To understand how price adjusts to achieve market equilibrium using demand and supply analysis
Demand	Law of Demand	To understand and apply the law of demand.
	Shifts in Demand	To understand the difference between a change in demand and a change in the "quantity" demanded.
Revenues	Revenue Maximization	To understand the relationship between price, quantity demanded, and revenues.
Elasticities	Price Elasticity	To understand the relationship between price elasticity, quantity demanded & revenues
Production	Short Run Production	To understand the short-run relationship & to measure & apply marginal and average products
	Long Run Production	To understand the long-run production relationship, returns to scale and the impact of plant size on labor efficiency.
Cost	Short Run Cost	To understand, measure and apply cost concepts in the short-run.
	Long Run Cost	To distinguish between long-run and short-run costs; understand the impact of plant size on the costs of the firm and the strategic nature of economies or diseconomies of scale.
Perfect Competition	Short- Run	To understand how this marketplace behaves and reaches equilibrium in the short-run; and to apply economic principles to maximize profits in the short-run, and practice critical thinking skills.
	Long- Run	To understand how this marketplace behaves and reaches equilibrium in the long-run; and to be able to apply economic principles to maximize long-run profits , and to sharpen critical thinking skills.
Monopoly	Short- Run	To understand how this market behaves and reaches equilibrium when plant size is fixed in the short-run; to be able to apply economic principles to maximize profits in the short-run; and to provide an opportunity to reinforce critical thinking skills.
	Long- Run	To understand how this market behaves & reaches equilibrium when plant size may change in the long-run; to be able to apply economic principles to maximize profits in the long-run; and to sharpen critical thinking skills.
Monopolistic Competition	Short- Run	To understand how this marketplace behaves and reaches equilibrium in the short-run; to learn to apply economic principles to maximize profits in the short run; and to apply critical thinking skills.
	Long -Run	To understand how this marketplace behaves and reaches equilibrium in the long-run; to learn to apply economic concepts to maximize profits in the long-run; and to sharpen critical thinking skills.
Oligopoly	Short -Run	To understand how this marketplace behaves in the short-run; to learn to apply economic principles to maximize profits in the short-run; and to apply critical thinking skills.
	Long- Run	To understand how this marketplace behaves in the long-run; to learn to apply economic concepts to maximize profits in the long-run; and to sharpen critical thinking skills.

Simulation Activity Selections to fit your Course

A significant pedagogical advantage of using our simulation is that it provides a framework and database to apply the theories and tools of economic analysis that you are teaching in your managerial economics course. All the data in any game can be exported to "Excel" by the click of a button. For example, as part of their final team report "activity", students can be asked to explain how they organized their teams and assigned responsibilities; and assess the effectiveness of their "organizational design". During the game, students can be assigned "activities" to measure and use theoretical concepts such as price elasticity, marginal revenue, marginal costs and many others.

A set of sample activities are given below that you may choose to assign to your students. These activities are the ones listed in the sample course outline for option 2 – "Using the Simulation throughout the Course". But once you start using our simulation in your class, you will find that you can easily create many of your own activities that link to the learning objective of your specific course. The only limit will be your creativity!

Evaluate Demand Activity using Regression

The objective of this assignment is to help you predict demand in the game using a statistical technique such as regression analysis. Use the data file that is provided to you from a Beat the Market game. To complete the assignment, do the following:

1. Identify and explain the important factors in the game that may influence firm demand; and reference demand theory to support your case.
2. Develop a regression model to test your answer to item 1 above.
   a. Explain the regression model and statistical results.
   b. What is the most important factor that influences firm demand in your model? Consider both the statistical significance and magnitude of the coefficients.
3. Based on your regression model, specify the equation that represents firm demand in the game.
4. Test how well your regression model predicts demand. To do this, compare the actual demand in the game with the predictions of your model.
5. Conclude by explaining the strengths and weaknesses of your model.

[NOTE: We provide a game database in Excel, but note that all data in any game exports to Excel with the click of a button. For instructors not requiring regression analysis, you may ask students to predict demand using a Excel and the reported price elasticity and marginal impacts for advertising, product development, and e-commerce that are reported in the game. This alternative assignment, with solutions, is provided to instructors upon adoption or request.]

Evaluate Cost Activity using Regression

The objective of this assignment is to help you predict your firm's costs in the game using a statistical technique such as regression analysis. Use the data file that is provided to you from a Beat the Market game. To complete the assignment do the following:

1. Develop a regression model to predict total production costs in the game.
   a. Explain the regression model and statistical results.
   b. What is the most important factor that influences firm costs? Consider both the statistical significance and magnitude of the coefficients.
2. Based on your regression model, specify the equation that represents your firm's total production costs in the game.
3. Test how well your regression model predicts total production costs. To do this, compare the actual costs in the game with the predictions of your model.
4. Conclude by explaining the strengths and weaknesses of your model.

[NOTE: We provide a game database in Excel format, but note that all data in any game exports to Excel with the click of a button. For instructors not requiring regression analysis, you may ask student to predict costs using a spreadsheet program, like Excel, using Trend-line analysis. This is an easy program in Excel that graphs and provides equations for non-linear functions, like the relationship between total costs and production. This alternative assignment, with solutions, is provided to instructors upon adoption or request.]

Profit Maximization Activity

Play the BTM game assigned for this activity and attempt to maximize your profits. It is a single-player game, so you may execute and complete the game on your own or as a team. (The game assigned by the instructor may be in any of the four market structures: perfect competition, monopoly, monopolistic competition and oligopoly.)

After playing the game, be prepared to discuss or write a report explaining:

1. How successful were you in maximizing profits in the game?
   - In answering this question compare your MR to your MC in the game.

2. How can the profit maximizing rule, setting marginal revenue (MR) equal to marginal cost (MC), be applied to this game? In your answer explain:
   - How one can change MR and MC in the game to maximize profits?

3. If you had the opportunity to play this game again, how would you change your price and production decisions in the game to improve your profits? Explain why.

Collusion Activity

STUDENT OBJECTIVE: Try to improve profits in the BTM Team game by participating in developing a price leadership or "implicit collusion" agreement with your rivals

IN-CLASS PROCEDURE:

- Teams meet separately to discuss strategy pertaining to collusion and pick a team leader. Teams decide under what conditions (rules or guidelines) they would be willing to collude. (15 min.)
- Team leaders meet in front of class and try to reach an agreement on setting price and other business decisions. (30 min.)
- If a collusion agreement is reached, the teams meet separately to determine their new decisions and the game is executed. (15 min).
- The process is repeated for each quarter of play of the game.

WRAP-UP: Class discussion of success and/or problems, and ethical issues of implementing implicit collusion agreements. (Team reports may also be required on their experience and the benefits, risks and ethical issues of collusion.)

Final Team Report and Presentation

A Team Beat-the-Market (BTM) Report and Presentation is required of all teams. The written report should be about 10 pages in length, 12 point font, single spaced, with standard margins. Any standard formatting style, like MLA or APA, is acceptable. The BTM Team Presentation should be 25 to 30 minutes.

The report and presentation should include the following:

(1) Describe how you organized your teams and assigned responsibilities. Assess the effectiveness of your "organizational design".
(2) Summarize your firm's strategy, decisions & performance in the game. How well did you do?
(3) What accounts for your success and problems in the game? Whenever possible use microeconomic theories to help explain your performance; and make direct reference to these theories in your report or presentation. It is encouraged to refer to models or graphs that are used in the textbook whenever possible to make your point.
(4) How did you make decisions in the game? Describe any data analysis and decision modeling techniques that you used, or tried to apply, in the game. Did they work? Why or why not?
(5) How would you improve your performance in the game? In hindsight, what economic theories and data analysis could be applied to make better decisions in the game? Give examples of how you would apply these principles and any data analysis that you would recommend (even if you have not done it).
(6) Conclude with the key learning lessons in the game, and how to "beat the market".

Frequently Asked Questions by Students

Common questions students have asked about playing the game are provided in this section with answers. This information may help you to *beat the market!*

1. How do I begin to make a decision?

a. Understand that the objective is to maximize profits.
b. Study the reports in the game including: Market Research, Demand & Supply, Net Profit, and Competitive Analysis.
c. Review the suggestions of the automated "CONSULTANT" that are on the Summary page of the game.
d. Click on the information buttons next to each decision and read the suggested process.

2. What are the "key" factors that affect profits in the game?

There are three "major factors" in the game:

a. Set production as close as possible to firm demand.
b. Set marginal revenue close to marginal cost
c. If plant size is a decision, select the plant size that will be most cost effective, given the projected level of demand. Information how costs change by plant size is found on the Decision page by clicking the Info button.

3. The CONSULTANT tells me to set production closer to firm demand, how do I do this?

a. Look at the past reports and use the GRAPH option to study the sensitivity of demand to changes in your firm's price, your rival's price and he market price (if not a monopoly). Once you learn about price elasticity, this information is very helpful and may be found on the Decision page by clicking the Info button for price.
b. If advertising, product development, and e-commerce are decisions, then look at the marginal impact of these decisions. This information is found on the Decision page by clicking the Info button.
c. If there are random economic events occurring in the game, check out this information on the Market Research Report.
d. If the economy is changing, check out the GDP forecast in the Market Research Report. As a rule of thumb, a 10 unit change in the index, would increase market demand by 5%.

4. Why is my firm demand increasing when my price has gone up? Doesn't this violate the law of demand?

There are a few reasons why this might happen in the game.

a. The market price is rising more rapidly than the firm's price. The market price is reported in the Market Research Report.
b. If advertising is a decision, then the firm's advertising may have increased along with the firm's price. This would cause the firm's demand to shift to the right, and may cause quantity demanded to increase even though price is rising.
c. If product development or e-commerce are decisions, the same phenomenon as in "b" above is occurring.
d. If economic shocks are permitted in the game, the market demand may be increasing (shifting) due to this event. Economic shocks are reported in the Market Research Report.
e. If the economy is set to growth or business cycles, then market demand could be shifting from quarter to quarter. The growth in the economy is measure by a GDP index that is reported in the Market Research Report.

5. The CONSULTANT tells me my average costs are much higher than the average of other firm in the market, why is this?

a. Costs rise rapidly as production gets close to maximum capacity. The maximum production capacity is found on the Decision page by clicking the Info button for production.
b. If plant size is a decision, average costs depend also on plant size. The impact of plant size on average costs is found on the Decision page by clicking the Info button for plant size.
c. If training or process improvements are decisions, then your rivals may be spending more on these decisions than you. The impact of these decisions on costs or productivity may be found on the Decision page by clicking the Info button.
d. Selling or overhead costs include advertising, product development, e-commerce, training, and process improvements. If these are decisions in the game, the student may be overspending on these factors.

6. The CONSULTANT tells me to set MR closer to MC, how do I do this?

a. Changing price is the most important factor affecting MR. MR will change positively with price. As price is increased, MR will rise and become closer to the price level but will always be less than price; and as price is decreased, MR will decline at a faster rate and the gap between MR and price will widen.
b. Changing "production" will alter MC. As production gets closer to the maximum production capacity of the firm, then MC will rise rapidly.
c. If you can change plant size, then this will also change MC. The impact of plant size on MC may be found on the Decision page by clicking the Info button.

7. How do I decide on the level of advertising, product development, and e-commerce?

a. If advertising is a decision, be competitive and raise advertising as long as the marginal revenues from increased advertising exceed the marginal costs of production. But be careful there are diminishing returns to advertising. (Information on the marginal impact of advertising is available by clicking the Info button on the decision page for advertising and for production).
b. If product development is a decision, be competitive and raise product development as long as the marginal revenues from increased product development exceed the marginal costs of production. But be careful there are diminishing returns to product development. (Information on the marginal impact of product development is available by clicking the Info button on the decision page for product development and for production).
c. If e-commerce is a decision, be competitive and raise e-commerce as long as the marginal revenues from increased e-commerce exceed the marginal costs of production. But be careful there are diminishing returns to e-commerce. (Information on the marginal impact of e-commerce is available by clicking the Info button on the decision page for e-commerce and for production).