
Microeconomics Simulation Game

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Despite the major improvements in distance education technologies, many instructors still rely exclusively on traditional assignments and quizzes and struggle to create a more dynamic learning environment when teaching remotely. In this paper, I present an original game that microeconomics instructors can use to supplement their curriculum. The addition of this new tool makes learning microeconomics more engaging, creative, and memorable.

Check out the game at: <https://vrudys.com/microsimgame/index.html>

Register at: <https://vrudys.com/microsimgame/register.html>

1. INTRODUCTION

Digital games in higher education enable tech-enhanced learning. In this paper, I introduce a game designed to enhance the teaching of microeconomics concepts at an undergraduate level. In the Microeconomics Business Simulation Game (MBSG), teams of students run a breakfast cereal production company in a monopolistically competitive market. Students study and apply concepts of supply and demand, price elasticity, production costs, and specific monopolistic competition topics to make short-term production and marketing as well as long-term investment decisions. To win, students not only need to understand these concepts but also predict their competitors' moves as would be required in a real-world marketplace.

With tailored visuals and design elements, MBSG is ideal for engaging current and future generations of tech-savvy students. It promotes studying by relying on active learning and interactivity. Students retain information much better if they reflect on and practice than if they simply listen (Felder & Brent, 2009). MBSG reinforces learning through the application of the concepts in the game. Moreover, various in-game suggestions remind and show alternative perspectives of those concepts. MBSG also creates a setting for multiple new layers of interactions. Team interaction allows for small groups of students to collaborate. This allows for the sharing of perspectives and understanding that promote critical thinking skills (Windschitl, 1999; McKinney & Graham-Buxton, 1993; Pray Muir & Tracy, 1999). The game is driven by the decisions of all teams. Through partnership and competition, students feel more connected with their classmates while the instructor assumes an advisory role, answering students' questions instead of leading the discussion.

To make the game more appropriate for different course outlines and students, its content, complexity, and use are adaptable. The instructor may increase or decrease the complexity of the game by choosing the number of decisions students must make. This allows

the instructor to tailor the difficulty level for the class and ensure a better learning experience for students. To accommodate different academic schedules and class course outlines, the game can be set up to be played over five weeks with two student submissions per week or over ten weeks with a one team submission per week. Finally, the MBSG game's web-based set-up provides easy accessibility to students using a variety of devices, from laptops to smartphones.

To my knowledge, MBSG is the first multiplayer online game that is designed to be used to supplement an introductory microeconomics course. The only similar game used in business management classes, Business Strategy Game (Snyder, 1996), is far too complicated and expensive to be used in introductory economics classes. MBSG, on the other hand, is a free, fun and engaging new tool that helps create a modern memorable learning experience for students in introductory microeconomics classes.

2. GAME DESIGN

There are 10 teams each running a breakfast cereal producing and selling company. Each of those teams make regular short-term production and pricing decisions, and long-term factory and product investment decisions. The decisions of one team affects other teams: an increase in sales of one team will come at an expense of another team.

Throughout the game, students will touch upon many of the subjects typically studied in Introductory Microeconomics course. The main topics that are covered in the game are Supply and Demand, Elasticity, Costs of Production, Monopolistic Competition. Students will also learn about bonds and stocks, interest rates and will touch upon how firms behave in competitive markets as well as how oligopolies and monopolies make investment, production and pricing decisions.

2.1. Sequence of Events

To setup and play this game, instructors and students must do a few simple steps.

First, led by the class instructor, students are assigned to teams or students are allowed to choose their teammates. After all students are assigned a team or after a registration deadline passes, each team member receives login and password information via email. This allows each member to access their team's portal.

Second, before each deadline students meet and discuss the next decision. One designated teammate submits the decision. Submission must be accompanied by a short reasoning for the decision. This step encourages students to collaborate, assign roles, and learn from one another.

Third, once the deadline passes, the results are reported and students can log in to view updated information about the impact of their decision, and start discussing their next move.

2.2. Game Engine

Since students compete to win in a fictional world, the engine of the game, or the rules that determine the sales, must be understood.

As students compete for customers and decisions of each team affect others, it is important to understand what happens after students submit their decisions: how does the game decide who sells out, and who has remaining inventory unsold?

In this game, teams distinguish themselves by type, quality, price and advertising of cereal. Customers rate each cereal product according to these four factors. Since customers are different, ratings they give to each cereal product are significantly different. As the distribution of customers is uniform across the type and quality of cereal, there is no dominant strategy in the game. Customers then buy products that they rate the highest. Since some products will have a higher demand than others, some customers will not be able to buy their preferred cereal. All customers who are not able to buy their preferred cereal, re-evaluate all the in-stock cereals and try to buy their first-choice cereal from the remaining lot. There are a total of three rounds after which customers who still remain without cereal, leave the market and do not buy any cereal. By allowing a variety of strategies to be successful, this game engine increases game-to-game heterogeneity.

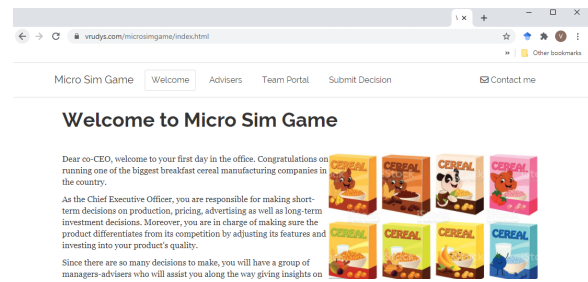
2.3. Game Visuals

The game is built as a simple website with distinct tabs/pages. They are the welcome page, advisers page, team portal, and decision submission page.

2.3.1. Welcome Page

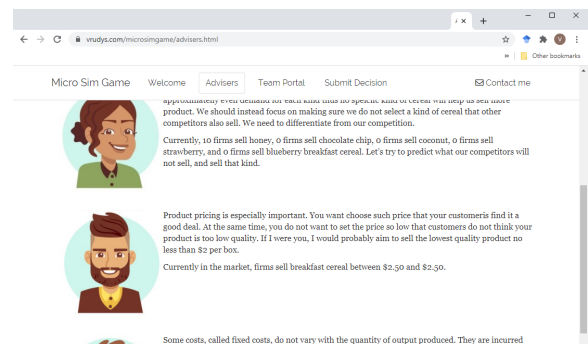
The welcome page introduces the game to the players. It is intended to be read only once at the beginning of

the game.



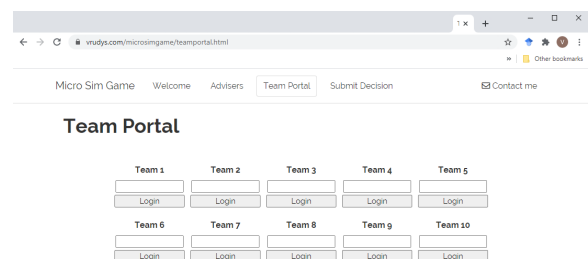
2.3.2. Advisers Page

In the advisers page, students find various helpful information about the game and tips about how to make better decisions. More specifically, advisers will give an idea about the price range that students should be thinking about to make sure there is no team with some wild decision that will not do it good in the long run. Reading these help not only to learn about various topics in microeconomics but also to win the game. Every decision period, this page is updated so that students can be exposed to new ideas and perspectives, and receive new tips. For example, in one turn an adviser may explain the benefits of debt for investment purposes while in the next, the risks and costs of carrying high levels of debt.

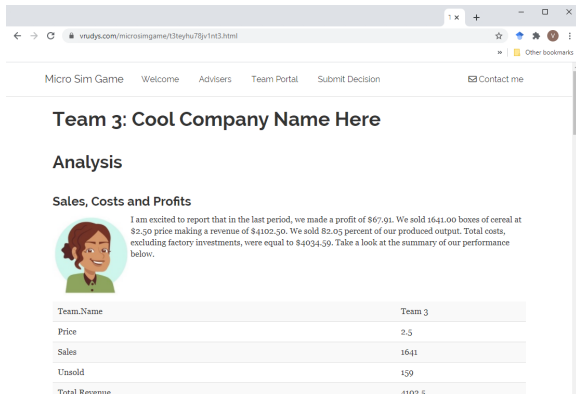


2.3.3. Team Portal

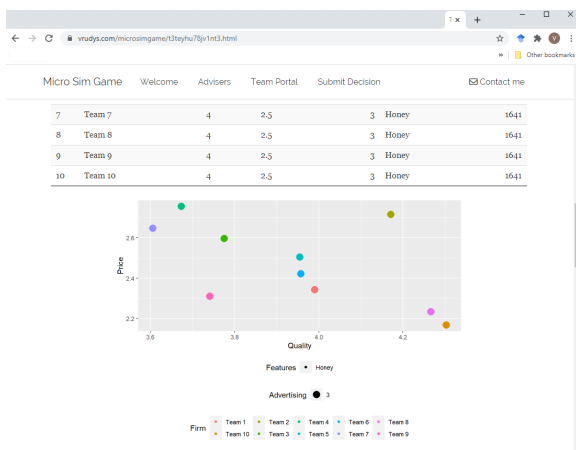
Team Portal page holds all of the team specific information. Thus, each team will have a unique login, or, alternatively, be provided with a unique web address to access teams personal information.



Upon login or by accessing using teams unique web address, the team will be able to see the firms previous decision and what actually happened.



Multiple tables show information about their own past period production, sales, advertising decisions and some information about competitors moves. To highlight how the team differentiates from other team, multiple useful figures are also provided.



2.3.4. Submit Decision Page

Students use the forth and final page to submit their decision before the deadline. Once students discuss and decide on their decision, one person in each team who chooses to be responsible for filling in the form writes in the teams name, all team members names, agree that all participated in the decision-making, and then enter all the necessary information regarding production, pricing, advertising, product differentiation, investment.

The screenshot shows the 'Submit Your Decision!' form. It includes fields for 'Team Name', 'Team Member 1: Full Name' (with sub-fields for First Name and Last Name), and 'Team Member 2: Full Name' (with sub-fields for First Name and Last Name). There are also checkboxes for 'I agree that all participated in the decision-making' and 'I agree that all participated in the decision-making'.

2.4. Ease of Use

The simple html website-based game has a very simple, attractive and easy-to-use structure. The login and gameplay does not require any complicated applications, devices or any technology knowledge.

The game is really easy to use for instructors as well. To accommodate different class outlines, the game can be played over a longer period of time with less frequent decision deadlines or shorter period with more frequent decision deadlines/turns. All the results are stored, and provided to the professor by email after each turn. A score for each team within specified range can be given after each turn, or for the whole game.

2.5. Adaptability

To be compatible to different institutions and difficulty levels, the game complexity is highly customizable. At the beginning of the semester, the instructor can choose the number of features present in the game. The features that can be selected for the game or left off are product type variety, advertising, credit and investment. Instructor may choose some, all or none of these options.

3. CONCLUSION

Various studies show a lack of engagement by students in economics classes. To increase student engagement and interest in economics, specifically microeconomics, I developed a new game to be used in introductory microeconomics classes. Microeconomics Business Simulation Game is a fun and engaging new tool that helps create a modern memorable learning experience for students. The flexibility of the game allows instructors to adapt this game to almost any course outline, and the game's accessibility makes sure that all students get free and straightforward access to participate.

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