



Student Manual

Version 6.0d

Philip H. Anderson, John A. Kaliski, Timothy W. Scott

© Oak Tree Simulations, LLC

All Rights Reserved 2020

CONTENTS

Preface iv

- What Is *Micromatic*? iv
- What are the Computer System Requirements? iv
- How do *Micromatic* Team and Solo Work? v
- Using the Manual While Online v
- Acknowledgments v

Chapter 1 – Overview 1

- What Is *Micromatic*? 1
- Micromatic* Team versus *Micromatic* Solo 2
- How the *Micromatic* Team and Solo Simulations Work 3
- Micromatic*'s Three Stages in a Decision-Round 3
 - The Forecasting Stage 4
 - The Processing Stage 4
 - Micromatic* Team Processing 4
 - Micromatic* Solo Processing 5
 - The Results Stage 6
- How to Approach the Simulation 6
- Purposes of *Micromatic* 7
- Tips on Succeeding with *Micromatic* 7
- How to Use This Manual 9

Chapter 2 – The *Micromatic* Business Environment 10

- The Q1 Scenario 10
- Company History 10
- Company Policies 11
- You and Company Management 11
- A Word about Managing your Business 12
- How the Simulation Proceeds 13

Chapter 3 – Getting Started 14

- Equipment Needed 14
- Preparing to Register 14
- Register to Use *Micromatic* 14
- Account Maintenance 20
- Troubleshooting 21
- Using the Student Manual While Online 21

Chapter 4 – Working with the *Micromatic* Programs 22

- Industry Central 22
 - Account 22
 - Change Email Address 22
 - Change Password 22
- Screens versus Panels 23
- The Team and Solo Home Page 23
 - The Menu Bar 23
 - The *Micromatic* Dashboard 24

Company at a Glance	24
Performance Graphs	24
The Menu Icon	24
Industry Performance Report and Company Summary Report	25
Quick Charts	25
Industry Central	26
Team Information	26
Process Quarter (Available only for <i>Micromatic</i> Solo Practice and Solo Exam)	26
Restart Industry (Available only for <i>Micromatic</i> Solo Practice)	26
Print Open Panels	27
Product Perception Charts	27
Learning Scripts	27
Entering a Decision	27
Past Quarter Information	28
Cost and Historical Information	28
Correcting an Error	29
Hiding Portions of a Panel	29
Viewing the <i>Forecasted</i> Results of Your Decisions	30
Processing the Decisions (Available Only for <i>Micromatic Solo</i>)	31
Viewing the <i>Actual</i> Results of Quarters that have been Processed	31
Simultaneous User Login on the Team Version	31
Troubleshooting	32
Complete System Failure	32
<i>Micromatic</i> Program Failure	32
Program “Timeouts”	33

Chapter 5 – Making Decisions 34

Watch Learning Scripts – Making <i>Micromatic</i> Decisions	34
Preparing for Decisions: Your Business Plan	34
Developing a Business Plan	34
Overview of Decisions	35
Marketing Decisions	36
Sales Price	36
Product Quality	37
Local YouTube Advertising	37
Facebook ads	37
Web Marketing	37
Features Development	37
Ad Message	38
Salespersons	38
Withdraw from Region	38
Sales Forecast	38
Factors to Consider When Forecasting Sales	39
Forecast Reports	39
Diminishing Returns	40
Substitute Products	40
Market Research Decisions	40
Operations Decisions	41
Raw Materials	42
Finished Goods	42
Finished Goods Transfers	43
Work force	43

- Plant Capacity 44
 - Build Plant Units 44
 - Lease Plant Units 44
 - Sell Plant Units 45
 - Maintenance 45
 - Administrative Costs Related to Operations 45
- Finance Decisions 45
 - Short-Term Loan Requests 46
 - Short-Term Investment Deposits 46
 - Short-Term Investment Withdrawals 46
 - Dividends per Share Issued 46
 - Issue Shares 47
 - Retire Shares 47
 - Stock Price 47
 - Bond Requested 47
 - 1st Bond Extra Payment 47
- Some Decision Guidelines 48

Chapter 6 – Micromatic Reports 49

- Marketing Report 50
 - View Report in Excel 51
- Operations Reports 52
 - Finished Goods 52
 - Workforce 52
 - Plant 52
 - Raw Material 52
- Details On/Off Option 53
- Cost of Goods Sold Report 53
- Finance Reports 54
 - Balance Sheet 54
 - Cash Flow Statement 55
 - Income Statement 57
 - Financial Ratios Report 58
- Industry Reports 59
 - Industry Performance Report 59
 - Calculation of Points Awarded 60
 - Performance-to-Date Calculation 60
 - Company Summary Report 61
- A Final Comment 61

Appendix A – Example of Marketing Research Report 62

Appendix B – Step-By-Step Walk-Through 63

PREFACE

WHAT IS *MICROMATIC*?

Micromatic is a computer-based model that simulates a small manufacturing company. The product is sold through retail markets to the general public in three different sales regions. Region 3 can be in the United States, Europe, or China. If Region 3 is in Europe, the currency is in Euros (€); if in China, it is Yuan (¥). You could also use other dollar currencies that make sense such as Canadian \$ or Australian \$. The prices you charge for your products, the level of quality you build into them, plus how you choose to promote them, are decisions you will constantly face. You will also have to decide whether to make the products yourself or to sub-contract the manufacture of them to another company.

There are two versions of the *Micromatic* program, *Micromatic Team* and *Micromatic Solo*. In *Team Micromatic* you will be part of a group that will manage your company. Your company will compete with other companies in the same marketplace that will be managed by other groups in your class. In *Micromatic Team*, the administrator processes the decisions that teams make regarding the operation of their company after collecting the decisions from all the competing teams. After processing, the teams will make a new set of decisions based on the results of those just processed. Each decision-round represents three months of operations (i.e., one quarter of a year). Your administrator will determine how many decision rounds you will play. The maximum number is 20. Chapter 1 will explain this decision-round process in more detail.

Micromatic Solo is the play-alone version of the *Micromatic Team*. The solo version places you in competition with companies managed by the computer rather than by other groups in your class. The computer uses logic developed by us to manage these companies. While your competitors will act rationally, they are not all-knowing, perfect competitors. With practice, you can successfully compete against these companies. In *Micromatic Solo* you process the decisions for the companies. This includes the decisions you entered for your company as well as those determined by the computer for your competitors. Your instructor may also use the exam version of *Micromatic Solo* for assessment.

Using *Micromatic Team* and *Solo*, you will:

- Decide your company mission, goals, policies, and strategies.
- Develop skills in planning, organizing, staffing, directing, and controlling a business.
- Make decisions in the areas of:
 1. Marketing, including market research and sales forecasts.
 2. Finance, including short-term and long-term loans.
 3. Manufacturing, including raw materials, production, scheduling, staffing, and inventory control.
- Have the opportunity to ask “what-if” questions by entering a sales estimate and seeing what the results of your decisions would be given this level of sales.
- See the results of your decisions and have an opportunity to correct mistakes in the following quarters of operation.

WHAT ARE THE COMPUTER SYSTEM REQUIREMENTS?

In order to use the *Micromatic* web programs, you will need a computer with one of the following browsers that is connected to the internet: Chrome, Firefox, Microsoft Edge, or Safari.

If you experience difficulty opening the program, you may have to turn off any “pop-up” blockers and configure your browser to accept cookies. If you need assistance with this, initiate a search for “How to

enable cookies” on Google for your particular browser. Finally, although optional, we advise that you use a printer so that you can generate printouts of your quarterly results.

HOW DO MICROMATIC TEAM AND SOLO WORK?

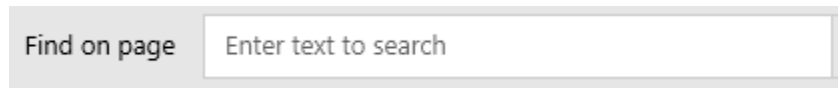
You work on a computer, entering your decisions on five screens. You can review previous quarters’ decisions and results either on the screen or on printouts as you work.

After you finalize and submit your decisions for a quarter of *Micromatic Team* and *Micromatic Solo* operations, the decisions are processed either by your instructor (for *Micromatic Team*) or by you (for *Micromatic Solo*). The *Micromatic Team* and *Micromatic Solo* programs will determine the number of products each company sells and produce a series of operations, marketing, and financial reports for your company. The programs also rate the companies and rank them according to their performance sales revenue, income after tax, return on sales, return on equity, return on assets, earnings per share, and stock price.

USING THE MANUAL WHILE ONLINE

When you access the *Micromatic* Student Manual online, rather than a printed version, you have the option to navigate quickly around the manual using the “Find” feature in the Adobe Reader menu bar (See Exhibit A). If the Find feature isn’t displayed, press CTRL + F.

Exhibit A



ACKNOWLEDGMENTS

We would like to thank the following people for their help and contributions to *Micromatic*. As always, our families deserve thanks for their patience, as we took time from them to work on this project. To Cathy, Lona, Emily, Leonie, and Kelly — Thanks.

We also would like to thank Paul Lapidés at Kennesaw State University for his contributions to course support materials and to Matt Sonfield at Hofstra University for his suggestions on how to improve this manual’s usefulness to the students working with *Micromatic*.

P. H. A.

J. A. K.

CHAPTER 1 – OVERVIEW

WHAT IS MICROMATIC?

Micromatic: A Business Simulation offers students of strategic management (business policy), small business management, and new venture management the opportunity to integrate the various pieces of the business curriculum. It also introduces students to devices and concepts of today's business world, such as spreadsheet calculations, complex "what-if" scenarios, financial analysis, and, in industry and line-of-business competitive analysis.

Micromatic is not planned for any specific product or industry. This vagueness is intentional and allows the game administrator to model different electronic products. It also precludes the participants' decisions from being based on the known actions of any real company. The simulation has been developed to afford you a planned, systematic learning experience in integrating knowledge acquired in today's business schools. Aiding in this attempt are the instructor, who plays many roles from management consultant to labor representative; this manual, which explores in detail the rules and options of *Micromatic*; and the model itself.

Your instructor can modify *Micromatic's* complexity by varying the number of decisions you confront in a decision-round. When operating in the "Abridged" version, *Micromatic* presents you with the fewest number of decisions to make in a decision-round. By contrast, *Micromatic's* "Full" version allows your instructor to augment these decisions with others that you might have to address. These decisions include whether to add a sales force to promote your product, expand sales of your product into another geographic region, and/or issue shares of stock in your company to the general public. We discuss the decisions you will face in detail in Chapter 5.

Students can use complex techniques such as stochastic models, present-value analysis, information systems, and linear programming to aid their decision-making. Moreover, since the teams themselves set the competitive environment, no optimum solution exists. Each play of the simulation is different, and the results will vary greatly depending on the background and level of the players. The game literally takes on their personalities.

Micromatic offers many opportunities and situations for applying numerous modern decision-making techniques. Students compete with each other in the Team Version, and with computer-managed companies in the Solo Version. Players of the simulation learn the importance of integrating operating schedules and reports in a logical manner in order to make sound decisions. Students learn rapidly that they can reduce their total decision-making time by keeping records and reports conscientiously. Through all this, you come to appreciate the benefit of proper use of an information system.

Micromatic is unique in that it represents all the functional areas of a business entity. Since production, marketing, human resources, and finance functions exist in the simulation; participants face the real problems of allocating resources. You learn very quickly that you must coordinate the functions and that they may not reach their predetermined goals if any function is maximized at the expense of the others.

Finally, the decisions in each period of the simulation are influenced by what has happened in the past and forecasts of what will happen in the future. Because of this, each team must learn to live with previous decisions, good or bad. The advisability of changing a plan even after you have committed yourself becomes apparent, especially when a series of bad decisions has been made. The fact that the players constantly face a deadline makes for a realistic decision-making environment.

Micromatic will allow you to put into practice the knowledge you have acquired in your previous business studies. You will practice and develop your skills in problem solving, teamwork, and human relations. *Micromatic* will help you see the relationships among the different areas of a business, for example, how marketing and operating decisions affect the financial side of the business. You will develop your analytical skills acquired in the functional regions to deal with problems of total organization. You will make decisions under conditions of uncertainty, usually with lack of sufficient information. Through all this, we hope you will come to a better understanding of the central significance of policy and strategy to the top-level managers and their organizations.

Micromatic is a challenging exercise. You will probably discover what your weak areas are in your business studies. You may have to review your accounting and finance books to reacquaint yourself with concepts and to develop new skills. You can build your own spreadsheet models and use statistical and other analytical tools to gain a competitive edge for your company in your *Micromatic* industry. *Micromatic* should test your knowledge and skills, your motivation, determination and perseverance. We hope that this simulation gives you some of the fun and excitement of running a real business.

Remember you are in competition with the other *Micromatic* companies in the simulation. Hard analysis usually beats intuitive gamblers. Gambling is easier, but a sound strategy wins the simulation exercise. Success in the beginning of the game can quickly evaporate as your luck runs out. You may feel confused when you begin the simulation, but remember that your competitors face the same confusion. Learn the rules quickly. Good time management and teamwork should improve your chances of success.

Learn from your mistakes and capitalize on your successes. Analyze what went wrong. Deal with the facts, not gut feelings. You could end up learning more from what you do wrong than from what you do right.

MICROMATIC TEAM VERSUS MICROMATIC SOLO

In *Micromatic Team*, you manage a company that competes against other companies run by students in your class. Each student-run company operates in the same marketplace and competes directly with other student-run companies. In *Micromatic Team*, the administrator processes decisions that students make regarding the operation of their companies after collecting decisions from all participants.

Micromatic Solo is a play-alone version of *Micromatic Team*. Rather than vying with other student-run companies, you compete against semi-intelligent companies managed by the computer. While these computer-run companies act rationally, they are not all-knowing, perfect competitors.

Micromatic Team and *Micromatic Solo* are programs that simulate many of the decisions involved in managing a small company. Your assignment is to manage the operations of your company, acting as a chief executive responsible for all aspects of the business. The decisions you make will include setting strategy for the company, determining the production and marketing of the products, financing the costs of the marketing and production operations, and the purchase of competitive information. Practicing with *Micromatic Team* or *Micromatic Solo* will sharpen your managerial skills. Managers are inherently action oriented. *Micromatic Team* and *Micromatic Solo* provide you with the opportunity to put what you have learned into action.

Depending on the objectives your administrator has for using this software, you will use one or both of the *Micromatic* programs. If your administrator chooses to use only *Micromatic Team*, you can still use this manual and software to work with *Micromatic Solo* on your own. Practicing with *Micromatic Solo* will sharpen your managerial skills for working with *Micromatic Team*.

Whichever simulation you use, your assignment is to manage the operations of this company, acting as a chief executive responsible for making decisions about all aspects of the business. The decisions you make will include production and marketing of the products, financing the costs of the marketing and production operations, and the purchase of competitive information.

You will compete with other companies selling similar products in your industry's marketplace. The computer will process your decisions and those of the other companies and provide reports regarding how well each company performed. The *Micromatic* software will use your decisions and the decisions of your competitors to determine how many sales each company made during a quarter (i.e., three months) and to provide operations, marketing, and financial reports for your company. You will manage your company for several quarters, analyzing the results of each quarter to help you make decisions for the next quarter's operations.

What follows is a discussion of how the two *Micromatic* simulations work. As we discuss each of the three stages for working with the two programs, we will point out the similarities and the differences between *Micromatic Team* and *Micromatic Solo*.

HOW THE MICROMATIC TEAM AND MICROMATIC SOLO SIMULATIONS WORK

The *Micromatic Team* and *Micromatic Solo* programs contain mathematical formulas and sets of rules. These formulas and rules allow the program to simulate, or imitate, the outcomes that a business decision would have in the real world. So, for example, the *Micromatic Team* and *Micromatic Solo* programs can determine how a company's sales would be impacted by the price that it sets for its product when compared with the prices of its competitors' products.

You will make approximately 100 decisions to manage each period of operation for your *Micromatic Team* or *Micromatic Solo* company. Each period of operation represents one quarter (i.e., three months) of a calendar year. You begin managing *Micromatic* operations in Quarter 1 and can continue to make decisions through Quarter 20. Just as you would if you were managing an actual business enterprise, your goal is to manage your *Micromatic* company as efficiently and effectively as possible. As you progress through each quarter of operation, you should work to improve your performance by analyzing your results and identifying your mistakes.

MICROMATIC'S THREE STAGES IN A DECISION-ROUND

There are three stages involved in working with the *Micromatic* simulations. They are (1) the Forecasting Stage, (2) the Processing Stage, and (3) the Results Stage. In the Forecasting Stage, you enter decisions to test "what if" assumptions and then modify those decisions until you enter a preferred set of decisions you think are the best. In the Processing Stage, an administrator program assesses the decisions of all competitors to determine market share allocations for each company and the consequent profitability of each company based on its operational performance. In the Results Stage you respond to the results of the processing of your decisions, looking at your company's reports to assess your actual versus forecasted performance. You then use your analysis in a new Forecasting Stage as you begin the next decision round.

The Forecasting and Results Stages are identical for both the *Micromatic Team* and *Micromatic Solo* programs. There are no differences between *Micromatic Team* and *Micromatic Solo* in the decisions you make or in how you enter those decisions. Nor are there any differences in any of the reports (e.g., Income Statement) that are generated by your decisions. The difference between the two versions of the simulations occurs in the Processing Stage. This is because of the differing nature of the competitors

between the two simulations. In *Micromatic Team* you will compete against companies managed by other participants in the simulation exercise. In *Micromatic Solo* you will compete against computer-managed companies. Next, we will discuss each of these stages in detail.

The Forecasting Stage

In the Forecasting Stage, you will make decisions regarding (a) marketing (e.g., pricing and promotion of your products), (b) manufacturing (e.g., how many units to produce or whether to have your products manufactured by a sub-contractor), and (c) financing (e.g., requesting a loan to pay current bills). Once you have entered your decisions, you can look at *forecasted* reports for your company based on the decisions you just entered. You can view these *forecasted* reports using the Reports option on the Menu bar. (We explain how to do this in Chapter 5.) After analyzing these reports, you can enter new decisions to try to improve your *forecasted* results. Entering new decisions will allow you to test “what-if” assumptions and then modify those decisions until you enter the set of decisions you think are the best. You can enter new decisions as often as you like before you choose to process your entries. There is no limit to the number of times you can enter new decisions. The last set of decisions that you enter and save will be used in the Processing Stage.

The Processing Stage

Once you are satisfied with the decisions you have entered, you will process those decisions and move to the next quarter of operation (e.g., from Quarter 1 to Quarter 2). Once your decisions for a quarter have been processed, you cannot alter your decisions or the results for that quarter. Your next set of decisions will be for the next quarter of operation and will be based on the results of the quarter of operation you just completed. For example, once your Quarter 1 decisions are processed, your next set of decisions will be for Quarter 2 regardless of how much you would like to change what you did in Quarter 1.

Having to live with the decisions you have made is a part of organizational life. For example, the marketing team for Wal-Mart may use a model to test the effect of varying pricing strategies (e.g., higher price, but fewer unit sales) on profitability for the company. They will likely test many variations to the price versus sales trade-off. However, once they make the decision on the price of a product and the advertisement has run in the local YouTube, it is impossible to change the price (and the consequent sales results) for that advertisement. All Wal-Mart can do is to make a pricing change in *next* week’s YouTube ad. So, once you choose to implement your decisions (i.e., process the quarter), you will also have to live with the consequences of those decisions for that quarter and make adjustments in your decisions for subsequent quarters.

As stated earlier, it is in the Processing Stage where *Micromatic Team* and *Micromatic Solo* operate differently. Because of this difference in who are your competitors in the two versions of the simulation, we will discuss how the Processing Stage works for each of the two versions of the simulation, separately. First, we will discuss how decisions for *Micromatic Team* are processed. Then we will explain the method for processing decisions when using *Micromatic Solo*.

Micromatic Team Processing. In *Micromatic Team*, you are usually part of a group organized to manage your company in competition with the other groups in the class. Each group will manage a separate company that will compete with the other groups in the same marketplace. You are not in competition with the computer. The computer’s function is just to process the decisions of the companies quickly and to provide reports that show the results of those decisions. There can be from 2 to 25 companies competing in the marketplace. The number of competitors will depend on the number of people in the class. In *Micromatic Team*, the administrator processes the decisions that teams make regarding the operation of their company after collecting the decisions from all the competing teams.

As stated earlier, when forecasting, you can modify the decision you enter as often as you like. It is the *final* set of numbers that you entered and saved when you log off that become your decisions when processing a quarter. Your administrator will use the *Micromatic Team* Administrator program to read the decisions you and other teams have entered. Once all of the decisions for a company have been read into the administrator's program, the administrator will process those decisions to determine how each team performed in that particular quarter.

Once your administrator has processed a quarter, you cannot alter either your decisions or the results for that quarter. Your next set of decisions will be for the next quarter of operation and will be based on the results of the quarter of operation you just completed. For example, once your administrator has processed the decisions for Quarter 2, your next set of decisions will be for Quarter 3 regardless of how much you would like to change what you did in Quarter 2. You cannot turn back the clock in the simulation any more than you can in real life. When working with *Micromatic Team*, once the administrator has processed your decisions, you must move to the next quarter of operation.

Next, we will explain how to process the decisions for the *Micromatic Solo* simulation. Notice how changing your competition from other participant-managed companies to computer-managed companies simplifies the method of processing company decisions for a quarter of operation.

Micromatic Solo Processing. *Micromatic Solo* is the play-alone version of *Micromatic*. While other student teams are your competition in *Micromatic Team*, *Micromatic Solo* was designed so that your competition is five semi-intelligent, computer-managed companies operating in the marketplace. **When working with *Micromatic Solo* you will always manage Company #1.** While your competitors will act rationally, they are not all-knowing, perfect competitors. Whether these computer-managed competitors are tougher competitors than the participant-managed companies that you experience in *Micromatic Team* will vary depending on the participants managing the companies in a *Micromatic Team* industry. We designed *Micromatic Solo* so that you can establish a competitive advantage in the industry as you work with the program.

Having the computer manage the companies you compete with in *Micromatic Solo* simplifies the procedure for processing your decisions. Instead of the administrator processing the company decisions as he or she does in *Micromatic Team*, in *Micromatic Solo* the computer makes the decisions for the competing companies. Consequently, whenever you have completed your decisions for your company, you can process the decisions yourself for all the companies in the industry. *Micromatic Solo* eliminates the need for an administrator to collect and process the decisions of the companies operating in an industry. This allows you to play the game by yourself, at your own pace, not tied to anyone else's schedule. *Micromatic Solo* allows you to work with the software without having to wait for decisions from the competing companies, nor wait for an administrator to process company decisions. In addition, if you perform poorly against the computer competitors, you can stop playing the current setup and start a new competition quickly and easily.

Once you are satisfied with the set of decisions you have entered, you can process those decisions and move to the next quarter (e.g., from Quarter 1 to Quarter 2). To do this, you will select the "Process Quarter" option under Game on the Menu bar. Processing the quarter commits you to the last set of decisions you entered. Once you have processed a quarter, you cannot alter your decisions or the results for the quarter you just processed. Your next set of decisions will be for the next quarter of operation and will be based on the results of the quarter of operation you just completed. For example, once you have processed the decisions for Quarter 1, your next set of decisions will be for Quarter 2 regardless of how much you would like to change what you did in Quarter 1.

The only exception to this is if you decide to use the Restart Game option under Game on the Menu bar when you are working with Solo Practice. (There is no restart option when using Solo Exam.) Using this option erases all results for all previous quarters and returns you to your *initial* starting position at the beginning of Quarter 1. It does not move you back to the preceding quarter. Selecting this option will delete the current game data and you will begin again at Quarter 1. When you start a new game, *Micromatic Solo* resets the initial set of costs for the companies operating in the industry and creates a new industry-wide demand for the product you are selling. The program also sets the weights for the performance criteria reported in the two performance reports. Finally, it sets the relative importance of the marketing variables for determining the market share captured as a result of marketing efforts by your company and your competitors. For example, the influence of YouTube advertising in determining sales may have increased or decreased. Do not select this option unless you are ready to accept a completely new start up situation for Quarter 1.

The Results Stage

Once your decisions have been processed, the *Micromatic* programs will provide reports that show how well your company performed in competition with the competing companies. The programs will determine how many sales each company made based on their marketing efforts relative to the competition and will provide individual operations, marketing, and financial reports for each company.

You will use the results of the quarter just processed as the basis for your decisions for the next quarter of operation. For example, maybe in Quarter 1 your price for micromatics was too high compared to your competitors. If this resulted in an increase of finished goods inventory for that product, your Quarter 2 operations will reflect the cost of carrying that extra inventory. It would be up to you to adjust your pricing of micromatics in Quarter 2 to avoid repeating the problem in Quarter 3. In other words, you will use your analysis of the results of a quarter that was just processed to guide you as you make adjustments in your decisions and forecasts for the next quarter of operations. So, once you have processed a quarter and analyzed the results, you will return to the Forecasting Stage and repeat the three-stage sequence.

HOW TO APPROACH THE SIMULATION

Management is a blend of art and science. This means the process of managing requires working with both the facts of the situation you are facing and with your intuition regarding how to succeed in that environment. Emphasizing one of these at the expense of the other makes you a less effective manager. Intuitive problem-solvers make decisions without considering all of the data available to them. They are more concerned with their “gut feelings” than with the realities they face. Ignoring these realities results in decisions that are ineffective in resolving the problems faced. By contrast, problem-solvers who rely completely on facts tend not to consider the aspects of a problem that cannot be easily reduced to numbers. Certainly, you cannot quantify everything that contributes to the resolution of a problem. This approach, then, also leaves out key components of a problem’s solution. *Micromatic* will give you a chance to develop and practice both kinds of managerial thinking. Although you must work with the detail of the numbers generated in your *Micromatic* reports, you must also get a feel for the total simulated business environment created by *Micromatic*. Learning to manage both of these dimensions of a problem will make you a more effective manager, not only of your *Micromatic* company, but also in subsequent business experiences you encounter.

Many college participants dislike working in a group. They feel that it is not like work in “the real world.” In fact, groups working with a *Micromatic Team* company face almost the same problems that a work group in any business organization has to face. Managers do much of their work in a business organization in teams. Working with a group of individuals requires learning how to manage competing

individual ideas and egos while successfully accomplishing the group's goal. This is a common experience in the modern organization. It is also a necessary element in successfully managing the *Micromatic Team* simulation. In business, as in the *Micromatic Team* simulation, each participant's knowledge, motivation, determination, and time available to devote to the circumstances faced affects the success of the enterprise. Learning to work together, cooperatively, as peers, is a critical ingredient for success in any business enterprise.

One of the keys to being successful in an enterprise is to learn how to use the talents of others. The Team version will provide you with a "platform" for practicing and developing your skills in this area. Remember, all the evidence shows that managers who try to do it all by themselves, limit the growth and success of their business. So, use *Micromatic* to polish your skills at leveraging the expertise of the management team, of which you are a member, to build a successful company.

PURPOSES OF MICROMATIC TEAM AND SOLO

Working with *Micromatic Team* and *Micromatic Solo* will help you to:

- * Experience issues involved in managing a business.
- * Understand the importance of a business plan in guiding business decisions, including;
 - * The importance of planning to develop a common vision and coordination between the marketing, operations, and financial areas of a business, and
 - * The need for planning as you make tactical moves to react to changing conditions,
- * Develop skills in planning, organizing, staffing, and controlling a business,
- * Understand the relationships between financial statements such as the cash flow statement, the income statement, and the balance sheet, and their tie to the operational reports,
- * Acquire experiences to aid your comprehension of issues presented in entrepreneurship courses,
- * Understand the relationships between marketing, operations, and finance,
- * Experience the dynamics of marketing against constantly changing competitor positions and the need for market research, and
- * Understand the operational issues of production, inventory control, plant and work-force utilization, scheduling, and cost control of manufacturing operations.

TIPS ON SUCCEEDING WITH MICROMATIC

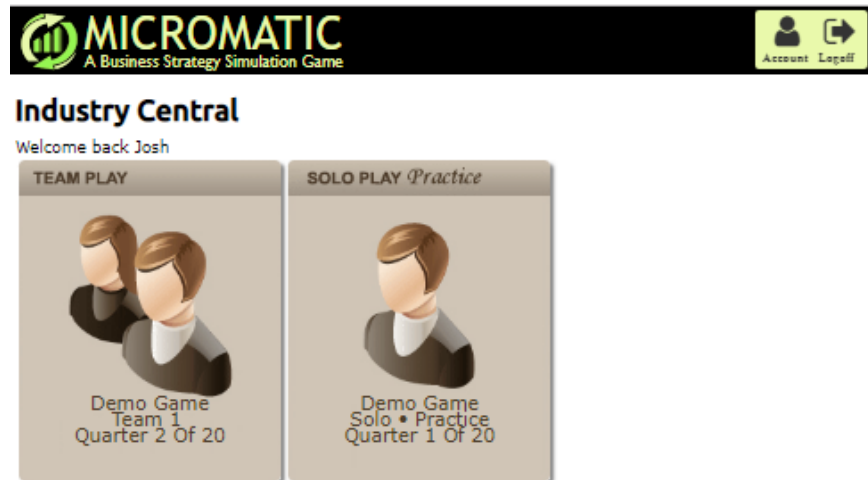
The following are some tips to help you when you are working with *Micromatic*:

- * Manage your time efficiently. Learning how to manage time is a primary concern for any manager. It affects success in any business. There will never be enough time to do all that you would wish to do. Determine what issues to focus on (set priorities). Staying focused on these issues (efficiency) will have a significant impact on the effectiveness of the decisions you make. Working with either *Micromatic Team* or *Micromatic Solo* gives you practice at managing this critical resource. Developing good time-management skills will increase your chances of success in your business career.
- * Manage your business; do not guess at your decisions. You can either manage your company or guess when making decisions regarding the future. Managing the business involves having company goals, plus plans and strategies for meeting those goals. Use these goals, plans, and strategies to guide your decision making. Guessing leads to making decisions randomly and without any consistency over time. This may be easier and more fun in the short run. You may even initially get better results than your competition. However, in the long run, if you make your decisions by guessing, you will not be able to outperform your competition. This is because you will not understand what you did that was correct and what you need to change to improve your

position in subsequent quarters. Nor will you be sensitive to changes that your competitors are making or to changes in your economic climate. *Micromatic* is the kind of project where the more effort you put into it, the more you get out of it.

- * Learn from your failures as well as your successes. Managers must always deal with their own and others' mistakes. When your decisions in *Micromatic* do not give you the results you planned for, or they are not satisfactory for the long-term success of your company, analyze the results to see what you should do differently next time. A successful manager learns how to capitalize on success, recover from mistakes, and move forward to improve the company's position. You can often learn more from what you do wrong than from what you do right.
- * Do not worry if you are confused at first. Participants are often confused when they begin working with the *Micromatic* programs. Working with a simulation may be a new form of learning experience for you. Working with a simulation requires *applying* your knowledge and skills to a business operation rather than *listening* to a lecture about the knowledge and skills needed to operate the business. It is a fundamental change to move from hearing to doing.
- * Work with the Solo Practice version of *Micromatic*. After you register to use *Micromatic* (see Chapter 3) and log into the program, the Industry Central panel will appear (See Exhibit 1.1). If your instructor has not yet set up a Team game, you will only see the Solo icon.

Exhibit 1.1



The first time that you log into either the Team or Solo game, it will open a Welcome to *Micromatic* learning script tutorial. After watching the Welcome tutorial, click on the Solo Practice icon. It will open a screen like that shown in Exhibit 1.2. You can access additional learning scripts by clicking on the Help menu (see arrow in Exhibit 1.2). Watching the learning scripts will show you how to work with *Micromatic* to make decisions, view reports, and understand your status as you view the results of your decisions after they have been processed

Exhibit 1.2

MICROMATIC
A Business Strategy Simulation Game

Marketing | Operations | Finance

Refresh Notices | Dash | Help | Menu

Industry Dashboard
Quarter 1 Forecast

Marketing Decisions
Marketing Report

Operations Decisions
Operations Report
Cost Of Goods Sold

Financial Decisions
Cashflow
Income Statement
Balance Sheet
Financial Ratios

Company At A Glance : Forecast Quarter 1

Units Available	9,229 • 6,794 • 2,000	Worker Productivity	1,000 • 1,000 • 1,000	Net Income	\$5,810
Stock Outs	0 • 0 • 0	Plant Capacity	16,000 • 0 • 0	Cash Balance	\$52,763
Total S&A Expense	\$219,500	Warehouse Costs	\$60,115	COGS per Unit	\$51.0707
Q0 Actual Demand	7,771 • 6,206 • 0	Raw Material Inv	8,000 • 0 • 0	Return On Sales	0.01

As with any new experience, it can be confusing and a bit overwhelming at first. However, after you make two or three sets of decisions, you should feel familiar with the rules of *Micromatic* and become more comfortable with learning through active application rather than passive listening. Your willingness to invest the effort to learn your new environment will have a significant impact on your ability to outperform your competitors.

This exercise also replicates much of what you will experience in the world of business. Managers face a constantly changing business environment. Their ability to understand quickly a new business situation can significantly affect their personal and organizational success. You have only to think about the changes in information technology you have witnessed over the past few years to recognize the importance of being able to adjust to changes around you.

HOW TO USE THIS MANUAL

Read this manual thoroughly, but do not try to memorize it. Instead, read to get a sense of the business environment created by the simulation. Then, as you work with *Micromatic*, refer to the appropriate sections of the manual for specific information. You will notice that the simulation's Help program contains much of the information supplied by this manual. For example, you can view the costs of operating the business and the timing sequences between events (i.e., time lags between when you make your decisions and when you will experience the results of these decisions) through the Menu bar in the program. We will explain how to do this later in this manual.

CHAPTER 2 – THE *MICROMATIC* BUSINESS ENVIRONMENT

This chapter will provide a description of the *Micromatic* business environment. It will describe your company's history leading up to you taking managerial control. It will also describe your company's products and its manufacturing capacity, as well as the marketplace in which it operates.

In the *Micromatic* simulation, all companies start from an identical position. This means each company has the same amount of cash and other assets, as well as the same amount of debt and owners' equity. In addition, each company also has the same inventory, plant capacity, number of production employees, and the same company history. After the first quarter, all of that will change as a consequence of the decisions you make. The *Micromatic* companies all manufacture the same kinds of products and compete against each other for customers. So, after the first quarter, companies will have different market shares and will be in different financial positions. Whether your company develops a stronger position relative to the other companies in your industry will depend on your ability to manage your company better than the competing companies.

This chapter describes your company's history and the nature of its business. As you read, keep in mind that you are reading the description of the current position of the company you will manage, regardless of the company number.

If you are working with the *Micromatic Team* simulation, you will be assigned to Company 1, Company 2, Company 3, and so on up to the maximum number of companies operating in your industry. **If you are working with the *Micromatic Solo* simulation, you will always manage Company 1.**

THE Q1 SCENARIO

Along with several other people, you have been hired for a management position in a *Micromatic* company. Your general management task will be to allocate the company's resources to the best competitive advantage. *Micromatic* companies compete head to head with other companies in the same industry, so competitors' decisions affect your company's performance.

A highly improbable thing has happened: all the companies have the same history, all are starting at the same point, and all sell the same product in the same market. So we can say that the history and present situation of your *Micromatic* company represents all the other companies in the industry in Quarter 1.

COMPANY HISTORY

T. W. Scott founded the *Micromatic* Companies. The companies produce and sell micromatics, a small electronic consumer product. For purposes of our discussion of the simulation, we won't define it more specifically; but your instructor may choose to do so. Scott didn't have enough money to manufacture micromatics and establish a business by himself, so he approached several friends for the necessary financial backing. His friends were highly interested. They made a preliminary survey to determine the market forecast of micromatics. They also did an analysis of the necessary production methods and costs.

Scott and his investor partners formed a corporation. They issued a total of 160,000 shares of common stock valued at \$10 per share. They decided that the company could choose between manufacturing micromatics by purchasing the raw material components and assembling them to make the products or sub-contracting their production to others. Scott became the first president of *Micromatic*.

The company started operations in Quarter 0 with a manufacturing plant, warehouse, sales, and administrative offices in Region 1, plus warehouse and sales offices in Region 2. *Micromatics* are assembled in Region 1 by a union-affiliated production force that operates in three-person crews. If your instructor so chooses, you may also have the opportunity to market, sell, and produce in Region 3, either beginning in Quarter 1 or in a later quarter.

After one quarter of operation, Scott decided to devote his time to new inventions and turn over the company's operations to a new management team. You are a member of that new team.

COMPANY POLICIES

Micromatic's Board of Directors has established some important guidelines for your incoming management team:

- They do not want to expend resources to expand the company's market beyond Regions 1 and 2, with the possible exception of Region 3. The directors think the demand for the product is expanding in these markets, and they want you to focus your efforts there.
- The directors want to retain the company policy of selling its product by improving product image through enhancements in product quality and features. Sales efforts are to be supported by local and Facebook ads, as well as through advertising on the web. At your instructor's discretion, you may also be allowed to add a sales force to your marketing efforts, either in Quarter 1 or in a later quarter. Previous management considered relying on wholesalers, retailers, and mail-order outlets for marketing, but the board believes that it would be more effective for the company's own staff to work with retailers. The market characteristics of each of the regions may differ.
- Past *Micromatic* company policy has been to use existing production technology, with its acknowledged constraints. While the assembly equipment requires only semi-skilled employees, it demands a specific crew size of three people per crew. The company has had few problems hiring new employees, but it has been faced with some rigid labor practices. The turnover rate is comparable to that of other businesses in the community.
- *Micromatic* will rely on only one supplier of raw materials. The company has not been able to interest other suppliers because of technical problems and because the company doesn't buy enough materials to make it worth the other potential suppliers' time. The quality of the present supplier has been excellent; the price of the raw materials is reasonable, and order delivery has been timely. Although there have periodically been some shortages in the number of units delivered, the Board has decided this doesn't happen often enough to initiate a search for a different supplier.
- The directors have agreed that the company's financing arrangements will stay the same. The company was financed initially through subscriptions to shares of stock. Additional financing has been done using long-term debt in the form of a bond issue and short-term notes. The company has good relationships with financial institutions, so it can obtain money using a short-term line of credit reasonably easily. The company has had high accounts receivable because the industry has lax cash-payment practices, with only 50 percent collected in the quarter sold. Attempts to tighten up have had negative results. The board of directors has agreed that the company will have to follow current industry collection practices.

YOU AND COMPANY MANAGEMENT

Although the policies and rules set by the board of directors limit certain actions you can take, you and your management team still have considerable latitude to set the strategic direction for your company.

Your management team's decisions will be based on your own strategy for allocating resources. Here are the kinds of questions you'll need to consider.

1. What strategy should you follow to gain an advantage over your competitors?
2. How much should you spend to obtain information about the future market, your competitors' activities, and miscellaneous future competitive activities?
3. How much sales promotion should you have and how should it be allocated? How do these allocations relate to the sales price and quality you chose?
4. How many units should you produce, how much material should you order, how many employees should you hire, and where should you warehouse your micromatics? Certainly, your decisions should include analyses of inventory levels.
5. How large a production capacity should you have, and where should it be located? How should you handle variable demand?
6. How should you distribute the company's earnings?

These questions should give you an idea of what your role will be. Certainly, they don't indicate all the decisions you will need to make or how often you will need to make decisions. Some decisions, such as those regarding plant constructions and leasing decisions, you will make infrequently; you will make others, such as hiring decisions, each quarter. Chapter 2, "Making Your Decisions," will go into more detail regarding this.

A WORD ABOUT MANAGING YOUR BUSINESS

Your course in business management will provide you with the tools to use in formulating and executing your game plan as well as in conducting industry and competitive analyses. In fact, many of the business courses you have had will be useful in mastering *Micromatic*.

You are operating a for-profit firm so profitability will be used as one of the criteria for performance evaluation. Other measures that relate directly to profitability (e.g., ROS, EPS, ROA, EVA) may also be used. In addition, you will have performance criteria that are related to achieving profitability. For example, in the marketing areas if you are a volume-oriented firm one would expect to see market share as one of your performance criteria. In the production area, depending on the firm's strategy, one might have efficiency as a criterion. Thus, your overall performance will be evaluated with reference to the overall goals and strategy of your firm. The game administrator will share with you the exact financial measures used to determine standings before you start the game.

You will receive information on your performance relative to your competition on a number of measures. These will include sales revenue, income after tax, return on sales, return on equity, stock price, and so forth. You will receive this information for the most recent quarter of operation, as well as the results you produce over the entire simulation.

Micromatic provides an opportunity for you to practice "thinking strategically." It prompts you to diagnose situations from a strategic perspective. *Micromatic* also provides opportunities to conduct industry and competitive analyses and then to watch your analyses unfold in a real-time situation. Making decisions for short-run results without investigating the internal and external competitive environment will give you disastrous results. To win, your team must formulate a powerful long-term strategic plan and then execute that plan skillfully. You should try to learn from your mistakes; people who do so generally finish high in the standings. Focus on the long-run view.

Decisions about what kind of team and company you are going to be are critical to your long-term success. For example, are you going to be high-price, high margin, or low price, low margin? Are you

going to finance internally or with equity or debt? Are you going to take advantage of opportunities to buy in quantity, or are you going to strive to have minimum inventories in order to reduce cost? Your decisions on these and other strategic positioning questions will be critical to your company's success.

The company you are going to manage will be driven by several competitive factors: first, the long-range demand forecast; second, the cost of capital; and third, and the competitive positions your competitors take. Thus, your team should keep up with the external factors that will affect your own performance. For example, if you try to decide to use a high price, high margin strategy, and the industry goes in the other direction; you will find it tough to compete. But if the industry shifts to a pure commodity market, then you should have an opportunity to differentiate your product significantly and so gain market share. Due to the dynamic and interactive nature of *Micromatic*, it is the players (company teams) who determine the nature of the competition and not the simulation.

HOW THE SIMULATION PROCEEDS

You and the other students in your class will be divided into management teams—thus you will be a member of a team of top executives managing your enterprise. You will be making strategic corporate decisions on overall growth, market orientation, operating philosophy, corporate objectives, and the like. Specifically, you will be making strategic production, marketing, and financial decisions.

You will make decisions quarter-by-quarter, beginning with Quarter 1. (Each quarter lasts three months with Quarter 1 representing January 1st through March 31st.) You will, of course, have to begin where Quarter 0 left off.

Because many of the people who normally interact with a company will not be available during the game, the game administrator will fill their roles. The administrator will help you learn the game and how to manage your company. He or she may also act as a banker or broker with whom to negotiate for money, as a union leader, as a board member, and so on. The administrator will also supply you with additional information at different points in the simulation.

Following each quarter's decisions, you will receive production, marketing, and financial reports that reflect the results of your decisions, as well as any competitive information you might have ordered. At your leisure, you can view the results on your monitor, or you can print a hard copy of any or all of the results. You will then use these reports as a basis for your next quarter's decisions.

Your instructor may grade each quarter's results and/or your annual performance. Your instructor may also use cumulative performance on key criteria for grading purposes. Grades are based not only on your own efforts, but also on those of your entire team. This is a simulation of realistic business practices and an actual test of your managerial skills and ability to work in groups. In addition, your team's grade will depend on the decisions of all the other teams; because they are your direct competitors, your company's fortunes will rise and fall in relation to theirs.

Read this manual thoroughly, but use it mainly as a reference: don't try to memorize it. When you get stuck, a quick rereading may help you to get "unstuck" as you consider new possibilities or gain a new understanding of something that previously seemed insignificant. The more you put into this exercise, the more you will get out of it. Most important, have fun!

CHAPTER 3 – GETTING STARTED

Below we specify the computer requirements for using *Micromatic*. We also tell you how to login and register so that you can use the *Micromatic* software.

EQUIPMENT NEEDED

In order to use the *Micromatic* web programs, you will need a computer with one of the following browsers and you are connected to the internet: Chrome, Firefox, or Microsoft Edge, or Safari. ***If you experience difficulty opening the program, you may have to turn off any “pop-up” blockers and configure your browser to accept cookies.*** If you need assistance with this, initiate a search for “How to enable cookies” on Google for your particular browser. Finally, although optional, we advise that you use a printer so that you can generate printouts of your quarterly results.

PREPARING TO REGISTER

You need ***three*** items ***before*** you can register to use the *Micromatic* programs.

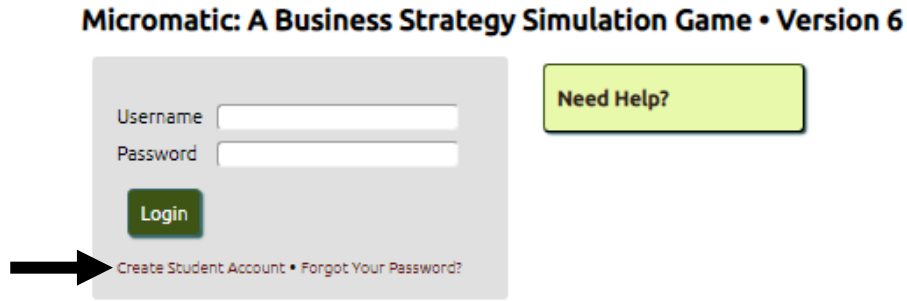
1. **Game Name**. This is the name that your instructor gave to the *Micromatic* game you will be playing. Typically, this will be the name of the course you will be taking, such as Mgmt 300.
2. **A Validation Code provided by your instructor**. The Validation Code will assign you to the proper *Micromatic* game for your course and instructor on the server’s database.
3. **Proof of purchase**. You can pay to access *Micromatic* in one of two ways.
 - a. Use your PayPal account (if you have one) or a credit card to pay online as part of the registration process.
 - b. A valid *Micromatic* Passkey number from your instructor. ***This will happen only if your institution includes the registration fee for Micromatic in its tuition fees.*** You will need to do this ***prior*** to beginning the registration process. ***Passkeys are valid for only one registration, so make sure that the text that you purchase does not contain a used Passkey. If the Passkey number has been used previously, it is invalid. You will NOT be able to use it to register for using the Micromatic programs!*** Once you have registered, you can login and use the *Micromatic* programs as often as you like by using the username and password you established during the registration process.

REGISTERING TO USE MICROMATIC

Once you (1) have a Validation Code from your instructor or (2) have a credit card ready for online purchase, you can begin the registration process. To ***register*** the *Micromatic* programs, follow these steps:

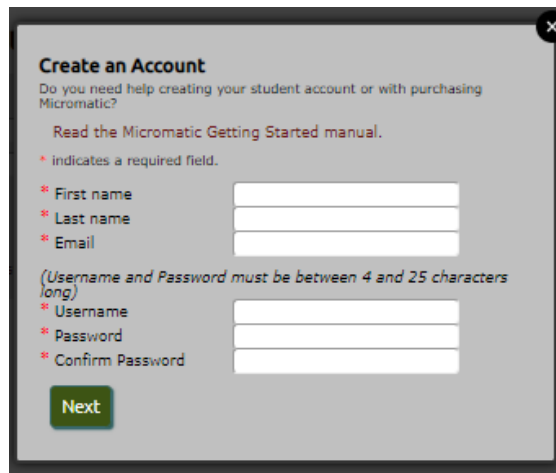
1. **Connect to the Internet**. If you are continuously connected to the Internet through a cable modem or DSL access, go to Step 2. If you use a dial-up modem to connect with the Internet, connect now.
2. **Open Chrome, Firefox, Microsoft Edge, or Safari Browser**. Open a browser by selecting Start, then Programs, then the desired browser or on click on that icon if you have it on your desktop or task bar.
3. **Open the *Micromatic* Web Site**. Enter the web for *Micromatic* in the address bar for your browser. The web address is <http://oaktreesim.com/Micromatic>. Once you do this, a screen like that shown in Exhibit 3.1 will appear on your monitor.
4. Select the “Create a student account” option (See arrow in Exhibit 3.1).

Exhibit 3.1



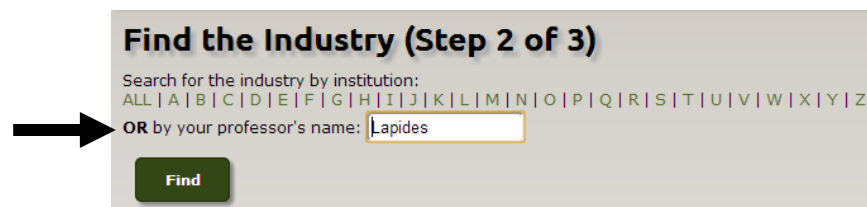
- Next, enter the required information as detailed in Exhibit 3.2. Then click on “Next”.

Exhibit 3.2



- To register for the correct game, first select either the letter of the alphabet for your institution (e.g., “W” for University of Wisconsin”) or enter your instructor’s surname then click on "Find" (See Exhibit 3.3, below).

Exhibit 3.3



- As shown in Exhibit 3.4, if you selected a letter of the alphabet you may have multiple institutions/instructors displayed (see left side of Exhibit 3.4). This is less likely if you entered your instructor's surname. Regardless of which option you use, if your instructor has more than one simulation game operating, make sure you select the correct one.

Exhibit 3.4

Selecting a <i>Letter</i>	Selecting an <i>Instructor</i>
<p style="text-align: center;">Find the Industry (Step 2 of 3)</p> <p>Search for the industry by institution: ALL A B C D E F G H I J K L M N O P Q </p> <p>OR by your professor's name: <input type="text"/></p> <p style="text-align: center;">Find</p> <p>Kennesaw State University</p> <p>Dr. Dorothy Brawley</p> <ul style="list-style-type: none"> <input type="radio"/> BRAWLEY-MM MGT4004 SU13 <p>Mr. Paul Lapidès</p> <ul style="list-style-type: none"> <input type="radio"/> MM S13 4120 W01 <p>Dick Teters</p> <ul style="list-style-type: none"> <input type="radio"/> MGT 4120 Section 01 Spring 2013 <p style="text-align: center;">Register</p>	<p style="text-align: center;">Find the Industry (Step 2 of 3)</p> <p>Search for the industry by institution: ALL A B C D E F G H I J K L M N O P Q </p> <p>OR by your professor's name: <input type="text" value="Lapides"/></p> <p style="text-align: center;">Find</p> <hr/> <p>Kennesaw State University</p> <p>Mr. Paul Lapidès</p> <ul style="list-style-type: none"> <input checked="" type="radio"/> MM S13 4120 W01 <p style="text-align: center;">Register</p>

8. After selecting the correct game option, a pop-up box will appear asking you to enter a validation code (see Exhibit 3.5). Enter the validation code your instructor gave you and click on “Submit”. As noted in Exhibit 3.5, if you do not have the validation code, you need to contact your instructor before you can proceed any further.

Exhibit 3.5

Find the Industry (Step 2 of 3)

Search for the industry by institution:
 ALL | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z

OR by your professor's name:

Find

Kennesaw State University

Mr. Paul Lapidès

- MM S13 4120 W01

Register

The simulation you selected requires a validation code from your instructor. If you have not been given a validation code yet please contact your instructor and re-register at a later time.

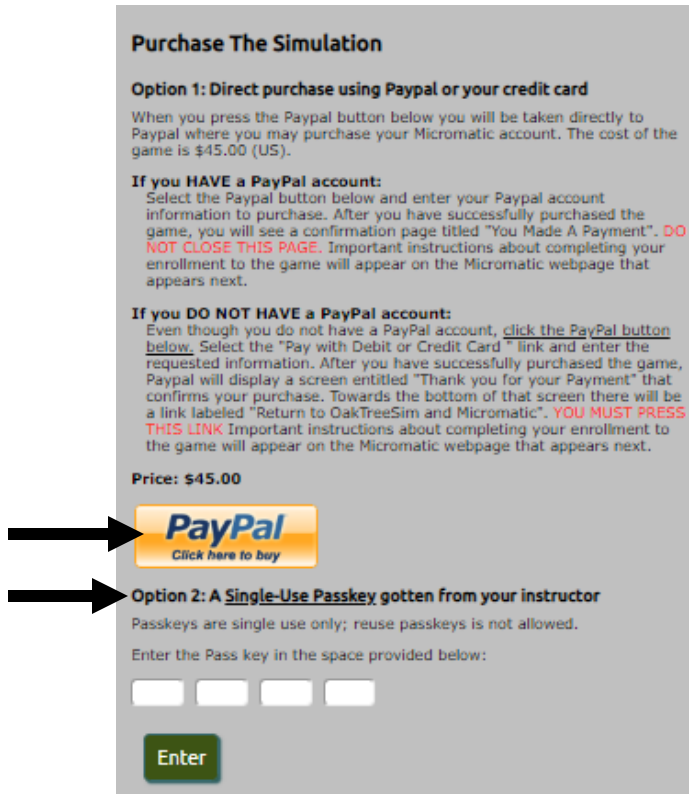
Validation Code:

Submit **Cancel**

9. After you click on the Submit button, a screen similar to that shown in Exhibit 3.6 will appear on your monitor. To complete your registration for *Micromatic*, you need to pay for your *Micromatic* account by either (a) doing a direct purchase using PayPal or (b) entering a Passkey.
- a. To purchase *Micromatic* using **PayPal**, click on the PayPal icon (See top arrow in Exhibit 3.6.) Then go to Step 11, below.
 - b. If your instructor gave you a **Passkey**, enter the Passkey number and select Enter (See bottom arrow in Exhibit 3.6.) Then go to Step 10, below.

Exhibit 3.6

(NOTE: PayPal periodically changes its screens, so there may be some variation to what you see.)



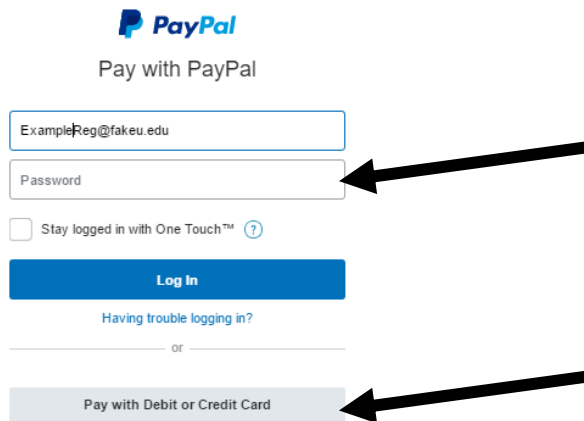
10. **Option 1: PayPal or Debit/Credit Card Option.**

If you select Option 1, read the directions on this screen *closely* for how to proceed, then select the PayPal button even if you will be using a debit/credit card to pay for your purchase.

11. After you have selected the PayPal button, a screen like that shown in Exhibit 3.7 will appear on your monitor.

a. If you have a PayPal account, enter your password (see **first** arrow on the right), then confirm your decision to purchase Micromatic.

Exhibit 3.7



- a. If you **DO NOT** have a PayPal account, select the “Pay with Debit or Credit Card” option (see **second** arrow on the right in Exhibit 3.7, and enter the requested information (See Exhibit 3.8) to complete your purchase.

Exhibit 3.8

Oak Tree Simulations


- b. After you complete your purchase, one of two screens will appear on your monitor (See Exhibit 3.9). If the Team game is set up for you to choose your team, you will see a screen like that on the left. Click on the , select your team, and select “Save”. After completing this step, you will return to the web site for *Micromatic* (see Exhibit 3.11). If your instructor has not set up the Team game or is making the team assignments, you will see just the icon for the Solo game. Select the "Click here" link to return to web site for *Micromatic*.

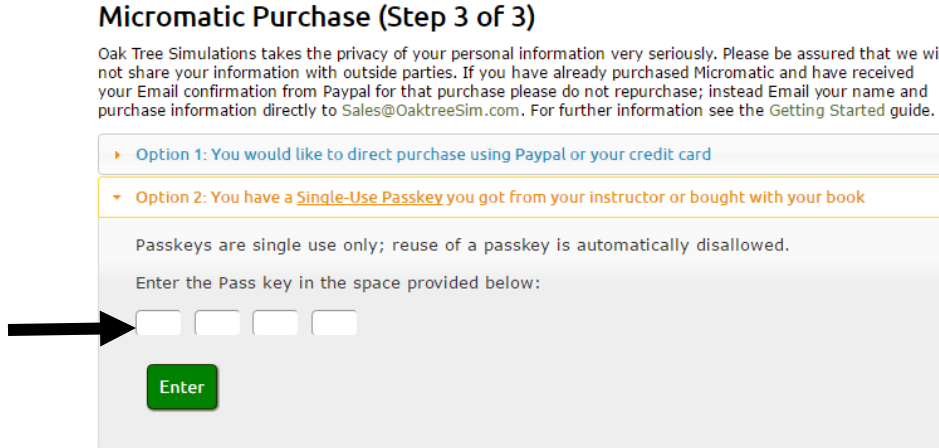
Exhibit 3.9

<p>Your account has been successfully built. An email message containing your account information has been sent to you.</p> <hr/> <p>Team Enrollment</p> <p>Next you should select the team you wish to enter. From the list given below select your desired team and press the "Save" button.</p> <table border="1"> <tr> <td data-bbox="203 1570 360 1648"> <p>Team 1</p> <ul style="list-style-type: none"> S Cheng </td> <td data-bbox="365 1570 441 1648"> <p>Team 2</p> <ul style="list-style-type: none"> N Du </td> <td data-bbox="446 1570 571 1648"> <p>Team 3</p> <ul style="list-style-type: none"> S-v2 Cheng </td> </tr> <tr> <td colspan="3" data-bbox="203 1654 571 1732"> <p>Team 4</p> <ul style="list-style-type: none"> John A DoeTeam </td> </tr> </table> <p>Team 1 ▼</p> <p>Save</p>	<p>Team 1</p> <ul style="list-style-type: none"> S Cheng 	<p>Team 2</p> <ul style="list-style-type: none"> N Du 	<p>Team 3</p> <ul style="list-style-type: none"> S-v2 Cheng 	<p>Team 4</p> <ul style="list-style-type: none"> John A DoeTeam 			<p>Thank you for your Purchase</p> <p>Here are the details of your purchase:</p> <ul style="list-style-type: none"> Customer Name: Philip Anderson Item: Micromatic Simulation Game Amount: 48.15 <p>Your transaction has been completed, and a receipt for your purchase has been emailed to you. You may log into your account at www.paypal.com to view details of this transaction.</p> <p>Select A Team</p> <p>Your account has been successfully built. An email message containing your account information has been sent to you.</p> <p>The Team enrollment is currently not available for this industry. Contact your instructor for placement on a team. Once your instructor places you on a team you will be able to play the Team version of the industry. Until then you can play the Solo version of the industry at anytime. Click here to access the Solo industry.</p> <p>OAK TREE SIMULATIONS All Rights Reserved to Oak Tree Simulations, LLC 2014</p> <p>Support@OakTreeSim.com</p>
<p>Team 1</p> <ul style="list-style-type: none"> S Cheng 	<p>Team 2</p> <ul style="list-style-type: none"> N Du 	<p>Team 3</p> <ul style="list-style-type: none"> S-v2 Cheng 					
<p>Team 4</p> <ul style="list-style-type: none"> John A DoeTeam 							

12. Option 2: Passkey Option.

If you have a Passkey from your instructor and select Option 2, a screen like that in Exhibit 3.10 will appear on your monitor.

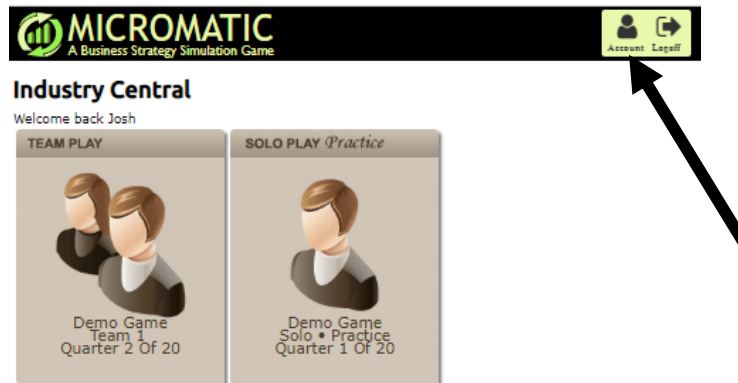
Exhibit 3.10



Enter the Passkey number and select Enter. One of the two screens like those shown in Exhibit 3.9 and explained in Step 11b will appear on your monitor.

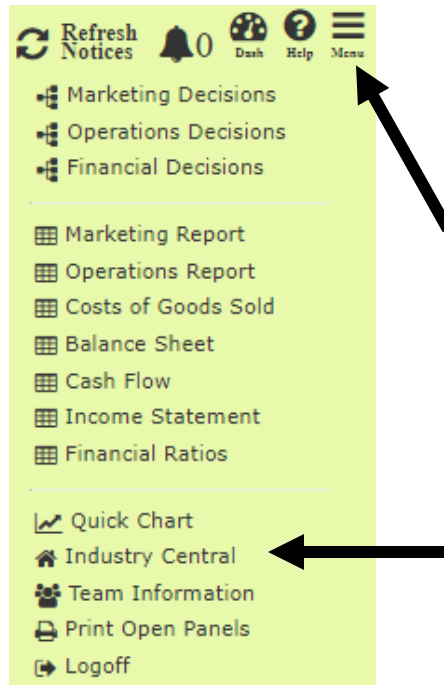
13. You can now begin working with your *Micromatic* program by clicking on the icon for the game you wish to play, *Micromatic* Team or Solo Practice (Exhibit 3.11, below). If you have not yet been assigned a team, you will only see the Solo icon. From this time forward, you will only need to enter your username and password to reach the Industry Central screen.

Exhibit 3.11



You will use the Industry Central screen to switch between using the Team game and the Solo game. You can return to this screen at any time you are working with the *Micromatic* programs by selecting the Menu icon in the upper-right corner of your monitor after you have logged into either the Team or Solo game (see top arrow in Exhibit 3.12). Then select the Industry Central link (see bottom arrow in Exhibit 3.12).

Exhibit 3.12



ACCOUNT MAINTENANCE

You will use this screen to make changes to your *Micromatic* account data. Do this by selecting the Account option when in Industry Central (see arrow in Exhibit 3.11). A screen like that shown in Exhibit 3.13 will appear on your monitor.

Exhibit 3.13

A screenshot of the 'Account Maintenance' form. The title is 'Account Maintenance' in bold. Below it is the instruction 'Update the account settings below:'. There are five input fields: 'First name' with 'Pat', 'Last name' with 'Anderson', 'Email' with 'Anders@yahoo.com', 'Password', and 'Confirm Password'. Below the fields is a note: '*Leave password and confirm password blank if no change is desired.'. At the bottom are two buttons: 'Save' and 'Cancel'.

Change Email Address. This option allows you to change the email address from the one you initially entered when registering to use *Micromatic* to a new one. To do this, type in your new email address and select “save”.

Change Password. You may decide, for security reasons, to change your company’s password. You can change your password as often as you wish, but be careful. It is usually advisable not to select as a password the name of a family member or a nickname that others are likely to guess. Also, frequent changes can lead to confusion. If you forget your password, you will not be able to access your files to make decisions for the upcoming quarter of operation. If this happens, see your instructor for help.

TROUBLESHOOTING

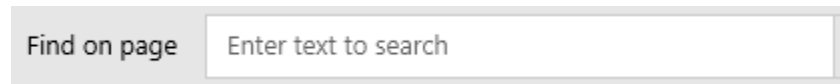
If you experience difficulty registering to use or opening the program,

- **Turn off any “pop-up” blockers and configure your browser to accept cookies.** If you need assistance with this or to initiate a search for “How to enable cookies” on Google for your particular browser.
- **Make certain that you have started Micromatic directly from Chrome, Firefox, Microsoft Edge, or Safari.** Do not launch the program from inside another program environment such as BlackBoard.

USING THE STUDENT MANUAL WHILE ONLINE

When you access the *Micromatic* Student Manual online, rather than a printed version, you have the option to navigate quickly around the manual using the “Find” feature in the Adobe Reader menu bar (See arrow in Exhibit 3.14). If the Find feature isn't displayed, press CTRL + F or select the View option in the menu bar, then the Tools option, and then click on "Find".

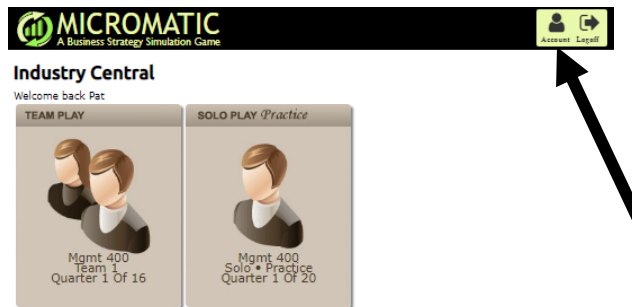
Exhibit 3.14



CHAPTER 4 – WORKING WITH THE *MICROMATIC* PROGRAMS

This chapter will detail how to work with the various features of the *Micromatic* programs. If you have not done so yet, go to the *Micromatic* web site (www.oaktreesim.com/micromatic). After the Welcome screen opens, enter your username and password. A screen like that shown in Exhibit 4.1 will appear on your monitor. This is the Industry Central screen; your starting point for working with *Micromatic*.

Exhibit 4.1



INDUSTRY CENTRAL

The Industry Central link will bring you to the screen shown in Exhibit 4.1. From this screen you will select the program with which you wish to work: Team or Solo. If your program administrator has not yet created a Team or Solo Exam industry, you will see only the Solo Practice industry icon. Just click on the appropriate icon. Your instructor will set the Solo game to give you access to the Practice mode and/or the Exam mode. The only difference between these two modes of the Solo game is that the practice mode allows you to restart the program from Quarter 1 as many times as you desire. The exam mode allows only one pass through the quarters. There is no option to restart the game. We discussed these differences between the two versions of *Micromatic* in more detail back in Chapter 1.

Account

If you wish to make changes to your email address or password, select the Account option (see arrow in Exhibit 4.1). A screen like that shown in Exhibit 4.2 will appear on your monitor.

Exhibit 4.2

Account Maintenance

Update the account settings below:

First name	<input type="text" value="Pat"/>
Last name	<input type="text" value="Wilson"/>
Email	<input type="text" value="PatWilson@MyUniversity.edu"/>
Password	<input type="password"/>
Confirm Password	<input type="password"/>

*Leave password and confirm password blank if no change is desired.

Change Email Address. This option allows you to change the email address from the one you initially entered when registering to use *Micromatic* to a new one. To do this, type in your new email address and select “save”.

Change Password. You may decide, for security reasons, to change your company’s password. You can change your password as often as you wish, but be careful. It is usually advisable not to select a

password the name of a family member or a nickname that others are likely to guess. Also, frequent changes can lead to confusion. If you forget your password, you will not be able to access your files to make decisions for the upcoming quarter of operation. If this happens, see your instructor for help.

SCREENS VERSUS PANELS

Throughout this manual, you will read references to screens and panels. The primary distinction between the two is that panels are movable, while screens are not. Panels exist within screens and can be repositioned inside the boundaries of a screen. You can reposition a panel using the standard convention of positioning the mouse over the title bar of a panel, then right-clicking and holding the mouse key as you "grab" and drag a panel to a new position, then releasing the mouse key. In *Micromatic*, you will have decision panels and report panels. These panels are dynamically linked.

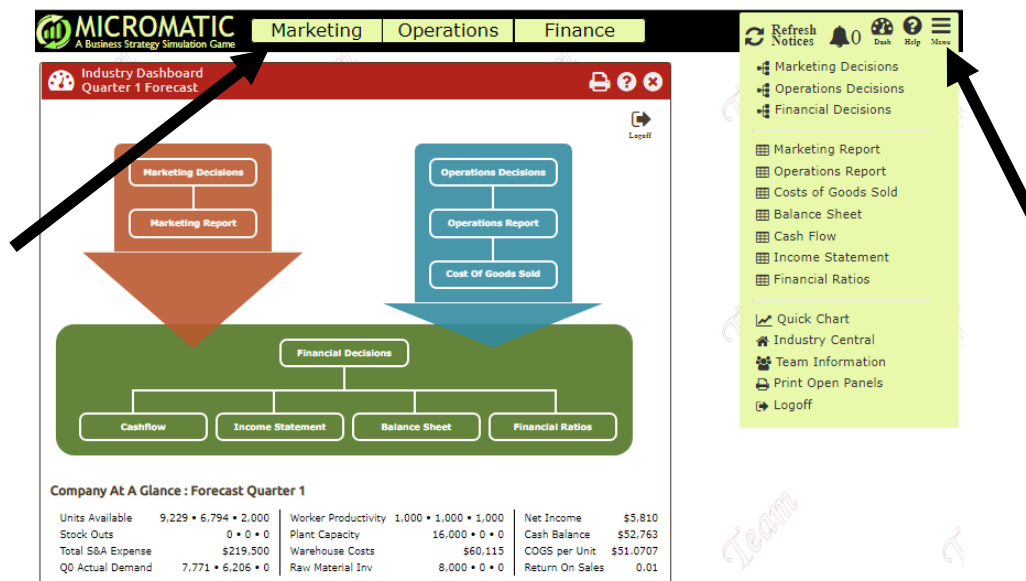
THE TEAM AND SOLO HOME PAGE

Once you select either the Team or Solo game program, the screen shown in Exhibit 4.3 will appear on your monitor. This is your "home base" for working with the *Micromatic* Team and Solo programs.

The Menu Bar

The **Menu Bar** allows you to quickly navigate around *Micromatic*. Selecting one of the Marketing, Operations, or Finance options lets you to access the decision and report panels for those functions of your business. The right side of the menu bar shows icons you will use to navigate *Micromatic*. After a quarter's decisions are processed, the **Notices** bell (🔔) may be flashing red to indicate issues resulting from the prior quarter's results. After you enter your planned decisions for the quarter, selecting the Refresh icon (🔄 Refresh Notices) displays issues for you to consider before you finalize your decisions. Select the trash can for a notice to remove it. The **Dashboard** icon (📊) allows you to quickly open the Dashboard when it is covered by decision or report panels. Selecting the **Help** icon (❓) displays links to learning scripts, the student manual, and various tips for working with *Micromatic*. Finally, the **Menu** icon (☰) provides links to a variety of key items you will use to manage your business. These are discussed in detail, below. Just below these icons, you will see the quarter of play that you are in currently.

Exhibit 4.3



The *Micromatic* Dashboard



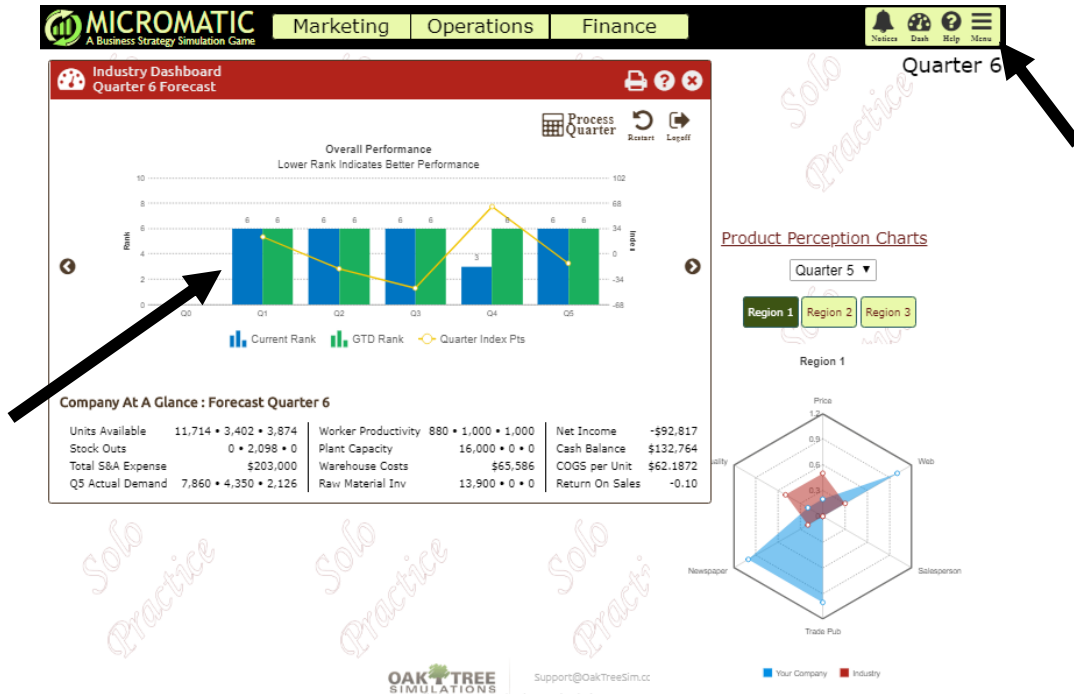

The “map” at the top of the Dashboard is an interactive panel that visually shows the relationships between the decision and report panels (See Exhibit 4.3). Clicking on an item (e.g., Marketing decisions, Balance Sheet) opens that panel. You can also open the decision and report panels using the *Micromatic* Menu (See the right arrow in Exhibit 4.4) or from the three functions links above the Dashboard. As will be discussed below, there are also icons to process a quarter or restart a game ( ) that you can use when you are working with the Solo version of *Micromatic*.


Exhibit 4.4



Company at a Glance. There is also a **Company at a Glance** report at the bottom of the dashboard. This report displays data from your company’s reports and provides you with updates of these data as you enter your decisions for the current quarter. As the title implies, this data provides you with a snapshot of your company’s performance in a number of different areas. Take note that these numbers will change if your forecasted units sold for each product to not match the *actual* units sold after the quarter is processed. But, even given that the numbers will mostly likely change, they still provide you with your company’s forecasted performance and decisions you might want to revisit before the quarter is processed.

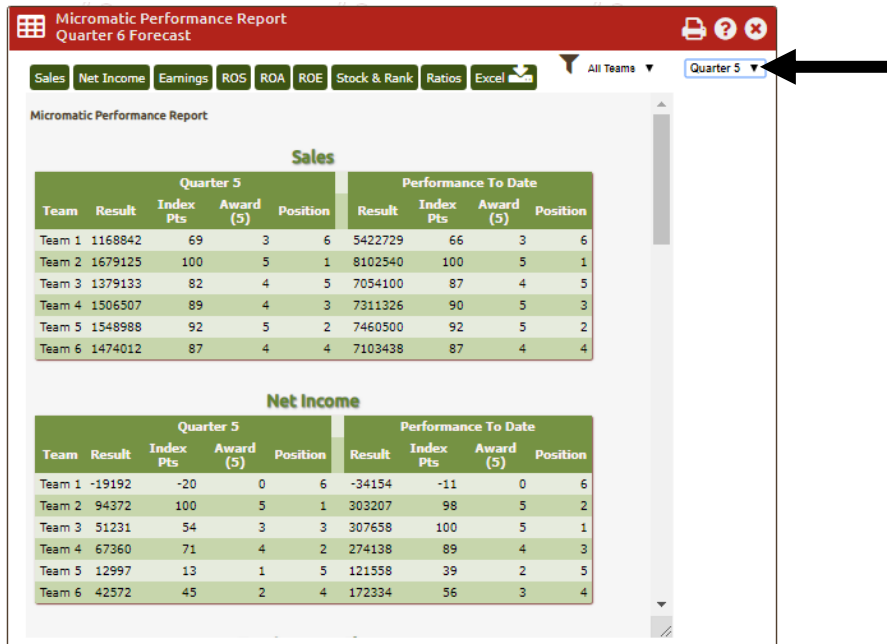
Performance Graphs. After Quarter 1 is processed, the Dashboard will change to provide some graphical displays of your performance (see left arrow in Exhibit 4.4). The Dashboard opens with an Overall Performance graph. Selecting the  advances to show overviews of your marketing, operations, and finance performance.

The Menu Icon

The Menu icon () provides links to the functional decision and report panels, plus links to the Industry Performance Report that shows the performance of all companies operating in the industry and the Company Summary Report that shows a history of your company’s decisions and performance over the duration of the simulation (See right arrow in Exhibit 4.3). These two reports are discussed next.

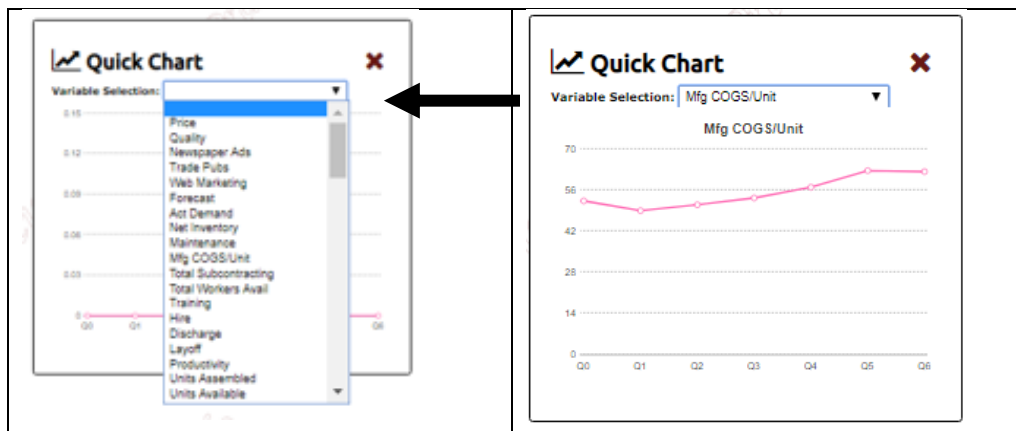
Industry Performance Report and Company Summary Report. We discuss the details of each of these reports in detail in Chapter 6. To access these two reports, click on the appropriate link. Exhibit 4.5 shows an example of the Industry Performance Report. Also take notice that you can change the quarter number for the report you want to view from this screen (see arrow in Exhibit 4.5). Finally, selecting the “View in Excel” link will export the data into an Excel file, allowing you to work with the data to analyze results and to develop charts and graphs that can help you manage your company.

Exhibit 4.5



Quick Charts. Quick Charts allow you to quickly monitor the trend of a decision or report variable over the duration of the simulation. To do this, after selecting this link, click on the drop down (see arrow in Exhibit 4.6), then use the scroll bar to pick the variable you desire. It will then display a line graph like that shown on the right in Exhibit 4.6. You can also open a Quick Chart by clicking on a variable you want to analyze, like Mfg COGS. As discussed below (see Exhibit 4.11), doing this displays historical information on that variable. You can also click on the chart icon (MDPrice) in the upper left corner to display the line chart for the variable.

Exhibit 4.6



Industry Central. Selecting this option will return you to the screen shown in Exhibit 4.1. Use this option to switch between using the Team game and the Solo game and to access the Account Maintenance menu where you can change your email address or password (see Exhibit 3.13).

Team Information. When you select this option, a panel like that shown in Exhibit 4.7 will appear on your monitor. If you like, enter a name and slogan for your team. There is no relationship between your company name or slogan and the success or failure of your company, so select any name that you desire. You can change your company name at any time during the simulation exercise. These entries are just for fun, to allow you to personalize your company.

Exhibit 4.7




Process Quarter  (**Available only for *Micromatic Solo Practice and Solo Exam***). This option is only available for the Solo version of *Micromatic*. (For the Team version, your instructor will process the quarter after all the companies have submitted their decisions for the quarter.) After making your forecasts, you can process your decisions for a quarter by selecting the Process Quarter option. If you are satisfied with your decisions and want to proceed to the next quarter (e.g., from Quarter 1 to Quarter 2), click on “Process” when the dialogue box appears on your monitor (see Exhibit 4.8). Once you select “Process,” the program will process quarter’s decisions (e.g., Quarter 1) and move forward to Quarter 2.

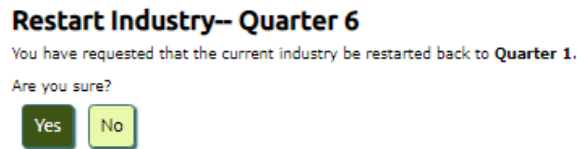
Exhibit 4.8

After processing Quarter 1’s decisions, you can view or print your Actual Results by selecting the printer icon in the panel’s title bar () to print just that panel. Alternatively, you can open all the decision and report panels you want printed and then select the Print Open Panels, as discussed below.

Restart Industry  (**Available only for *Micromatic Solo Practice***). Selecting this option will delete the current game data and begin at Quarter 1 with a new setup. When you start a new game, *Micromatic Solo Practice* creates a new industry-wide demand for the products you are selling. It also sets the relative importance of the marketing variables for determining the market share captured as a result of marketing efforts by you and your competitors. Lastly, it sets the weights for the performance criteria reported in the two performance reports. Chapter 6 will discuss these factors in detail. For now, it is only important for you to recognize that each time you start a new game, things will be different from the game you previously were playing. For example, the costs of your raw materials may be higher (or lower), as may be the costs for advertising. And the influence of YouTube advertising in determining sales may have increased or decreased.

When you select this option, the dialogue box shown in Exhibit 4.9 will appear on your screen. Select “Yes” to start a new game, or “No” to keep on playing the existing game.

Exhibit 4.9




Print Open Panels. This option allows you to print all the *Micromatic* panels that are currently open on your monitor.

Product Perception Charts

The Product Radars show the position of your company and of the industry average on six marketing factors relative to the industry leader on that factor. An example of this is shown in the lower right corner of Exhibit 4.4, above. Two points are plotted on each spoke of the diagram – your company and the industry average. The endpoint of each spoke is determined by the level of activity for the highest company in the industry. So, if the greatest number of ads by any company in the industry is 10, and your company runs 7 news ads, then your position on the spoke would be 0.7 (7/10). The same calculation is made to determine the position of the industry average. If your company is highest on a factor, your position is 1.0, the endpoint of the spoke.

LEARNING SCRIPTS

After registering to use *Micromatic*, we recommend that you watch the learning scripts we have developed to speed up your understanding of the game. You can access the scripts via the Help  icon. These learning scripts will help you to learn about making decisions, viewing reports, and understanding your status as you view the results of your decisions after they have been processed.

We strongly recommend that you do this before reading Chapter 5 – Making Decisions and Chapter 6 – *Micromatic* Reports. It will speed up your reading of those chapters.

ENTERING A DECISION

For both the Team version and the two Solo versions you will use three panels to enter your decisions regarding the operation of your business. These are the Marketing, Operations, and Finance decisions panels. You can access these panels through the *Micromatic* menu bar (see Exhibit 4.3). In addition to the three decision panels, there are seven panels that display reports showing the results of the decisions you made and the costs of running your company. As you enter your decisions, *Micromatic* automatically saves the new decisions you have entered. We will discuss each of the decision panels in detail in Chapter 5 and the report panels in Chapter 6.

Exhibit 4.10 shows you the Marketing Decisions panel. The *Micromatic* program will only allow you to make certain entries. This is to prevent you from making entry mistakes. If you attempt an invalid entry (e.g., enter a number that exceeds the decision limits or enter a letter where a number is required), the *Micromatic* program will indicate this by displaying an error message on the screen.

I have opened Marketing report panel and positioned it side-by-side with the decision panel by mousing-over the title bar, left clicking, and then moving the panel. When you make an entry on a decision panel, it will automatically update all reports affected by that decision, So if I change my web spending, that new entry shows on the S&A Report and also changes the Total S&A costs on the Income statement.

- Note: You can quickly open the report(s) corresponding to a decision panel by selecting the Report tab in the upper left corner of the decision panel (see arrow in Exhibit 4.10).

Exhibit 4.10

The image shows two side-by-side screenshots of a software interface. The left screenshot is titled 'Marketing Decisions Quarter 1 Forecast' and has tabs for 'Price/Promotion', 'Salesperson', and 'Market Research'. The 'Report' tab is selected, and a black arrow points to it. Below the tabs is a table for 'Price and Promotion' with columns for Quarter 1 (R1, R2, R3) and Quarter 0 (R1, R2, R3). The right screenshot is titled 'Marketing Report Quarter 1 Forecast' and has tabs for 'Promotion', 'Salesperson', and 'Market Research'. It displays a table for 'S&A Summary' with columns for Quarter 1 (R1, R2, R3, Total) and Quarter 0 (R1, R2, R3, Total). The table lists various expenses like Newspaper, Trade Publications, Web Marketing, Features Development, Features Count, Competitive Info, Administrative Expense, Fines/Refunds, and Total S&A Expense.

Price and Promotion	R1	R2	R3	R1	R2	R3
Price	\$70	\$70	€70	\$70	\$70	€70
Quality	\$0.00	\$0.00	€0.00	\$0.00	\$0.00	€0.00
Newspaper	9	4	0	9	4	0
Trade Publications	5	3	0	5	3	0
Web Marketing	\$0			\$0		
Features Development	\$0			\$0		
Ad Message	General	General	General	General	General	General

Promotion	R1	R2	R3	Total	R1	R2	R3	Total
Newspaper	\$9,000	\$4,000	€0	\$13,000	\$9,000	\$4,000	€0	\$13,000.00
Trade Publications	\$15,000	\$9,000	€0	\$24,000	\$15,000	\$9,000	€0	\$24,000.00
Web Marketing	\$0			\$0	\$0			\$0
Features Development	\$0			\$0	\$0			\$0
Features Count	0			0	0			0
S&A Summary				Total	Total			
Competitive Info				\$0				\$7,500
Administrative Expense				\$50,000				\$50,000
Fines/Refunds				\$0				\$0
Total S&A Expense				\$167,000				\$174,500

The Marketing decisions are grouped by functional areas within marketing. You can see the other decision areas, such as Salespersons, by selecting the tabs at the top of the panel. There are comparable tabs for the Marketing reports.

Past Quarter Information.

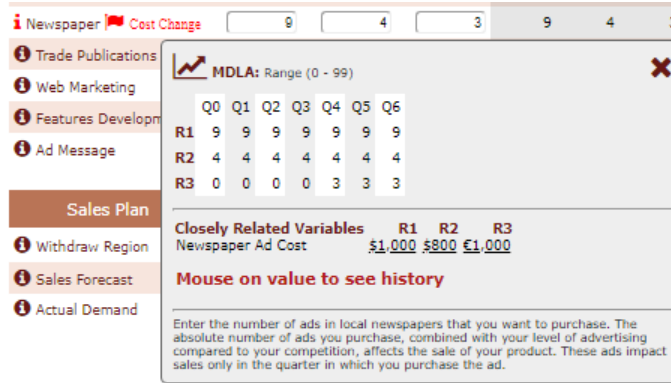
A useful feature on all decision and report panels is that besides showing the data for the current quarter, it also shows the corresponding data for the prior quarter. As you progress through the simulation, you can access all prior quarters by clicking on the prior quarter heading and selecting the desired quarter.

Notice that all companies in the industry start from the exact same position in Quarter 1. You can use this information to help you determine how you want to distinguish your company from your competition as you enter your Quarter 1 decisions. Before you make your Quarter 1 marketing decisions, we **strongly urge** that you watch the learning script for that.

Cost and Historical Information.

You can access information regarding all items in both decision and report panels by clicking on its label (e.g., YouTube). This will display a message like that shown in Exhibit 4.11. This provides you with the history for that item. Notice that you are notified when there is a cost change.

Exhibit 4.11



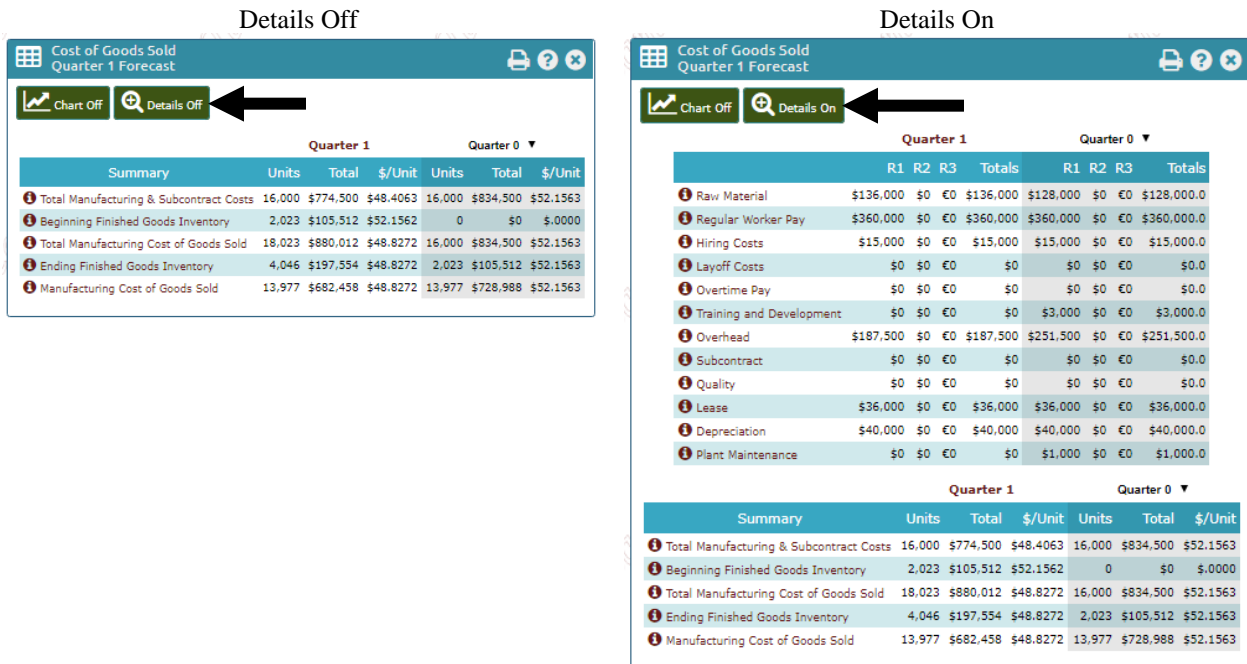
Correcting an Error

If you make a mistake or want to change a decision you have entered, simply move to the number you want to change using either the Tab key or the mouse. Type in your new decision and press the Tab key. This will replace the old number with your new number. You can always change any entries you have made up to the time the quarter’s decisions are processed. Once your decisions for a quarter have been processed, you can no longer change them.

HIDING PORTIONS OF A PANEL

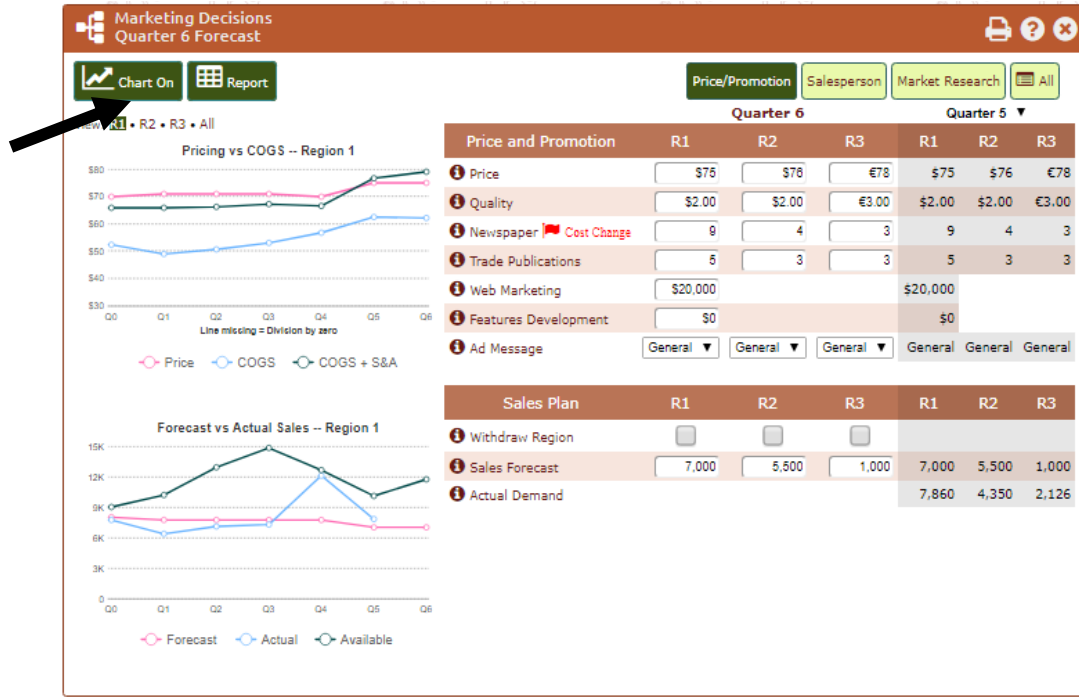
On some reports there is a “Details Off button in the upper left corner (see Exhibit 4.12). To show all the items related to the report, click on the button. For example, doing this for the Cost of Goods Sold report will display all the costs that go into determining the cost per unit for each product. Seeing these detailed costs can help you, if you are having trouble determining why the cost per units are increasing. The purpose for being able to turn off some details of a report is to help simplify the data you manage.

Exhibit 4.12



Finally, after Quarter 1 is processed, you will see certain graphs to the left of the panel to help you see trends that can aid you as you make your decisions for the quarter. You can hide the graphs, if you choose, by clicking on the Chart icon in the upper left corner (see arrow in Exhibit 4.13).

Exhibit 4.13



VIEWING THE FORECASTED RESULTS OF YOUR DECISIONS

Once you have entered decisions, you can view the *forecasted* reports for your company. These are not your “actual” results, like those that you will receive *after* either your instructor has processed your decisions (Team version) or you have processed your decisions (Solo version). Instead, these reports are based on the sales forecast that you entered on the Marketing decisions screen. So, if you said, for example, that you will sell 6,000 units in Region 1 at a price of \$70 each, you will see in the reports that you sold 6,000 units and made \$420,000 in sales. However, when the *Micromatic Team* or *Micromatic Solo* program actually processes your decisions, your sales may look very different! For example, if you sell only 5,000 units because of aggressive pricing by your competitors, your sales revenues for Region 1 would be only \$350,000. This reduction in sales revenues could move you from a profit to a loss for that quarter’s operation. In other words, your forecast reports are only as accurate as your sales forecasts. If you are overly optimistic in your sales forecasts, your reports will reflect this optimism and may show profits that will be nonexistent after you process your company’s decisions. The program will not warn you that your forecasts are inaccurate. It will only process your forecasts, not judge them. It is up to you to enter realistic sales forecasts.

You can view the reports to see what the effects of your planned decisions will be, *assuming your forecast is accurate*. You can look through the reports using any one of the methods for moving around the screens that was described earlier. Notice that before you process your decisions, the reports are labeled as “Forecast” reports. After your *Micromatic Team* and *Micromatic Solo* decisions have been processed, the reports will be labeled as “Actual” reports. The “Actual” reports are the ones that matter. These are the reports that will be used to determine your standing relative to your competition and that you will use to determine your decisions for your company’s next quarter of operation.

PROCESSING THE DECISIONS (AVAILABLE ONLY FOR MICROMATIC SOLO).

After you have entered decisions, reviewed your anticipated performance by looking at forecasted results, and modified any decisions you wish, you are ready to process those decisions. We described the processing stage of working with *Micromatic* in Chapter 1. Instructions for processing *Micromatic Solo* are also provided earlier in this chapter. Processing the decisions will move you from the quarter in which you are now operating (e.g., Quarter 1) to the next quarter (e.g., Quarter 2). If you are using the Team version of the software, you will have to wait until your instructor processes the quarter’s decisions before you can view the Actual results of a quarter (discussed next).

VIEWING THE ACTUAL RESULTS OF QUARTERS THAT HAVE BEEN PROCESSED

As discussed earlier, when you load the *Micromatic* program, it automatically advances to the next quarter for which you must make decisions. So, for example, after your decisions for Quarter 3 have been processed, your *Micromatic* program will automatically set up for your company’s Quarter 4 decisions.

For both the Decision and Report panels, the data is displayed for two quarters. The quarter data displayed on the left shows your *forecast* for the current quarter (e.g., Quarter 4). The quarter data on the right displays the *actual* results for the prior quarter (e.g., Quarter 3). As the game progresses, you can display the data for earlier quarters by selecting the drop-down (see arrow in Exhibit 4.14).

Exhibit 4.14



SIMULTANEOUS USER LOGIN ON THE TEAM VERSION

It is possible for multiple members of a team to log into their company’s web site simultaneously when using the Team version of *Micromatic*. This allows team members to work together to enter decisions and view the company’s reports without having to be in the same physical location. When simultaneously logged on with your teammates, you will be notified of any changes one of them makes (See Exhibit 4.15). These Notices will disappear after about 5 to 10 seconds. After that, you can see them by clicking on the Notices bell. FYI, any entries a team member makes automatically replaces the decision you had previously entered. So makes sure that you monitor the Notices bell before logging off to see if a teammate has made changes you missed.

Exhibit 4.15

Quarter 1				Quarter 0		
Price and Promotion	R1	R2	R3	R1	R2	R3
Price	\$72	\$73	€75	\$70	\$70	€70
Quality	\$3.30	\$2.40	€3.00	\$,00	\$,00	€,00
Newspaper	9	4	3	9	4	0
Trade Publications	5	3	3	5	3	0
Web Marketing	\$20,000			\$0		
Features Development	\$5,000			\$0		
Ad Message	General	General	General	General	General	General
Sales Plan				R1	R2	R3
Withdraw Region	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Sales Forecast	7,771	6,206	0	8,000	6,500	0
Actual Demand				7,771	6,206	0

By default the latest decisions entered are the ones used when your instructor processes the quarter. So, make sure that the decisions of the last person entering decisions are those you want implemented. *It is the responsibility of the team to ensure the decisions entered are “correct” at the time when the decisions are processed.*

TROUBLE SHOOTING

The *Micromatic* program has undergone literally hundreds of hours of testing, both inside and outside the classroom. However, it is always wise for you to be prepared for “What do I do if?” or “What do I do now?” situations. If you should experience difficulties, read the following sections. If that does not resolve the difficulty, contact one of us at the addresses and numbers listed in the Preface.

Complete System Failure

The first thing to remember is that even the computer system suddenly fails to operate (frequently referred to as a “crash”), the data in your files will not be destroyed. In this worst-case scenario, restart the *Micromatic* program. Any entries you had saved earlier will still be in your database.

Micromatic Program Failure

If you experience difficulty using the program, first ensure that you have:

- **Turned off any “pop-up” blockers and configure your browser to accept cookies.** If you need assistance on this, search for “How to enable cookies” on Google for your particular browser.
- **Started *Micromatic* directly from Microsoft Edge, Google Chrome, Safari, or Firefox.** Do not launch the program from inside another program environment such as BlackBoard.

While highly improbable, if you have been exploring the limits of *Micromatic* and trying unique combinations of entries that result in an error message, exit the program and then restart it and enter any decisions that were not saved again. This will allow the *Micromatic* program to clear itself of the combination of entries that created the confusion and should permit you to make the entries you desire.

Program “Timeouts”

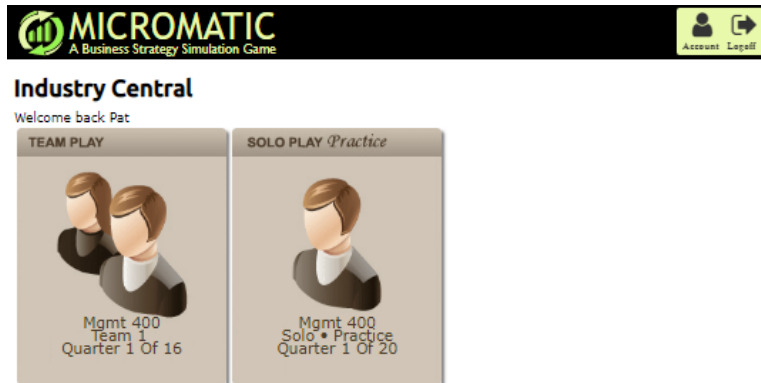
If you open the *Micromatic* program and let the program sit “idle” for a long period of time without moving from one screen to another or saving your decisions, the program will “time out”. If the program has “timed out”, the next time you make an entry or change a screen you will get a notice that you have been automatically logged out. **We do this to protect from idle programs consuming operating space and slowing down server processing times.** When this happens, simply restart the program.

CHAPTER 5 – MAKING YOUR DECISIONS

WATCH LEARNING SCRIPTS – MAKING *MICROMATIC* DECISIONS

Before reading this chapter, we recommend that you watch the learning scripts on making decisions. To do this, select any of the game icons (Team or Solo Practice) as shown Exhibit 5.1. Then access the learning scripts through the Help menu. Watching the learning scripts on making decisions will speed up your understanding of this chapter.

Exhibit 5.1



PREPARING FOR DECISIONS: YOUR BUSINESS PLAN

Before making any decisions, you should develop a business plan for your company. This is an important first step to help you cohesively tie together all your decisions. Without this plan, various parts of your business could be working against each other. For example, you might develop a marketing plan designed for a high sales volume. At the same time, you may have developed a production plan with a goal of constraining production to avoid overtime and minimize costs. This could result in stimulating more demand for your products than you had available to sell. This would result in lost sales, which would mean lost income and unhappy customers. Developing a business plan can help you avoid parts of your company working toward conflicting goals. You will use your business plan to guide you in the marketing, operations, and financial decisions you have to make. Below is a quick overview of things to consider when developing a business plan. This is not meant to be a comprehensive discussion. You need to refer to your other management texts for that.

Developing a Business Plan

The first step of the planning process is to develop a mission statement for your company. Let us consider two very different company missions. One would be to meet the customer need for a premier-quality product that is relatively price inelastic. For customers buying this product, quality, not price, drives their decision-making process. The opposite focus would be to meet the customer need for a low-priced product where quality is less important. This does not mean that quality is unimportant, but is a secondary issue after price.

These two different company missions would result in two very different strategies. The high-quality focus would lead to a differentiation strategy, while the low-price focus would lead to a low-cost strategy. Regardless of which strategy you choose to pursue, you will face the same sets of decisions in marketing, operations, and finance. However, the nature of the decisions you make will be very different. For example, you will need to make marketing decisions about price, quality, and promotional support for the

sale of your product. A differentiation strategy will naturally lead to high investments in the quality and features of the product to support the marketing efforts. A low-price strategy will of necessity result in efforts to lower the company's cost of operations so that the company can maintain profits even though its product's price is much lower than that of companies with a differentiation strategy. This will make the cost of production a critical concern for companies pursuing the cost strategy. Efficient operations (e.g., plant utilization, worker utilization and productivity, and inventory control), while important to every company, will be a key to achieving success for those companies taking the low-price/low-cost route to the marketplace. Managing your financial requirements to minimize unnecessary financial charges will also be important to pursuers of a low-price strategy.

Keep your business plan in mind as you read about the different decisions you will make to manage your *Micromatic* company. Following your plan will help you avoid coming overly reactive to the actions of your competitors as you respond to the prior quarter's results and make decisions for the current quarter.

OVERVIEW OF DECISIONS

You need to make and enter decisions in four main areas:

- **Marketing**
The Marketing decisions include issues of product positioning (e.g., price, quality, and features), product promotion and marketing research (e.g., deciding what data to gather about your competition).
- **Operations Management**
These decisions involve whether to self-manufacture or sub-contract the production of your product, construction or sale of plant capacity, and spending on maintenance of equipment. They also involve logistical decisions related to transferring products to different regions.
- **Human Resource**
Human Resource decisions include the managing of your labor force (e.g., hiring, firing, laying off, and training of production workers). You will also face decisions regarding the managing of your sales force (e.g., hiring and firing of sales reps, plus setting the commissions they receive).
- **Finance**
These decisions include determining what form of financing (i.e., short-term loan and bonds) to use to pay for the cost of running your business. They also include deciding whether to issue new shares of stock, to retire outstanding shares of stock, and to issue dividends to your existing shareholders.

Your instructor will determine whether your "home base" operations in Region 1 are located in the US or in Europe. This will determine whether the currency for your business is based on the US dollar or Europe's Euro. Also, your instructor can choose to have the currency for Region 3 to be US dollars, European Euros, or Chinese Yuan. If the Region 3 currency is different from the currency in Region 1 and 2, you will be faced with exchange rate issues as you make your decisions. Any costs incurred in Region 2 and/or 3 are merged into the company's consolidated Income Statement, Balance Sheet and Cash Flow Statement, with any foreign currency amounts converted into the Region 1 currency at the current exchange rate.

You will enter your decisions on three different screens. They are Marketing Decisions, Operating Decisions, and Finance Decisions. We will now discuss each of these in detail.

MARKETING DECISIONS

For each quarter, you will have a variety of marketing decisions to make. These decisions will include:

- the pricing of your product,
- the advertising medium to use (i.e., YouTube, Facebook ads, and the web) to create customer awareness of your product,
- the ad message communicated in your advertisements, and
- the sales force you will use to promote product placement with the retailers. These will include decisions regarding salesperson hiring, firing, transfers, and commissions.

You will enter each of your marketing decisions on the Marketing Decisions screen (see Exhibit 5.2). Next, we discuss each of these decisions.

Exhibit 5.2

Quarter 1				Quarter 0		
Price and Promotion	R1	R2	R3	R1	R2	R3
Price	\$70	\$70	€70	\$70	\$70	€70
Quality	\$0.00	\$0.00	€0.00	\$0.00	\$0.00	€0.00
YouTube Ads	9	4	0	9	4	0
Facebook Ads	5	3	0	5	3	0
Web Marketing	\$0			\$0		
Features Development	\$0			\$0		
Ad Message	General	General	General	General	General	General
Sales Plan				R1	R2	R3
Withdraw Region	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Sales Forecast	7,771	6,206	0	8,000	6,500	0
Actual Demand				7,771	6,206	0

Sales Price

- The Quarter 0 sales price was \$70 in Regions 1 & 2.
 - In Region, the Quarter 0 sales price is €70 in Region 3 if set up as a country in Europe using the Euro as its currency and ¥500 if Region 3 is set up as China.
- The price of your product affects your share of the market in two ways: (1) your price relative to the prices set by your competitors and (2) any change in your price from the prior quarter. The change in price affects sales exponentially. So, the bigger the change in price, the bigger the impact of that change. Significant changes in price from one quarter to the next have a *major* impact on units sold.
- Prices much higher than the average price charged in the region can result in very low to no sales.
- You are permitted to charge different prices in each region.
- Sales price can only be charged in integers.

- The allowed price range in Quarters 1, 2, and 3 is 60 – 87. After that it is 55 – 90.

Product Quality

- Enter how much quality (in monetary terms) that you want to build into your product. The money spent on quality affects the customers' perception of the value of your product -- and consequently, sales. So, even if you are not producing in a region, you still must enter the amount of quality you want added to products sold in this region.
- The money spent on quality affects both market share and the cost of goods sold cost.
 - Product quality is entered as a marketing decision. It is a charge added to the cost of each unit sold that quarter (i.e. the quality is added at the point of sale). The charge is not added to the cost of those units in finished goods inventory. The quality expenditure on the Cost of Goods report equals the money spent on quality times the number of units sold that quarter.
- The maximum you can spend on quality in Quarters 1, 2, and 3 is \$20.00.

Local YouTube Advertising

- Costs \$1,000 per page in Regions 1 & 2.
 - In Region 3, the cost is €1,000 per page in Region 3 if set up as a country in Europe using the Euro as its currency and ¥5,000 if Region 3 is set up as China.
- Has an impact on sales only in the quarter in which you purchase the ad.
- Affects only the region in which you purchase the ad.
- Maximum number of pages you can buy in a quarter per product for Quarters 1, 2, and 3 is 30. After that it is 99.

Facebook ads

- Cost \$3,000 per page in Regions 1 & 2.
 - In Region 3, the cost is €3,000 per page in Region 3 if set up as a country in Europe using the Euro as its currency and ¥7,000 if Region 3 is set up as China.
- Has an impact on sales only in the quarter in which you purchase the ad.
- Affects only the region in which you purchase the ad.
- Maximum number of pages you can buy in a quarter per product for Quarters 1, 2, and 3 is 15. After that it is 99.

Web Marketing

- Web marketing expenditures affect sales only in the quarter in which the money is spent.
- The money spent promoting your product on the WWW affects sales in all regions.
- The maximum you can spend for Quarters 1, 2 and 3 is \$40,000. After that it is \$99,999.

Features Development

- Product features are enhancements made to the product to make it more marketable.
- The total number of product features added to the product affects sales.
- Spending on Features Development is for research to discover new features to add to your product.
 - It is unknown how much you need to spend to create features, but it is known that the more that you spend on features development, the more likely you will create a feature.
 - Any money spent in a quarter is accumulated into a total spending account. It is total spending on features development that determines whether a feature is created.
- Any new features created in a quarter are added to all items produced in that quarter and to all items in Finished Goods Inventory.
- The number of features that have been created is displayed on the S&A Report.

- The maximum you can spend for Quarters 1, 2 and 3 is \$20,000. After that it is \$99,999.

Ad Message

- You must choose from among five different advertising messages. You can choose to vary the message from region to region. However, you must use the same message for all forms of advertising (YouTubes, Facebook ads, and web marketing) within a region. The advertising messages are:
 1. Price – emphasizes the *low price* of your product.
 2. Quality – extols the *superior quality* of your product.
 3. Service – points out the service advantage that your company provides. *This message is most effective when a large sales force supports it.*
 4. Features – stresses the *greater number* of features of your product.
 5. General – describes the benefits the consumer (or retailer) can expect to derive from using your product. Rather focusing on price, features, quality, or service the “general” message explains (or demonstrates) the *value of using your product*.
- The effectiveness of your advertising message is strongly influenced by how accurately it matches reality. For example, if you are advertising features but your product has fewer features than the products of most of your competitors, your message will be relatively ineffective. Your advertising will be most effective if you select a message that emphasizes an area in which you have a competitive advantage.

Salespersons

- **Salary** is \$10,000 per quarter per salesperson in Regions 1 & 2.
 - In Region 3, the salary is €10,000 per salesperson in Region 3 if set up as a country in Europe using the Euro as its currency and ¥11,000 if Region 3 is China.
- Salespersons **hired** in a quarter will be trained in that quarter and be ready to promote sales in the following quarter.
 - For the quarter during which a salesperson is hired, for each salesperson hired there is:
 - A **hiring cost** of \$2,500 in Regions 1 & 2. €2,500 in Region 3 if set up as a country in Europe using the Euro as its currency and ¥2,000 if Region 3 is set up as China.
 - A **training cost** of \$5,000 in Regions 1 & 2. €5,000 in Region 3 if set up as a country in Europe using the Euro as its currency and ¥1,800 if Region 3 is set up as China.
 - A **salary cost** of \$10,000 in Regions 1 & 2. €10,000 in Region 3 if set up as a country in Europe using the Euro as its currency and ¥11,000 if Region 3 is set up as China.
 - You can hire at most 5 salespersons per region Quarters 1, 2 and 3. After that it is 99.
- You can pay salespersons a **commission** in an effort to increase your salespersons performance. The higher the commission, the more motivated the salesperson is to promote your product.
- You can **transfer** salespersons to another region if you desire. Transfer costs between Regions 1 & 2 are \$7,500. Transfer costs to and from Region 3 are \$12,000 if set up as a country in Europe using the Euro as its currency and \$50,000 if Region 3 is set up as China. All salesperson transfers are in \$.
- The salespersons leave the company at the end of the quarter in which you **discharge** them.
- If you have a **stock out** in a region, you will lose one salesperson unless you have no salespersons in that region. If your stock out in a region is greater than 2000 units, you will lose two salespersons.

Withdraw from Region

- If you wish to withdraw from a region, click on the box for that region, entering a check (i.e.,) into the box. This will eliminate any sales of your product from that region.

Sales Forecast

- Enter your forecast of how many units you *expect* to sell in each sales region. There is *no* guarantee that you will sell this amount. This is just your *best estimate* of what you will sell. *Micromatic* uses your sales plan to calculate the numbers in your *forecasted* reports. You will use these forecasted reports to help you make your quarterly decisions.

Factors to Consider When Forecasting Sales. The factors in the marketing mix (price, advertising, product features, product quality, and service provided by Salespersons), plus price change and the accuracy of your advertising message, combine to determine what portion of the market each company will capture (i.e., its market share). How much you choose to spend on building quality into your products will be discussed later in this chapter under “Operations Decisions”. The combination of a product’s price, features, and quality creates a value to the customer. This value, combined with your promotional and service efforts (e.g., advertising, sales force), will influence sales of your product.

Base your sales forecasts estimate on (a) your decisions regarding these factors that determine market share, (b) your expectations of your competitors’ decisions on these factors, (c) the industry sales potential for each of the regions, and (d) other conditions that could influence sales potential. Some of these other conditions are moderately predictable (e.g., general economic conditions), others may be less predictable (e.g., the impact of political instability in a foreign country in which the firm operates), and yet others may be random and therefore impossible to predict (e.g., a hurricane that temporarily stops production in a region). The message with respect to these conditions is that having contingency plans can be invaluable when things don’t work out as planned.

Enter a number between 0 and 99,999 for the three sales regions in which you operate that is your best estimate of the sales volume you will achieve. This estimate is *not* a guarantee of what you will sell; only your estimate of that number. Your forecast is only as accurate as your estimate of your marketing efforts relative to your competitor’s marketing efforts and your estimate of overall market demand.

Forecast Reports. Once you enter the forecasts, the *Micromatic* program uses those numbers to generate forecast reports that show what would happen *if you actually sold the amount that you forecasted*. These forecast reports allow you to see what your operating costs and net income would be, whether you need to request a short-term loan, and what your overall picture would be for the quarter. You can also see *forecasts* for your material inventories and the cost of producing your products for that quarter. We discuss each of the reports created by *Micromatic* in Chapter 3.

Take note. These reports are *forecast* reports and are labeled as forecasts on the report screens and on any printouts you generate. They are only as good as your estimate of the demand for your products. No guarantee exists that you will actually sell what you forecast. Actual sales are determined after you have processed your decisions for that quarter and moved on to the next quarter. At that time, the reports are labeled as “actual” reports to distinguish them from the forecasted reports. If you have misjudged your competitors’ actions or the general market demand for the product, your forecasted sales can be considerably different from your actual sales. If this is the case, your forecasted results will not resemble your actual results. This means your ability to plan your actions and predict your results will be highly dependent upon your ability to forecast accurately.

Remember two things about your sales forecasts. One, the sales *forecasts* you enter have no effect on your *actual* sales in a quarter. The *Micromatic* program does not consider sales forecasts when determining actual sales of a product. It only considers the pricing, promotion, quality, and total market demand for a product when allocating sales. Two, *Micromatic* will not warn you if your sales forecasts

are unrealistic. It is your responsibility to understand your marketplace, using both quantitative and intuitive skills, and make a reasoned determination of what will be your products' sales volumes.

After looking at the forecasted reports, you can modify your decision inputs to maximize your company's efficiency and performance. You can make as many modifications to your decision inputs as you wish. The decisions you have entered do not become permanent until you have processed them. You can test any number of possible decision sets to determine which will yield the best results for your company.

Diminishing Returns. As with almost any product, the advertising of your *Micromatic* products can reach a point of diminishing return. As you raise your levels of advertising, more potential customers become aware of your products. Unfortunately, awareness does not guarantee a purchase. At some point, additional expenditures on advertising will result in smaller increases in the number of sales in a region. Determining when you have reached this point is a problem all companies face and will be a continual challenge for your company.

Substitute Products. The issue of diminishing returns does not mean you can avoid promoting your products. If you spend too little on advertising, your efforts may result in few sales because your promotional efforts are overshadowed by your competitors' promotional efforts. Further, if companies in your industry spend little on promotion of the *Micromatic* products, or price them too high, your potential customers will purchase substitute products sold by companies outside your *Micromatic* industry. This would mean neither you nor your *Micromatic* competitors would sell the sales potential forecasted for the industry. This can also occur if the whole industry invests too little in product quality. Your task then is to design a marketing program that is both effective and efficient. For a marketing program to be successful, it must generate the demand you desire at the lowest possible cost.

Marketing Research Decisions

You also can make marketing research decisions each quarter. An example of the Marketing Research Report is shown in Appendix A.

- Click on the box () for the research information desired.
- You have two options for purchasing information on future sales potential.
 - Average Expected Demand for the Next 4 Quarters provides the average forecasted demand per company for each of the next 4 quarters. This is an estimate of sales demand for the industry; it is not a guarantee of what sales will be for your company.
 - The second research item on future sales potential allows you to **buy information for a single quarter** that you select. If you select this option, you must also **enter the quarter number for which you desire information**.
 - To determine the industry sales potential, multiply the sales potential per firm for each product by the number of firms in the industry.
- For all **other marketing research** options you select, you will receive information for *all* companies in the industry.
- The **cost of the research** option you select is shown by clicking on the label for that item. That is the total cost for the item selected, regardless of the number of companies operating in the industry.
- You will find the marketing research you purchased in the Market Report under the tab for Market Research for the quarter when you made the purchase.

Future Sales Potential. The prior managers of your company purchased potential market demand for Quarter 1 in Quarter 0. Quarter 1 demand forecasts are 8,500 units for Region 1, 6,600 units for Region 2, and 3,000 units for Region 3. **These numbers do not represent the guaranteed sales volume for your company in Quarter 1. They represent the average demand per company for the industry.** Depending on your marketing effort relative to that of your competitors, you will sell above or below

these levels. The numbers indicate how much each company would sell if the total market potential were divided equally among all companies in your industry. You can determine the total sales potential for a product by multiplying the number given in the research report by the number of companies in your industry. For example, if the number of companies is 5, then the total demand for Region 3 in Quarter 1 will be 15,000 units (i.e., 3,000 units * 5 companies). If one of your goals is to achieve a 30% share of the market for Product 1, your sales goal for Region 1 in Quarter 1 would be 4,500 units ($15,000 * .30 = 4,500$). This goal is greater than the average demand of 3,000 shown in the report, so to sell this amount requires a marketing effort greater than that of at least some of your competitors. Put simply, the more you want to sell above the average demand for a product, the greater effort you will have to put in to marketing your product relative to your competition. Remember, at some point the cost of this marketing effort will outweigh the benefits that come from the increased sales volume.

Quarter 1 represents the first three months of the calendar year (January – March). Each of the subsequent quarters coincide with the remaining months of the year (e.g., Quarter 2 is April – June). Quarter 5 begins the yearly cycle again, in the subsequent year.

OPERATIONS DECISIONS

For each quarter, you will have a variety of operations decisions to make. These decisions will include:

- Ordering of raw materials
- Production workers (i.e., hire, fire, lay off)
- Production of finished goods (i.e., subcontract production, in-house production)
- Product transfers (i.e., movement of finished goods between sales regions). Note that while this item is part of operations, you could regard it as the “Place” decision in the marketing mix.

You will enter each of your operations decisions on the Operations decisions screen (see Exhibit 5.3). Next, we discuss each of these decisions.

Exhibit 5.3

		Quarter 1			Quarter 0		
Units		R1	R2	R3	R1	R2	R3
Raw Material Ordered		20,000	0	0	20,000	0	0
Liquidate Raw Material		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Subcontract Finish Goods		0	0	0	0	0	0
Finished Goods Production		18,000	0	0	16,000	0	0
Finished Goods Transfer							
From Region 1 To:		<input checked="" type="checkbox"/>	7,000	0	<input checked="" type="checkbox"/>	7,000	0
From Region 2 To:		0	<input checked="" type="checkbox"/>	0	0	<input checked="" type="checkbox"/>	0
From Region 3 To:		0	0	<input checked="" type="checkbox"/>	0	0	<input checked="" type="checkbox"/>
Workers							
Hired (#)		5	0	0	5	0	0
Discharged (#)		0	0	0	0	0	0
Laid Off (#)		0	0	0	0	0	0
Training Expenditure		\$0	\$0	€0	\$3,000	\$0	€0
Plant Capacity							
Build Plant Units		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0	0	0
Lease Plant Units		0	0	0	0	0	0
Lease Duration (Quarters)		4 Qrts	4 Qrts	8 Qrts	4	4	4
Sell Plant Units		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0	0	0
Maintenance		\$0	\$0	€0	\$1,000	\$0	€0

Raw Materials

- Raw material **purchase costs** are as follows.

<u>Units ordered</u>	<u>Price In the US</u>	<u>Price In Europe</u>	<u>Price In China</u>
1 – 9,999	\$10.00	€10.00	¥95.00
10,000 – 19,999	\$9.00	€9.00	¥80.00
20,000 and above	\$8.00	€8.00	¥70.00

- Price breaks** are based on purchases by region, not by the total for all regions.
- Raw Materials ordered in a quarter are delivered in the following quarter. For example, raw materials purchased in Quarter 2 will be delivered in Quarter 3.
- Raw Materials are paid for in the quarter in which they are received; i.e., COD.
- Carrying cost** for the beginning units in raw material inventory are as follows:
 - In the US = \$2.00
 - In Europe = €2.00
 - In China = ¥6.00
- Raw Material Order Shortages can occur.
 - In the US and Europe A 7% probability exists that only 80% of the raw material order will be delivered. The remaining 20% will never arrive.
 - In China A 14% probability exists that only 50% of the raw material order will be delivered. The remaining 50% will never arrive.
- Selecting the **Liquidate** option allows you to sell off **all** raw material inventories that you have in a region. If you choose this option, you will receive 50% of the value of inventory as shown on the Raw Material Report in the next quarter. This liquidation will take place in the next quarter, not the current quarter. It will also cancel any raw material order for the region you enter this quarter.

Finished Goods

- You can **subcontract** the production of your product with a local manufacturer.
 - Units purchased from a subcontractor are available for sale in the same quarter as purchased.
 - There is a chance that the subcontractor may be UNABLE to provide all of the requested units. When operating in China, the reliability of product deliveries is less than in the US or Europe.
 - The **cost of subcontracted units** is shown on the Material and Inventory Costs screen.
 - Default costs are as follows.
 - In the US = \$63.00 per unit
 - In Europe = €63.00 per unit
 - In China = ¥440.00 per unit
 - The subcontract cost shown does **not** include money spent to improve the quality of the product.
 - When operating in China, the reliability of product deliveries and worker turnover are not as predictable as they are in the US or Europe.
- **Production** is limited by the number of crews available, crew productivity, plant capacity, and the number of units of raw material available, whichever is most constraining. Enter the number of units you wish to produce during the quarter, subject to the limitations described.
- Finished goods **carrying costs** are based on the number of beginning units in finished goods inventory. The unit costs are as follows:
 - In the US = \$5.00 per unit
 - In Europe = €5.00 per unit
 - In China = ¥24.00 per unit

Finished Goods Transfers

- You can **transfer** finished goods (but not raw materials) to another region. Transfer costs per unit are as follows:
 - Between regions in the US = \$5.00
 - Between regions in Europe = €5.00
 - Between the US and Europe = \$10.00
 - Between the US and China = \$19.00 from/to R1 \$15.00 from/to R2
 - Between the Europe and China = €19.00 from/to R1 €15.00 from/to R2
- When operating in China, the reliability of product deliveries and worker turnover are not as predictable as they are in the US or Europe.

Work Force

- Wages are \$7,500 per worker per quarter in the US.
 - In Region 3, the cost is €5,500 in Region 3 if set up as a country in Europe using the Euro as its currency and ¥9,000 if Region 3 is set up as China.
- The **cost to hire** a new worker in the US is \$3,000.
 - In Region 3, the cost is €3,000 in Region 3 if set up as a country in Europe using the Euro as its currency and ¥25,000 if Region 3 is set up as China.
 - You need to hire workers one quarter in advance of the first day of work, e.g., if you hire workers in Quarter 2, they will be available in Quarter 3.
- **To form a crew**, you need three people. A partial crew cannot produce any units.
 - Each crew can produce 1,000 units without overtime.
 - A crew can produce a maximum of 20% above its normal capacity. For example, if a crew's productivity is 1,000 units, the most it can produce is 1,200 units. The first 1,000 units would be produced at regular time. The last 200 units charged at the overtime rate. Overtime occurs if you exceed either the crew's production capacity or the plant's total current capacity (owned + leased), whichever is most constraining.

- **Overtime** is \$45.00/unit in the US. Any overtime cost is in addition to the regular cost of producing the product.
 - In Region 3, the cost is €45.00/unit in Region 3 if set up as a country in Europe using the Euro as its currency and ¥210.00/unit if Region 3 is set up as China.
- **Worker turnover** is computed based upon the number of workers in each region.
 - Workers who resign (i.e., turnover) leave at the beginning of the quarter and are not paid a salary.
 - In the US and Europe Normal turnover is 10%. There is a 7% probability that you'll lose one additional worker per region and a 3% probability that you'll lose two additional workers per region.
 - In China Normal turnover is 7%. There is a 15% probability that you'll lose one additional worker per region and a 7% probability that you'll lose two additional workers per region.
- **Discharged** workers leave at the beginning of the quarter and before turnover is calculated. Initially, there is no charge to fire a worker. Check the Operations Costs report for current costs.
- **Laid off workers** leave at the beginning of the quarter and return automatically the next quarter.
 - In the US Lay off cost per workers = \$3,000
 - In Europe Lay off cost per workers = €3,000
 - In China Lay off cost per workers = ¥700
- **Worker training** expenditures is money spent in an effort to improve the productivity of your production workers. *It is total spending on training, not spending per worker, which affects worker productivity. It is training for **all** workers, not just for the workers hired in the current quarter.*
- Expenditures made this quarter influence worker productivity in the following quarter. There is no guarantee that money spent in this area will translate into productivity increases. Nor is there a guarantee of how much worker productivity will increase, *if* an increase does occur. All that can be said for certain is that little or no investment in training will cause worker productivity to decline and that the larger your investment in training, the greater the likelihood that the productivity of your workers will increase.
- **Manufacturing Costs**
 - Total manufacturing costs are direct material, direct labor, overhead costs, plus depreciation.
 - Overhead costs
 - In the US = 50% of the total labor cost
 - In Europe = 50% of the total labor cost
 - In China = 150% of the total labor cost

Plant Capacity

- Background information for making plant decisions.
 - You currently own plant capacity in Region 1 that can produce 10,000 units per quarter. This capacity will last through Quarter 24.
 - You currently lease plant capacity in Region 1 to produce 6,000 units per quarter. This lease terminates at the end of Qtr 7, reducing your production capacity by 6,000 units in Qtr 8.
 - You must have a minimum of 5,000 units of capacity to operate in Region 1 and a minimum of 3,000 units of capacity to operate in Regions 2 and 3. This applies to both plants purchased and plants leased.
 - Depreciation is computed straight line over 25 quarters.
 - Money spent on plant maintenance affects the cost of manufacturing your product. Insufficient spending on plant maintenance will affect worker productivity.

- **Build Plant Units**
 - **Units.** Enter the number of units of production capacity you desire.
 - Current cost is \$100,000 per 1,000 units in Region 1 and \$80,000 per 1,000 units in Region 2.
 - In Region 3 the cost is €100,000 per 1,000 units in Region 3 if set up as a country in Europe using the Euro as its currency and ¥300,000 per 1,000 units if Region 3 is set up as China.
 - The minimum purchase is 1,000 units.
 - Payment terms are 20% down, 80% the next quarter.
 - There is a two-quarter delay from when plant capacity is purchased and when it is ready for producing product. For example, if purchased in Quarter 2, the plant is in construction in Quarter 3, and operational in Quarter 4.
- **Lease Plant Units**
 - **Units.** Enter the number of units of production capacity you wish to lease.
 - The minimum lease is 1,000 units.
 - There is a one quarter delay from when plant capacity is leased and when it is ready for producing product. For example, if a lease is purchased in Quarter 2, the plant is operational in Quarter 3.
 - **Duration.** You can lease a plant for 4 quarters or for 8 quarters.
 - Your current lease terminates at the end of Q7, reducing your production capacity by 6,000 units in Q8. **Do not forget to plan for this!**
 - Lease costs in Quarter 1 in Region 1 are \$7 per unit for a 4-quarter lease and \$6 per unit for an 8-quarter lease. Costs in Region 2 are \$6 per unit for a 4-quarter lease and \$5 per unit for an 8-quarter lease.
 - In Region 3, the cost is €7 per unit for a 4-quarter lease and €6 per unit for an 8-quarter lease in Region 3 if set up as a country in Europe and ¥20 per unit for a 4-quarter lease and ¥15 per unit for an 8-quarter lease if Region 3 is set up as China.
 - Lease costs may change. Check for the current quarter cost on the Operating Decisions screen.
- **Sell Plant Units**
 - **Units.** Enter the number of units of production capacity you wish to sell.
 - You must sell a minimum of 1000 units.
 - You must sell the oldest plant capacity first.
 - You can use the units sold in the current quarter.
 - You lose the capacity at the beginning of the following quarter.
 - You will be paid the book value of the plant sold (Purchase price less accumulated depreciation).
 - You will receive the cash from the sale of the plant in the following quarter.
- **Maintenance.**
 - Enter the amount of money you wish to spend on plant maintenance.
 - Money spent on plant maintenance affects the cost of manufacturing your product. How much you spend can cause worker productivity to either increase or decrease as it affects their working conditions and consequently their ability to efficiently manufacture your product.
 - There is no guarantee that a cost decrease will occur. However, the larger your investment in plant maintenance, the greater the likelihood for a decrease. However, there is a point of diminishing returns where you will gain no additional benefit.
 - There is no way to determine how much you need to spend to yield a cost decrease, except through experience.

- **Administrative Costs Related to Operations**

- There is a fixed administrative charge for operating a plant in Region 1. This charge is recorded in the S&A Report, which is discussed later in this manual.
 - If located in the US = \$50,000
 - If located in Europe = €50,000
- There are *additional* charges for operating plants in Regions 2 and 3. These charges independent of the charges for Region 1 and are added to the administrative charge for the plant in Region 1. For example, if you lease or build a plant in Region 2 and it is located in the US, then the total Administrative Expense shown in the S&A Report will be \$92,000 (\$50,000 for Region 1 plus \$42,000 for Region 2).
 - Region 2 = \$42,000 if located in the US and €42,000 if in Europe
 - Region 3 = \$42,000 if located in the US, €42,000 if in Europe, and ¥520,000 if in China
- Additional administrative charges begin in the quarter after you order additional capacity in a new region. Any administrative costs incurred from plants in Region 2 and/or 3 are consolidated into the company's S&A Report, with any foreign currency amounts converted into the Region 1 currency at the current exchange rate

FINANCE DECISIONS

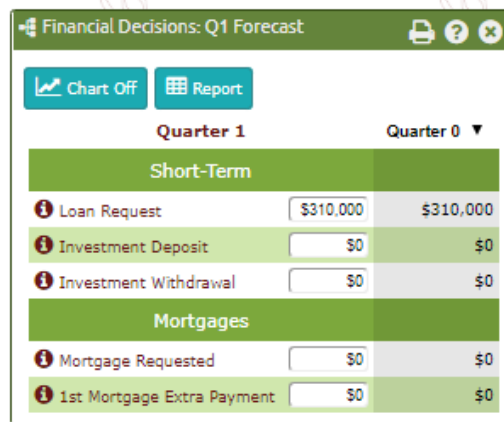
For each quarter, you will have a variety of finance decisions to make. These decisions will include:

- Short-term loans
- Short-term investment
- Bonds
- Stock Dividends
- Stock Issue or Retirement

If Region 1 is in the US, the financial statements will be in dollars (\$). If Region 1 is in Europe, they will be in Euros (€). For this summary, dollars are used as the currency in the following bullets. If Region 1 is in Europe the number would be the same, only the currency would change. For example, your line of credit will be either \$400,000 or €400,000.

You will enter each of your finance decisions on the Finance decisions screen (see Exhibit 5.4). Below the exhibit, we discuss each of these decisions.

Exhibit 5.4



The interest rate, line of credit, etc. can change over the duration of the simulation exercise. Clicking on the Loan Request in the Finance Decisions panel will display the current rate.

Short-Term Loan Requests

- **Request.** Enter the amount needed to ensure a positive cash flow on the Cash Flow Statement.
 - The base interest rate is 10% adjusted for your debt asset ratio at the beginning of the quarter.
 - You receive the loan in the quarter requested.
 - However, if the loan requested is insufficient to fully cover your cash flow needs when the quarter is processed, your loan request is cancelled and you will receive an emergency loan for twice the existing interest rate displayed on the screen. This means that if you request a short-term loan for \$200,000 but need \$200,001, your loan request is denied and you will incur an emergency loan for the full \$200,001 not for the \$1 you were short in your request.
 - The maximum amount you can request is displayed as your **line of credit** on the financial decisions screen. In Quarter 1, your line of credit is \$400,000.
 - You are required to repay what you borrowed in the following two quarters in two equal payments. For example, if you borrow \$100,000 in Quarter 2, you will pay \$50,000 in Quarter 3, and \$50,000 in Quarter 4.
- **Extra Payment.** You can make an extra payment on your short-term loan to pay it off early, if you desire.

Short-Term Investment Deposits

- Are paid in the quarter in which they are made. Payment is shown on the Cash Flow Statement.
- Interest income on deposits and existing investments is paid in the following quarter.
- Current investment rate is 5%.

Short-Term Investment Withdrawals

- Are received in the quarter requested.

Dividends per Share Issued

- Are paid in the quarter in which they were issued.
- In order to influence the stock price, the dividends must be at least \$.05 per share.
- You retire stock before you declare any dividends each quarter.
- You cannot issue a dividend if the transaction results in negative accumulated retained earnings.
- You pay dividends the quarter that you declare them.

Issue Shares

- **Stock issues** take place and the proceeds are received in the quarter requested.
- You cannot issue stock if the current price minus the broker's commission is less than the \$10 par value.
- The minimum number of shares you can issue in a quarter is 1,000 shares
- The maximum number of shares you can issue in a quarter is 10,000 shares
- You will pay a broker's commission fee of 10% on all stock transactions.
- The Minimum # Shares Outstanding that you can have is 120,000 shares.
- The Maximum # Shares Outstanding that you can have is 240,000 shares.

Retire Shares

- Are paid in the quarter in which they were purchased (i.e., retired).
 - You cannot retire stock if the transaction results in negative accumulated retained earnings. You may not be able to retire as many shares as you wish.
 - You also have quarterly and game limits to stock retirements.

Stock Price

- Is determined by previous price, earnings or losses per share, continuous quarters of profit or loss, amount of dividends, number of continuous quarters that you pay dividends, price-earnings ratio, and random market factors.

Bond Requested

- Are received in the quarter requested.
- All companies start with one bond.
- Current new bond interest rate is 10%.
- Bond repayment is paid over the 20 quarters following the issuance of the bond.
- Interest payment on new bonds starts the quarter after you receive the bond and continues until the bond is paid off.
- You can make an extra payment on your first bond to reduce its outstanding balance
 - There is a surcharge of 3% on additional (i.e., early) bond payments.
- The maximum number of bonds outstanding at any one time is two (2).
 - To get an additional bond, you must first retire the first (i.e., oldest) bond. Do this by entering the amount outstanding for Bond #1 shown on the Balance Sheet.
 - You can include the money needed to retire the first bond with your new bond request, if you have insufficient funds from other sources to make the early payment.
 - If the extra payment for the first bond is insufficient to pay it off early, your new bond request will be denied. The program does not allow you to overpay your extra payment.

1st Bond Extra Payment

- This is the amount of extra payment you wish to make on Bond #1. If you already have two bonds outstanding and wish to issue a new bond, you will **first** need to use this entry to pay off Bond #1 early to make room for the new bond.

SOME DECISION GUIDELINES

Some of the most common problems participants face in *Micromatic* is that they simply don't pay attention to what they are doing or examine closely what is going on in their industry. For example, they may forget to hire to replace workers lost to turnover or purchase market research information but then not examine it. Here are some reminders as you compete in *Micromatic*.

1. Do your decisions reflect your strategy? Are they consistent with each other? (Do your sales forecasts reflect the production decisions you made? Are you forecasting lost sales?)
2. Have you analyzed your competitors' performances and strategies?
3. Do you have confidence in your sales forecasts? Do your forecasts reflect (a) your present sales level, (b) expected changes in sales due to anticipated actions by your competitors and trends in industry demand, (c) changes in your marketing mix for the quarter, *and* (d) your historical forecasting accuracy? **Remember:** Wishing for high sales does not make them happen.
4. Before submitting your decision for a quarter, did you examine your forecasted income statement? Does it show you making the profits you have planned? *If not, why submit the decision?* What do you have to do to achieve your desired profit level? **Remember:** The accuracy of your forecasted income statement depends on the accuracy of the sales forecasts you submit!
5. Do you have the *information* you need to make intelligent decisions? What reports hold this information?
6. Are you doing what you intend to do? (Do you *really have* the lowest price in the industry or are your decisions based on ill-founded assumptions?)

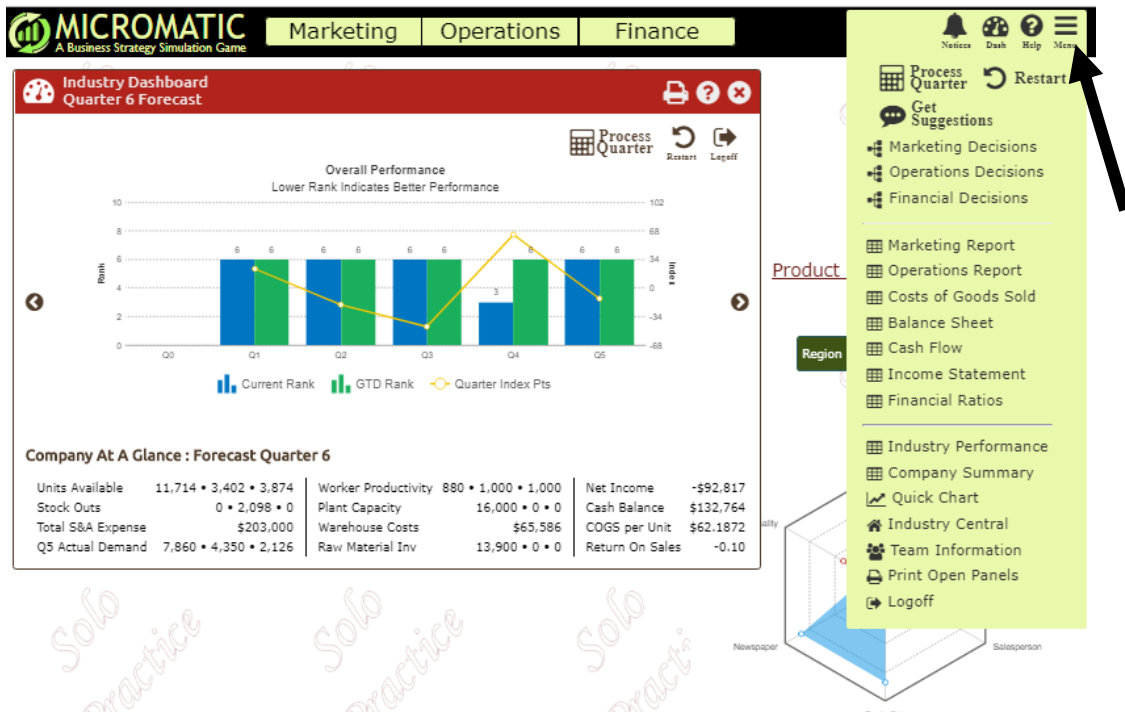
7. What marketing tools seem to be most effective in your industry? Have you carefully considered how much you're spending on each of your promotion tools? (Is your spending insufficient and/or ineffective? Are you on past the point of diminishing returns and throwing money away?)
8. Are your production costs under control? Have you done everything you can to minimize these costs? What is the quarterly trend of your unit costs as shown on the Cost of Production Report?
9. Is your Gross Profit insufficient to cover your other costs and still achieve a profit for the quarter? (If it is less than 25% of sales, it will be difficult to achieve a profit.)
10. Did you order enough raw material for each product for the quarter *after this one*? Remember, for the current quarter (say Q3) you can only produce the raw material inventory on hand. The quantity you order on your Q3 decision form is not received until Q4. Thus, in Q3 you must forecast ahead and anticipate how much you plan to produce in Q4. Stocking out may be more expensive than the cost of carrying inventory into next period.
11. Did you check your cash flow statement and request a large enough loan so that you don't have to pay high emergency loan interest rates?
12. Did you check to be certain you aren't submitting some of last quarter's decisions unintentionally?

In Chapter 6, we will discuss the reports generated by the decisions you make that you will use to manage your business.

CHAPTER 6 – MICROMATIC REPORTS

After you process each set of decisions, you will receive a number of reports that will show, in detail, the results of those decisions. You can view these reports and those of previous quarters using the Quarter menu option (See the arrow on the right in Exhibit 6.1, below). When you open the *Micromatic* program, it automatically opens the *next* quarter's *forecasted* decision screens and associated reports. The decisions showing are those from the quarter just processed. From here, you can enter new decisions as you adjust to the results of the prior quarter. You will also be able to view *forecast* reports that show the results of your decisions **IF** you sell the number of units that you forecast for the next quarter. (See discussion of forecast reports in Chapter 2.)

Exhibit 6.1



We will provide a description of each *Micromatic* report that you can access, using hypothetical data for Quarter 1 as an example. The reports are listed below.

- Marketing Report
- Operations Report
- Cost of Goods Sold
- Balance sheet
- Cash flow statement
- Income statement
- Financial Ratios
- Industry Performance
- Company Summary

MARKETING REPORT

Exhibit 6.2

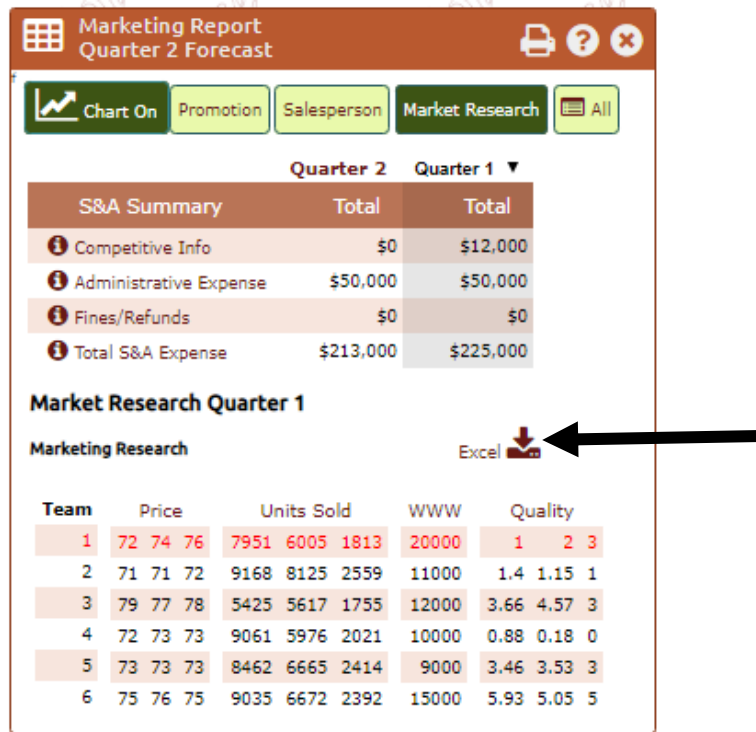
		Quarter 2				Quarter 1 ▼			
Promotion		R1	R2	R3	Total	R1	R2	R3	Total
📘	Newspaper	\$7,000	\$6,000	€3,000	\$17,500	\$7,000	\$6,000	€3,000	\$17,500.00
📘	Trade Publications	\$18,000	\$9,000	€9,000	\$40,500	\$18,000	\$9,000	€9,000	\$40,500.00
📘	Web Marketing				\$20,000				\$20,000
📘	Features Development				\$5,000				\$5,000
📘	Features Count				0				0
S&A Summary					Total				Total
📘	Competitive Info				\$0				\$12,000
📘	Administrative Expense				\$50,000				\$50,000
📘	Fines/Refunds				\$0				\$0
📘	Total S&A Expense				\$213,000				\$225,000

The Marketing Report shows the costs of promoting and selling the *Micromatic* product to prospective customers resulting from the decisions you entered on the Marketing Decisions panel. To see the per unit cost for a variable (e.g., YouTube), switch to the Marketing Decisions panel. When you click on the name for that variable, a dialog box will open showing the cost and other relevant information.

The **Promotion** tab shows the costs associated with the various forms of advertising available to your company. The **Salesperson** tab shows the costs associated with your sales force. The bottom of both those reports shows the costs of the decisions you made to purchase marketing research (see arrow in Exhibit 6.2), the fixed administrative overhead cost for operating your business, and any fines or refunds assigned to your company by your instructor.

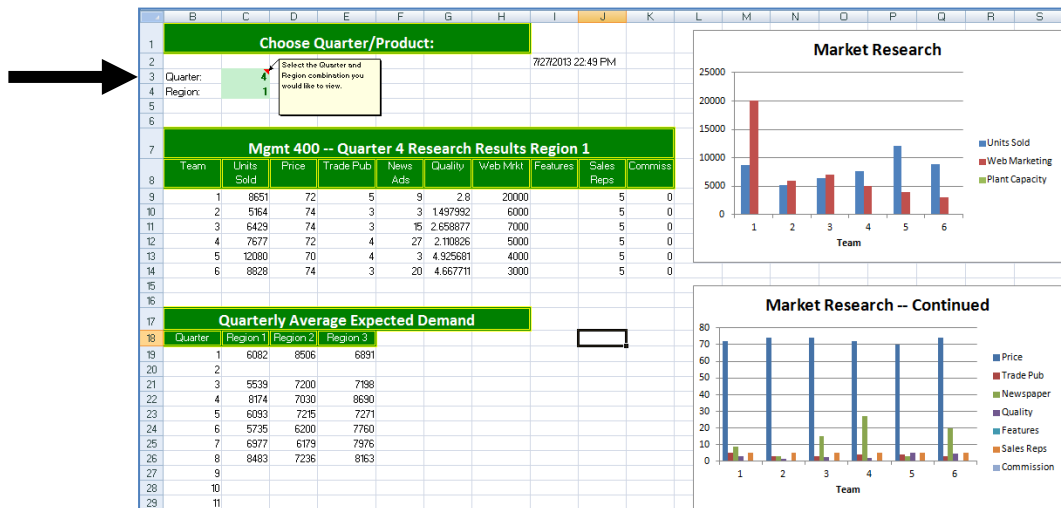
The **Market Research** tab displays the competitive information you purchased with your Marketing Research Decisions panel. Exhibit 6.3 shows an example of this report. You will receive any market research you purchase **after** the quarter when you made the purchase is processed. You will find the marketing research you purchased in the Market Report under the tab for Market Research for the quarter when you made the purchase.

Exhibit 6.3



View Report in Excel. Selecting the Excel Report for the company’s Market Research Report provides both the market research data that you purchased plus a graphical display of that data (See Exhibit 6.4). Enter the quarter and product number that you wish to view in the upper left corner (see arrow in Exhibit 6.4). Besides the graphical displays provided, exporting the data to Excel also allows you to develop your own graphical displays of the data you purchased.

Exhibit 6.4



OPERATIONS REPORT

The Operations Report (Exhibit 6.5) reflects the cost of making your product available to potential customers for purchase. These reports show the cost of producing your product and transporting it to the sales regions in which you market your product. Remember, even though your marketing efforts may be successful at generating demand for your product, if you cannot control the cost of providing your product to your customers, you can still have an unprofitable business. If you lose \$1.00 on each one you sell (e.g., you sell it for \$70, but it cost you \$71 to produce and transport to your customer), no matter how much you sell, you will still lose money.

Finished Goods

The Finished Goods section of the Operations Report shows the finished goods for each region in terms of inventory left from last quarter, units you decided to produce this quarter, and units you received from a sub-contractor based on an order you placed last quarter.

This report also shows the units available for sale in each region after transferring items between regions, the units you sold in each region and any ending inventories or stock outs you incurred. **Take note:** *When you are in a forecast quarter (i.e., the current quarter of operations), the Units Sold line is the number of units you entered as your forecast. There is **no** guarantee that you will sell what you forecast. You will see your actual units sold only after the quarter has been processed.*

Finally, the report shows the cost of transferring product between regions, the cost of maintaining finished products in inventory, and if there were any tariff charges associated with transporting products.

Workforce

The Workforce section shows the number of production workers you have on staff, how many workers it takes to form a production crew, and how much each production crew can produce each quarter without incurring overtime.

Plant

This report also shows the production capacity you have available that quarter, either through use of plant you purchased or plant you leased. The Leased Capacity line on your Plant and Workforce Report shows the number of units of plant capacity you currently have leased. You currently lease 6,000 units that you can use through Q7. Take note that this lease terminates at the end of Q7, reducing your production capacity by 6,000 units in Q8. The Leased Cap Expiring Next Quarter line will notify you of this, but don't miss it or you will find yourself unable to produce to the capacity you desire.

Raw Material

The Raw Material section shows the number of units of raw material for available from last quarter's operations. The second line of the report shows how many units of raw materials were received based on the number you ordered in the *prior* quarter. This means the number of units showing as available is the **maximum number of units** you can produce this quarter, because any units purchased in a quarter (e.g., Q3) are not received until the following quarter (e.g., Q4). The Usage line shows the number of units you pulled from inventory based upon the number you decided to produce this quarter. This report also shows the total cost and inventory cost of maintaining an inventory of raw materials for production of your product in the various regions. To view the per unit costs or the costs for a specific region, click on the appropriate label (e.g., Beginning Inventory).

Exhibit 6.5

Operations Report
Quarter 2 Forecast

Chart Off

Finished Goods WorkForce Plant Raw Material All

	Quarter 2			Quarter 1 ▼		
Finished Goods	R1	R2	R3	R1	R2	R3
Beginning Inventory	778	789	687	1,229	794	0
Units Assembled	16,000	0	0	16,000	0	0
Units Subcontracted	0	0	0	0	0	0
Units Available for Sale	8,278	6,789	3,187	8,729	6,794	2,500
Units Sold	6,500	5,500	1,500	7,951	6,005	1,813
Ending Inventory	1,778	1,289	1,687	778	789	687
Sales Lost (Stock outs)	0	0	0	0	0	0

Warehouse	R1	R2	R3	Total	R1	R2	R3	Total
Transportation Cost	\$0	\$30,000	\$25,000	\$55,000	\$0	\$30,000	\$25,000	\$55,000
Tariff Charges	\$0	\$0	€0	\$0	0	\$0	€0	\$0.0
Inventory Carrying Cost				\$12,987				\$10,115
Total Warehouse Cost				\$67,987				\$65,115

DETAILS ON/OFF OPTION

When you open some *Micromatic* reports, they will show a “Details Off” button (🔍 Details Off) in the upper left corner. To show all the items related to that report, click on the button. Exhibit 6.6 shows a side-by-side comparison for the Cost of Goods Sold Report. Displaying a report in the “Details Off” format provides you with the primary data you need to follow and helps avoid “data overload”. Switching to “Details On” allows you to drill-down to identify inefficiencies that are causing your costs to increase. Selecting the “Details On” will switch you back to the “Details Off” display of the report.

COST OF GOODS SOLD REPORT

The Cost of Goods Sold Report (Exhibit 6.6) provides key information on how much it cost you to produce a finished product. This is often referred to as Manufacturing Cost of Goods Sold or Mfg COGS. This includes just the production costs, not the cost of marketing the product or financing the business. This report provides you with information regarding:

- The cost of raw materials used in the production process.
- The cost of labor used to convert raw material into finished goods.
- Overhead costs associated with running the manufacturing operations.
- The cost of improvements in quality made to the product.
- Depreciation charges made to reflect the aging of your plant and equipment.

When the Details On version the report is displayed, the top of the report shows the costs by region and the total cost for the various components of your production costs. The bottom of the report shows the cost of production on a per unit basis. The Details Off version of the report only displays this portion of the report. The last line of the report shows the per unit cost of each item you sold after averaging this quarter’s production costs with the cost of items in inventory from prior quarter operations. This is done as a simple average cost of items in finished goods inventory, not on a FIFO or LIFO basis.

Exhibit 6.6

Details Off							Details On							
Cost of Goods Sold Quarter 2 Forecast							Cost of Goods Sold Quarter 2 Forecast							
Chart Off Details Off							Chart Off Details On							
Quarter 2				Quarter 1 ▼			Quarter 2				Quarter 1 ▼			
Summary	Units	Total	\$/Unit	Units	Total	\$/Unit	R1	R2	R3	Totals	R1	R2	R3	Totals
Total Manufacturing & Subcontract Costs	16,000	\$827,750	\$51.7344	16,000	\$812,819	\$50.8012	\$144,000	\$0	€0	\$144,000	\$136,000	\$0	€0	\$136,000.0
Beginning Finished Goods Inventory	2,254	\$114,848	\$50.9530	2,023	\$105,512	\$52.1562	\$360,000	\$0	€0	\$360,000	\$360,000	\$0	€0	\$360,000.0
Total Manufacturing Cost of Goods Sold	18,254	\$942,598	\$51.6379	18,023	\$918,331	\$50.9533	\$15,000	\$0	€0	\$15,000	\$15,000	\$0	€0	\$15,000.0
Ending Finished Goods Inventory	4,754	\$245,486	\$51.6379	2,254	\$114,848	\$50.9533	\$0	\$0	€0	\$0	\$0	\$0	€0	\$0.0
Manufacturing Cost of Goods Sold	13,500	\$697,112	\$51.6379	15,769	\$803,483	\$50.9533	\$7,200	\$0	€0	\$7,200	\$0	\$0	€0	\$0.0
							\$5,000	\$0	€0	\$5,000	\$5,000	\$0	€0	\$5,000.0
							\$191,100	\$0	€0	\$191,100	\$187,500	\$0	€0	\$187,500.0
							\$0	\$0	€0	\$0	\$0	\$0	€0	\$0.0
							\$6,500	\$11,000	€4,500	\$24,250	\$7,951	\$12,010	€5,439	\$28,119.5
							\$36,000	\$0	€0	\$36,000	\$36,000	\$0	€0	\$36,000.0
							\$40,000	\$0	€0	\$40,000	\$40,000	\$0	€0	\$40,000.0
							\$5,200	\$0	€0	\$5,200	\$5,200	\$0	€0	\$5,200.0

FINANCE REPORTS

The *Micromatic* financial reports shown below will help you determine the financial status and health of your company. They let you know whether your marketing and operations decisions yielded a profit, required borrowing to meet your cash flow needs, and resulted in a more liquid company. Below we discuss the three *Micromatic* financial reports; Balance Sheet, Cash Flow, and Income Statement.

Balance Sheet

The next report is the Balance Sheet (Exhibit 6.7). It shows the financial status of your company at the end of the quarter. The Balance Sheet is a snapshot summary indicating the Assets and Liabilities of the company at the end of that accounting period. Through it you can determine whether investments made in plant and equipment or equity investments are receiving a good rate of return.

Exhibit 6.7

Details Off		Details On	
Balance Sheet Quarter 2 Forecast		Balance Sheet Quarter 2 Forecast	
Chart Off Details Off		Chart Off Details On	
	Quarter 2	Quarter 1	
Current Assets			
Cash	\$100,554	\$149,867	
Accounts Receivable	\$523,000	\$611,762	
Short-term Investment	\$0	\$0	
Raw Material	\$96,000	\$64,000	
Finished Goods	\$245,486	\$114,848	
Total Current Assets	\$965,040	\$940,477	
Long-term Assets			
Accumulated Depreciation	\$120,000	\$80,000	
Total Assets	\$1,845,040	\$1,860,477	
Current Liabilities			
Short-term Notes Payable	\$0	\$0	
Income Taxes Payable	\$30,388	\$61,213	
Total Current Liabilities	\$30,388	\$61,213	
Long-term Liabilities			
Total Liabilities	\$300,388	\$346,213	
Owners' Equity			
Stock	\$1,600,000	\$1,600,000	
Accum Retained Earnings & Currency Adjust	-\$55,348	-\$85,736	
Stockholder Equity	\$1,544,652	\$1,514,264	
Total Liabilities & Stockholder Equity	\$1,845,040	\$1,860,477	
Current Stock Price	\$12.84	\$12.84	
Current Assets			
Cash	\$100,554	\$149,867	
Accounts Receivable	\$523,000	\$611,762	
Short-term Investment	\$0	\$0	
Raw Material	\$96,000	\$64,000	
Finished Goods	\$245,486	\$114,848	
Total Current Assets	\$965,040	\$940,477	
Long-term Assets			
Plant & Equipment	\$1,000,000	\$1,000,000	
Accumulated Depreciation	\$120,000	\$80,000	
Net Plant	\$880,000	\$920,000	
Total Assets	\$1,845,040	\$1,860,477	
Current Liabilities			
Short-term Notes Payable	\$0	\$0	
Income Taxes Payable	\$30,388	\$61,213	
Total Current Liabilities	\$30,388	\$61,213	
Long-term Liabilities			
Bond 1 Payable	\$270,000	\$285,000	
Bond 2 Payable	\$0	\$0	
Total Liabilities	\$300,388	\$346,213	
Owners' Equity			
Stock	\$1,600,000	\$1,600,000	
Accum Retained Earnings & Currency Adjust	-\$55,348	-\$85,736	
Stockholder Equity	\$1,544,652	\$1,514,264	
Total Liabilities & Stockholder Equity	\$1,845,040	\$1,860,477	
Current Stock Price	\$12.84	\$12.84	

The Balance Sheet also shows the net value (i.e., net worth) of your company. This is the liquidated value of the business if it “closed-up shop” and sold everything of value to pay for everything the business owed. Whether the stockholders would collect this amount of money would depend on whether they could sell their assets for “book value” (i.e., the value of the assets shown on the Balance Sheet). The owners might end up selling the company’s assets for more or less than their stated book value. This is similar to selling a used car. How much the potential buyer wants the car and what shape it is in will affect whether the car is sold at, above, or below a car dealer’s “Blue Book” price. The same kind of situation holds for the seller of assets of a business. The only asset that is worth exactly what is shown on the Balance Sheet is Cash. And even this account can become open to bargaining if the company does business outside the United States and has to deal with changing rates of exchange for the dollar.

Cash Flow Statement

The Cash Flow Statement displays two tabs at the top, Payments and Receipts. Selecting between these two tabs lets you see the detailed numbers for each of these categories. The bottom section of both shows the summary for each and the consequent Net Cash Flow.

The Cash Flow Statement provides information on the cash your company received and paid out this quarter. Exhibit 6.8 shows the impact of decisions made in Quarter 1 on your company's cash flow for that quarter. The Cash Flow Statement differs from the Income Statement (discussed next), which shows the dollar value of products you sold and the profits you earned during the quarter. The Cash Flow Statement shows the *actual* cash you received this quarter. This includes money you collected from Accounts Receivable. The Accounts Receivable on the Cash Flow Statement shows the amount of cash that was received from the accounts owing the company money for sales made in the prior quarter.

Exhibit 6.8

Payments			Receipts		
Cash Flow Quarter 2 Forecast			Cash Flow Quarter 2 Forecast		
Chart Off Payments Receipts All			Chart Off Payments Receipts All		
Quarter 2 Quarter 1			Quarter 2 Quarter 1		
Cash Payments			Cash Receipts		
Subcontract and Raw Material	\$176,000	\$168,000	Beginning Cash On Hand	\$149,867	\$186,295
Short-term Interest	\$0	\$0	Collection of AR	\$1,134,762	\$1,100,957
Bond Interest	\$7,125	\$7,500	Stocks Issued	\$0	\$0
Dividends Declared	\$0	\$0	Bond Issued	\$0	\$0
Bond Retirement	\$15,000	\$15,000	Plant Sale	\$0	\$0
Stock Retirement	\$0	\$0	Interest Income	\$0	\$0
Income Taxes Paid	\$61,213	\$19,951	Investment Withdrawal	\$0	\$0
Plant Payments and Maintenance	\$5,200	\$5,200	Cash Balance		
Lease Payment	\$36,000	\$36,000	Total Cash Receipts	\$1,284,629	\$1,287,252
Short-term Loans	\$0	\$0	Total Cash Payments	\$1,184,075	\$1,137,385
Investment Deposit	\$0	\$0	Net Cash Flow	\$100,554	\$149,867
Labor, Quality, Overhead	\$602,550	\$595,619	Short-term Loan Granted	\$0	\$0
Warehouse Operations Report	\$67,987	\$65,115	Emergency Loan	\$0	\$0
S & A Payments	\$213,000	\$225,000	Net Cash Balance	\$100,554	\$149,867
Cash Balance					
Total Cash Receipts	\$1,284,629	\$1,287,252			
Total Cash Payments	\$1,184,075	\$1,137,385			
Net Cash Flow	\$100,554	\$149,867			
Short-term Loan Granted	\$0	\$0			
Emergency Loan	\$0	\$0			
Net Cash Balance	\$100,554	\$149,867			

Below are some additional facts related to the Cash Flow Statement.

Cash Receipts

- 50% of **sales revenues** are received as cash in the quarter the sale is made.
 - The remaining 50% becomes Accounts Receivable and is collected as cash in the next quarter. There is no bad debt.
- **Stock issues** and **bond sales** are received in the quarter requested.
- The **sale of plant capacity** is received one quarter after you sell the plant. For example, if you sell plant capacity in Quarter 2, you can use the plant in Quarter 2. You will lose the plant capacity at the beginning of Quarter 3 and receive the cash in Quarter 3.

- Interest earned on **short-term investment** is received the quarter after you make the investment.
- **Withdrawals of short-term investment** are received in the quarter requested.
- **Short-term loan requests** are received in the quarter requested.
 - The maximum amount you can request is displayed as your **line of credit** on the financial decisions screen. In Quarter 1, your line of credit is \$400,000.

Cash Disbursements

- **Raw material purchases** are paid the quarter after you ordered the materials. The payment includes the cost of carrying raw material in inventory from last quarter into the current quarter.
- Interest charges on **short-term loans** are paid the quarter after the loan is received.
- **Interest charges on bonds sold** are paid over 20 quarters beginning one quarter after the bond is sold.
- **Dividends issued** are paid in the quarter in which they were issued.
- **Income taxes** are paid in the quarter after you incur the tax obligation. For example, if you earn a profit in Quarter 1, you will have to pay taxes on that profit in Quarter 2. So, the amount shown as “Provision for Income Taxes” on the Income Statement is not paid in cash until the following quarter.
- **Bond retirement** begins the quarter following the sale of the bond. A bond is retired in 20 equal payments.
- **Stock retirements** are paid in the quarter in which they were purchased (i.e., retired).
- Payments for the **purchase of plant** capacity are 20% down and 80% in the following quarter.
- Payments on a **Plant Lease** begin the quarter following the lease purchase.
- A **Short-term loan** is paid in two equal payments in the two quarters after it was received.
- **Investment deposits** are paid in the quarter in which they are made.
- **Labor and overhead** expenses are paid in the quarter in which they are incurred.
- **Warehouse operations** are paid in the quarter in which they are incurred.
- **S & A payments** are paid in the quarter in which they are incurred.
- An **Emergency Loan** appears if your cash payments are greater than your cash receipts, plus any short-term loan request you entered.
 - If this occurs, your short-term loan request is denied and your company is given an emergency loan to bring your cash balance up to zero. The interest rate on this emergency loan is double the standard interest rate up to a maximum rate of 30%, depending upon your company's debt-asset ratio.

Income Statement

The purpose of the Income Statement for any quarter is to show the amount of profit or loss that occurred as a result of your company's operations that quarter. Exhibit 6.9 shows the Income Statement for our example of Quarter 1 operations. On the Income Statement, the first line shows the sales revenue for this quarter and year-to-date (YTD) for your three sales regions. The various costs of running the business that quarter are then subtracted from the total sales revenues. The Manufacturing COGS is the first item subtracted, yielding your gross profit for the business. After that, S&A expenses, warehouse costs and interest charges are subtracted to yield your net income (or loss) before you pay any taxes.

The tax rate for your business is 50%. No taxes are paid when a loss occurs in a quarter, except for the fourth quarter when the program makes end-of-year adjustments in taxes paid are made in order to make the cumulative effective rate 50% on earnings for the year.

The Income Statement also shows any dividends you declared to your shareholders and the number of shares outstanding. In addition, it shows your earning per share (EPS), which is a key measure of your financial performance.

Exhibit 6.9

Details Off					Details On				
Income Statement Quarter 2 Forecast					Income Statement Quarter 2 Forecast				
Chart Off Details Off					Chart Off Details On				
	Quarter 2		Quarter 1 ▼			Quarter 2		Quarter 1 ▼	
Income and Expense	Current	YTD	Current	YTD	Income and Expense	Current	YTD	Current	YTD
Net Sales	\$1,046,000	\$2,269,524	\$1,223,524	\$1,223,524	Net Sales	\$1,046,000	\$2,269,524	\$1,223,524	\$1,223,524
Manufacturing Cost of Good Sold	\$697,112	\$1,500,595	\$803,483	\$803,483	Manufacturing Cost of Good Sold	\$697,112	\$1,500,595	\$803,483	\$803,483
Selling and Administrative Expense	\$213,000	\$438,000	\$225,000	\$225,000	Gross Profit	\$348,888	\$768,929	\$420,041	\$420,041
Warehouse Operations	\$67,987	\$133,102	\$65,115	\$65,115	Selling and Administrative Expense	\$213,000	\$438,000	\$225,000	\$225,000
Net Interest	\$7,125	\$14,625	\$7,500	\$7,500	Warehouse Operations	\$67,987	\$133,102	\$65,115	\$65,115
Net Income After Taxes	\$30,388	\$91,601	\$61,213	\$61,213	Operating Profit	\$67,901	\$197,827	\$129,926	\$129,926
Dividends Declared	\$0	\$0	\$0	\$0	Net Interest	\$7,125	\$14,625	\$7,500	\$7,500
					Income Before Income Taxes	\$60,776	\$183,202	\$122,426	\$122,426
					Provision for Income Taxes	\$30,388	\$91,601	\$61,213	\$61,213
					Net Income After Taxes	\$30,388	\$91,601	\$61,213	\$61,213
					Dividends Declared	\$0	\$0	\$0	\$0
					Retained Earnings	\$30,388	\$91,601	\$61,213	\$61,213
					Outstanding Shares	160,000		160,000	
					Earnings per share	\$0.19	\$0.57	\$0.38	\$0.38
					Dividends per share	\$0.00	\$0.00	\$0	\$0

Financial Ratios

The Financial Ratios Report (see Exhibit 6.10) shows a number of ratios that you can use to monitor the performance of your business. If you are not familiar with these ratios and what they represent, go back to your basic accounting and finance texts for guidance on this. Or click on the item and a short description will be displayed on your monitor.

Exhibit 6.10

Details Off			Details On		
Financial Ratios Quarter 2 Forecast			Financial Ratios Quarter 2 Forecast		
Chart On Details Off			Chart On Details On		
Quarter 2		Quarter 1 ▼	Quarter 2		Quarter 1 ▼
Ratio	Value	Value	Ratio	Value	Value
Liquidity Ratios					
Current	31.76	15.3640	Current	31.76	15.3640
Leverage Ratios					
Debt To Asset	0.16	.1861	Debt To Asset	0.16	.1861
Profitability Ratios					
Return On Sales	0.03	.0500	Return On Sales	0.03	.0500
Return on Assets	0.02	.0329	Return on Assets	0.02	.0329
Activity Ratios					
Inventory Turnover	5.81	11.1048	Inventory Turnover	5.81	11.1048
Note: NA indicates a divide by zero occurred.					
Activity Ratios (Continued)					
Times Interest Earned	9.53	17.3235	Times Interest Earned	9.53	17.3235
Fixed Assets Turnover	1.19	1.3299	Fixed Assets Turnover	1.19	1.3299
Total Assets Turnover	0.57	.6576	Total Assets Turnover	0.57	.6576
Note: NA indicates a divide by zero occurred.					

INDUSTRY REPORTS

Besides the reports that are specific to your company, there are also reports available to all companies operating in your industry. These are the Industry Performance Report, and Company Summary Report. You access these three reports under the Industry menu. We will discuss each of these next.

Industry Performance Report

In addition to reports on the performance of your individual company, you will also receive a performance report that will provide you with information for all companies in your *Micromatic* industry on seven factors: sales, net income, earnings per share (EPS), return on sales (ROS), return on assets (ROA), return on equity (ROE), and the current stock price of each company. You will receive this information for both the current quarter and a summary of the game-to-date.

When you select this option, a screen like that shown in Exhibit 6.11 will appear on your monitor. It displays performance for the current quarter, but you can switch to view earlier quarters (see red arrow). We will use this example to explain how the *Micromatic* Instructor program calculates the points assigned to each team in the Award columns.

Exhibit 6.11

Sales									
Quarter 4									
Team	Result	Index Pts	Award (5)	Position	Result	Index Pts	Award (5)	Position	Performance To Date
Team 1	1629600	76	4	4	4973173	60	3	5	
Team 2	1980517	93	5	2	6994243	84	4	2	
Team 3	1614700	76	4	5	5327131	64	3	4	
Team 4	761368	35	2	6	4021106	48	2	6	
Team 5	1876329	88	4	3	5496597	66	3	3	
Team 6	2124270	100	5	1	8229779	100	5	1	

Net Income									
Quarter 4									
Team	Result	Index Pts	Award (30)	Position	Result	Index Pts	Award (30)	Position	Performance To Date
Team 1	19245	13	4	4	-37209	-10	-2	4	
Team 2	97794	69	21	3	369951	100	30	1	
Team 3	103457	73	22	2	-90842	-24	-6	5	
Team 4	-167780	-119	-30	6	-433449	-117	-30	6	
Team 5	139878	100	30	1	354837	95	29	2	
Team 6	-2280	-1	0	5	51537	13	4	3	

Earnings per Share									
Quarter 4									
Team	Result	Index Pts	Award (10)	Position	Result	Index Pts	Award (10)	Position	Performance To Date
Team 1	0.1202	13	1	4	-0.0581	-10	0	4	
Team 2	0.5999	68	7	3	0.5752	100	10	1	
Team 3	0.6466	73	7	2	-0.1419	-24	-1	5	
Team 4	-1.0486	-119	-10	6	-0.6772	-117	-10	6	
Team 5	0.8742	100	10	1	0.5544	96	10	2	
Team 6	-0.0142	-1	0	5	0.0805	13	1	3	

Calculation of Points Awarded

For each of the factors, the report shows each company’s performance, plus a ranking and evaluation of that performance. Figures in the columns indicate each company’s performance for that quarter. For example, Company 1 had net income for the quarter of \$19,245 (see the arrow on the left in Exhibit 6.16).

The Points Awarded (Award) column shows the number of points awarded based on each company’s performance on that factor. The points awarded to each company for their performance on a specific factor are calculated based on (a) that company’s performance relative to the company that achieved the best performance on that factor multiplied by (b) the maximum possible points that could be achieved for that factor. For example, Exhibit 6.16 shows that Company 2 was awarded 69 points for the Net Income factor. This number was calculated by dividing Company 2’s net income for the quarter by the company with the best quarterly income (Company 5) and then multiplying this result by the maximum possible points assigned for this factor (30). You set this number on the Performance Effect Weights screen after you created the industry (See Chapter 4). In this example, Company 2’s net income for the quarter was 69% (97,794/139,878) of Company 5’s net income, so Company 2 received 69% of the 30 possible points that could be achieved for this factor. Thus, Company 2 achieved an Award of 21 (69% * 30).

The Overall Points number is the sum of the points awarded to a company for the performance factors. The Overall summary also shows the rank of each company based on the Overall Points awarded. Note that in some cases two companies might receive the same number of points for a factor. This was the result of rounding to a two-digit number for display on the report. This rounding can also result in two companies showing the same number of total points, but different ranking numbers. The ranking is based on the un-rounded number resulting from the calculations for each factor.

Performance-to-Date Calculation. As with the Quarter Performance Report, the Performance-to-Date summary shows the total points awarded to a company based on the number of points it received on each of the four performance factors. For the Performance-to-Date Report, these calculations are based on all quarters of operation. For sales and net income, the Performance-to-Date Report is an *accumulation* of the

combined total of all quarters of operation. For the earnings per share (EPS), return on sales (ROS), return on assets (ROA), return on equity (ROE) factors this report shows the *average* for all quarters of operation, rather than the total of the quarters. This allows a better comparison of game-to-date performance with current-quarter performance. The Industry Ranking summary shows the rank of each company based on the total points it has been awarded.

The instructor determines the maximum possible points for each of the factors. The points allocated to a company for each individual factor can range from -99 to 99, but the total of all the maximum points for an individual factor for the factors must equal exactly 100. This means that points must be allocated to at least two factors. Usually at least a few points are allocated to each factor.

Company Summary Report

The Game Summary Report allows you to generate a quarter-by-quarter display of the results for your company. Exhibit 6.12 provides an example of this report. This report will allow you to see easily your performance over time. If you click on the “View in Excel” option (see arrow in Exhibit 6.12), you can use this worksheet to analyze results and to develop charts and graphs to help you manage your company.

Exhibit 6.12

	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
Price - R1	80	82	82	83	83	83	83	83
Price - R2	80	82	82	83	83	83	83	83
Price - R3	80	82	82	83	83	83	83	83
Quality - R1	4	4	4	5	5	6	6	6
Quality - R2	4	4	4	5	5	6	6	6
Quality - R3	4	4	4	5	5	6	6	6
Local Newspaper - R1	9	9	9	9	9	9	9	9
Local Newspaper - R2	5	5	5	5	5	5	5	5
Local Newspaper - R3	0	1	1	1	1	1	1	1
Trade Publications - R1	5	5	5	5	5	5	5	5
Trade Publications - R2	3	3	3	3	3	3	3	3
Trade Publications - R3	0	1	1	1	1	1	1	1
Web Marketing	500	1000	1000	1000	1000	1000	1000	1000
Features Develop	0	0	0	0	0	0	0	0
Sales Forecast - R1	7771	8500	9000	10000	11000	11500	11500	10000
Sales Forecast - R2	6206	7500	7500	7500	8000	10000	10500	11000
Sales Forecast - R3	400	2000	1500	2200	3500	4300	4500	6250
Actual Demand - R1	8204	8651	8494	9067	9366	9150	8938	9609
Actual Demand - R2	6646	7267	7390	7864	8815	9667	9848	9974
Actual Demand - R3	269	1349	2301	2410	3725	3679	5420	4320
Hire - R1	0	0	0	1	1	0	0	0
Hire - R2	0	0	0	0	1	0	0	0

A FINAL COMMENT

You should now have a basic understanding of each of the *Micromatic* reports that you will work with throughout the simulation exercise. The more you work with them, the greater your confidence should become in using them to manage your company. While these reports are simplistic compared to those of large, complex organizations, the principles for using the reports to gain insight into how to manage any company are similar. Learning how to analyze where your costs are coming from, and how to control these costs, is a key to working within any company. We hope and believe the challenges you face in this simulation experience will aid you in that process. Good luck.

APPENDIX A

EXAMPLE OF MARKET RESEARCH REPORT

Market Research Quarter 1

Marketing Research



Team	Features	Sales Reps	Price	Units Sold	Magazines	Newspaper	WWW	Quality	Plant
1	0	5 3 0	70 70 70	6090 5179 0	5 3 0	9 4 0	0	0 0 0	16000 0 0
2	0	5 3 0	72 71 72	9696 7710 3137	6 6 6	9 9 9	11000	1.91 1 1	16000 0 0
3	0	5 3 0	78 77 78	6682 6143 2321	4 4 4	4 4 4	12000	3.23 4.42 3	16000 0 0
4	0	5 3 0	72 74 73	9336 5935 2277	5 3 3	9 4 3	10000	0.93 0.43 0	16000 0 0
5	0	5 3 0	74 73 73	8230 7076 2568	5 3 3	6 4 3	9000	3.1 3.25 3	16000 0 0
6	0	5 3 0	74 75 75	9575 7592 2345	5 4 3	8 6 3	15000	5.68 5.21 5	16000 0 0

Average Expected Demand

Quarter Region 1 Region 2 Region 3

2	8472	6984	2979
3	8263	6690	3414
4	8221	7123	3473
5	7142	6553	2841

APPENDIX B

A STEP-BY-STEP WALK-THROUGH

1. Log into the *Micromatic* program (<http://www.oaktreesim.com/micromatic/>).
2. Select the Solo Practice option.
3. Enter some Marketing decisions. Click on Marketing Decisions link under the Marketing Menu or on the *Micromatic* Map
 - Raise price of Region 1 by \$2.
 - Buy 12 YouTube ads for Region 1.
 - Lower sales forecast for Region 1 by 500 units.
4. Make some Marketing Research decisions. Click on Marketing Research Decisions link under the Marketing Menu or on the *Micromatic* Map
 - Buy Price and Units Sold information.
5. Look at the Forecast reports.
 - Select the Income Statement from under the Finance menu tab or the *Micromatic* Map.
 - Write down your forecasted net income
6. Return to the Marketing decisions screen.
7. Vary the decisions.
 - Lower the YouTube ads for Region 1 by 5.
 - Lower sales forecast for Region 1 by another 300 units.
8. Look at the Income Statement again (see Point #5).
 - Notice the change in the forecasted Net Income from first forecast.
9. Print out Forecasted reports.
 - Click the Panels tab on the Menu bar.
 - Select the Show All option.
 - Select the Print Active Panels option.
 - Select OK when the Printer dialogue box appears.
10. Process the quarter.
 - Click the Process Quarter option under the Industry tab on the Menu bar.
11. Compare Actual reports with Forecasted reports.
 - Look for differences in the reports. Determine what caused them?
12. Log off *Micromatic*.
 - Click on Logoff at the top of your monitor.