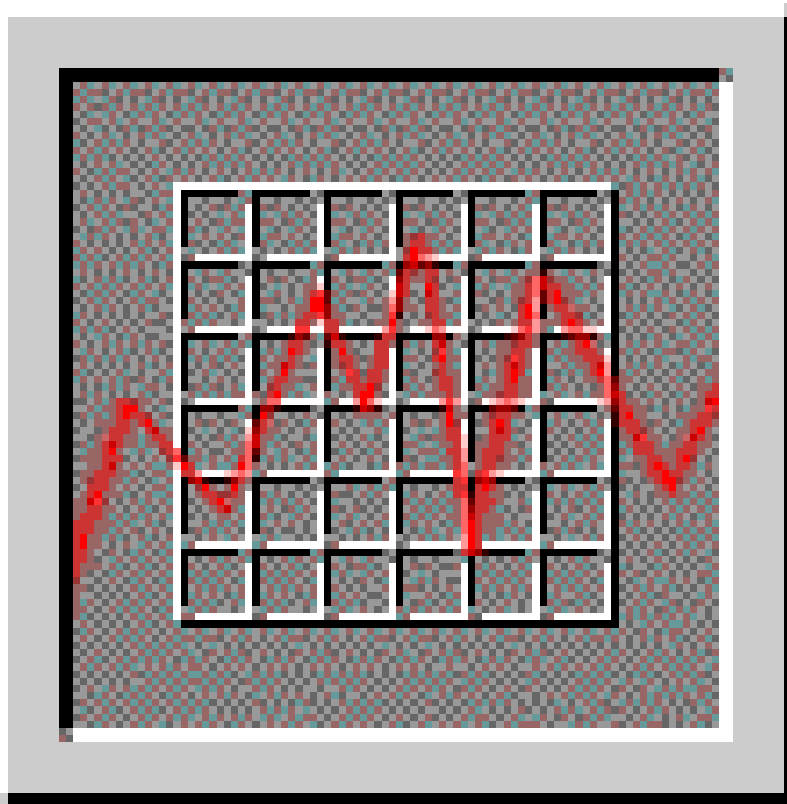


Micromatic

A Strategic Management Simulation

**Student Manual
v2.3**



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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 represents a European market. All sales in that region are in Euros (€). 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 25. 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 can choose to operate both *Micromatic Solo* and *Team* in either a “Brief Mode” or an “Enhanced Mode”. The Brief mode presents you with the fewest number of decisions to make in a decision-round. The Enhanced mode allows your instructor to add decisions dealing with issues such as adding a sales force to promote your product, expanding into another region, and the issuing shares of stock in your company to the general public. We discuss the decisions you will face in detail in Chapter 5.

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 Internet Explorer version 6.0 (with Service Pack 1) or higher that is connected to the internet. If you experience difficulty opening the program, you may have to turn off any “pop-up” blockers and configure your browser to accept cookies. 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 personal 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, stock price.

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 Kathy, Lona, Emily, Leonie, and Kelly — Thanks.

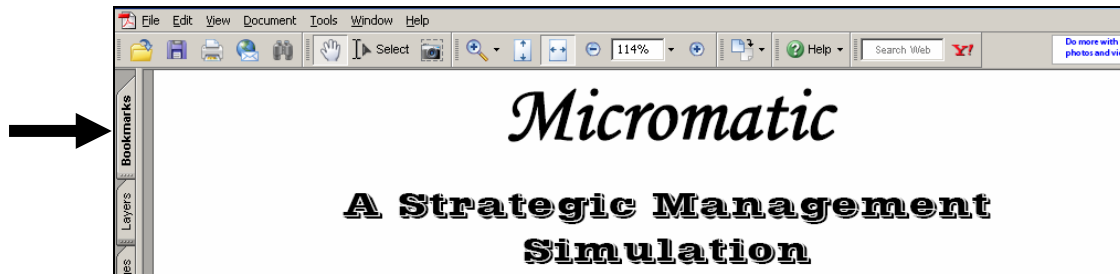
We also would like to thank Miles Smayling and the students at the Minnesota State University, Mankato who participated in the class testing of *Micromatic*. A special thank you goes to Barry Keating, a faculty member at the University of Notre Dame, Bill Biggs, a faculty member at Arcadia University, Paul Lapidés at Kennesaw State University, and John Washbush and Jerry Gosen, faculty members at the University of Wisconsin – Whitewater who helped us in the testing process.

T. W. S.
J. A. K.
P. H. A.

USING THE MANUAL WHILE ONLINE

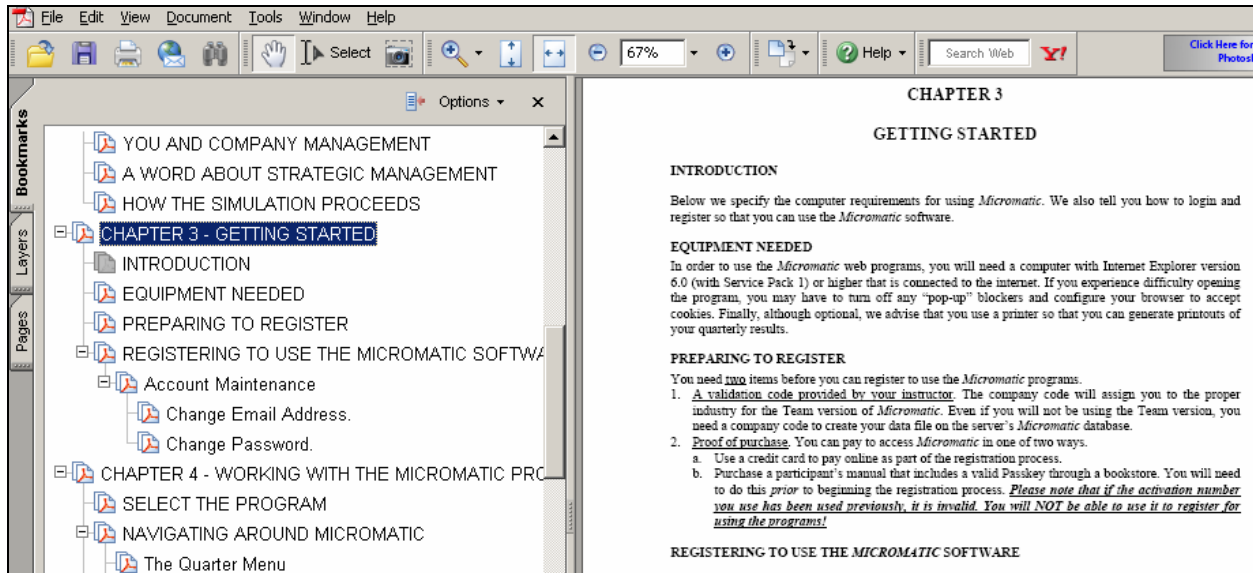
When you access the *Micromatic* Manual online, rather than a printed version, you have the option to navigate quickly around the manual using the “Bookmark” feature imbedded in the Adobe Reader software in which the manual is formatted. You access this feature by clicking on the Bookmark tab on the left side of the screen (See arrow in Exhibit 1.1).

Exhibit 1.1



The Bookmarks we created correspond to the headings and sub-headings we used throughout the manual. Most of these are also listed in the Contents section of the manual. By clicking on a Bookmark item, you move directly to that item in the manual. For example, Exhibit 1.2 shows that after scrolling down through the Bookmarks and selecting the “Chapter 3” item, that section of the manual is displayed in the right-hand side of the screen. Using the Bookmarks will allow you to navigate around the manual, quickly and easily.

Exhibit 1.2



CHAPTER 1 – OVERVIEW

WHAT IS MICROMATIC?

Micromatic: A Strategic Management Simulation, Web Edition offers students of strategic management (business policy) and small business management (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 particular, 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 "Brief Mode", *Micromatic* presents you with the fewest number of decisions to make in a decision-round. By contrast, *Micromatic's* "Enhanced Mode" allows your instructor to augment these decisions with others that you 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 may 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 affected 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 16. 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 newspaper, 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 newspaper 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 anymore 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 Industry" option under Action on the Menu bar. Processing the industry 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 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 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 Action on the Menu bar. 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 with a new setup. 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 two products 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 newspaper 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 exactly 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. Remember, this is most likely 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.

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 what you will experience in the world of business. Managers face a constantly changing business environment. Their ability to understand quickly new business situations significantly affects their personal and organizational success. You have only to think about the changes in computer 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 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 competes head to head with other companies in the same industry, so competitors' decisions affect your company's performance.

Micromatic's stockholders purchased the company and the new Board of Directors has been dissatisfied with the results of previous management's policies and decisions. At the same time, your competitors' stockholders have also grown dissatisfied with their companies' management. In fact, 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 the Micromatic Company represents all the other companies in the industry.

COMPANY HISTORY

C. W. Scott founded the Micromatic Company. The company produces and sells micromatics, a small 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 trade publications, 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 semiskilled employees, it demands a specific crew size of three people per crew. At the time Scott started the company, equipment that would allow different crew sizes was only in the development stage. It may become available during your tenure as a manager of the company. If it does, your instructor will inform you of the equipment options available for you to purchase. 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 being 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 STRATEGIC MANAGEMENT

Your course in strategic 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

REGISTER TO USE THE PROGRAM

If you have already registered to use Micromatic, go to the web site (www.oaktreesim.com/micromatic). After the Welcome screen opens, enter your username and password. Then go to Chapter 4 for directions on how to work with the Micromatic programs.

If you have not registered for using the Micromatic programs, go to www.oaktreesim.com/micromatic and select the “Create a student account” link (See arrow in Exhibit 3.1).

Exhibit 3.1

Welcome to Micromatic: A Management Simulation

Username

Password

Login

[Create a student account](#)
[Getting Started Help](#)
[Forgotten Your Password?](#)
[Need Help?](#)

[Oak Tree Simulations](#)

Then select the “Click here for help getting registered” link (see arrow in Exhibit 3.2) to open the Getting Started file. This file has step-by-step directions to guide you through the registration process.

Exhibit 3.2

Create an Account (Step 1 of 3)

* indicates a required field.

[Click here for help registering.](#)

* First name

Middle name

* Last name

* Email

(Username and Password must be between 4 and 16 characters long)

* Username

* Password

* Confirm Password

Next

TROUBLESHOOTING

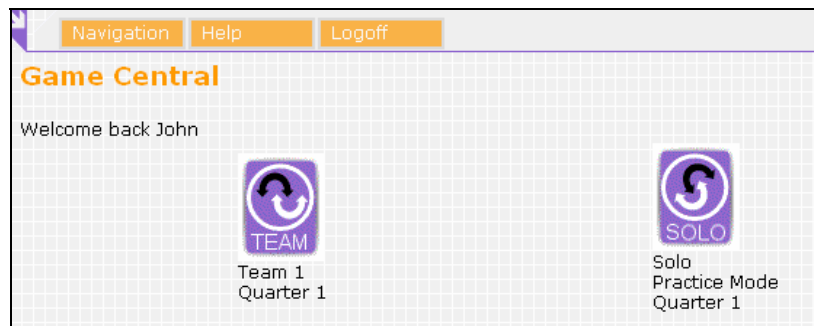
If you experience difficulty registering to use, opening, or working with the program,

- **Turn off any “pop-up” blockers and configure your browser to accept cookies.** If you need assistance with this, go to <http://webmaster.info.aol.com/cookieguide.html> for directions or initiate a search for “How to enable cookies” on Google for your particular browser.
- **Make certain that you have started Micromatic directly from Internet Explorer version 6.0 (with Service Pack 1) or higher.** Do not launch the program from inside another program environment such as BlackBoard or use a different browser such as Firefox.

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.

Exhibit 4.1



NAVIGATING AROUND MICROMATIC

To work with *Micromatic*, you need to be able to move within a panel and among the multiple panels. If you are familiar with working in a Windows environment, the *Micromatic* program utilizes standard Windows protocol for keystroke entries. This means the Tab key moves you to the next entry point, the Shift key + Tab key moves you backward to the preceding entry point, and so forth. You can also use a mouse if one is connected to your computer. You can use these two methods in combination with each other, switching back and forth as often as you like. You will use this Windows protocol to move around a panel and make entries.

ACCOUNT MAINTENANCE

You will use this screen to make changes to your Micromatic account data. Do this by clicking on the Navigation menu option. Then select the Account Maintenance option. A screen like that shown in Exhibit 4.2 will appear on your monitor.

Exhibit 4.2

 A screenshot of the Account Maintenance form. The form has a title 'Account Maintenance' in orange. Below the title, it says 'Update the account settings below:'. There are several input fields: 'First name' with the value 'John', 'Middle name' (empty), 'Last name' with the value 'Doe', 'Email' with the value 'jdoe@nowhere.', 'Desired Language' with the value 'English', 'Password' (empty), and 'Confirm Password' (empty). At the bottom, there is a note: '*Leave password and confirm password blank if no change is desired.' and 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.

SELECT THE PROGRAM

After you log into *Micromatic*, you will be at the Game Central screen (see Exhibit 4.1). From this screen you will select the program with which you wish to work: Team or Solo. Just click on the appropriate icon. The Solo game will be set by your instructor for either the Practice mode or the Exam mode. The only difference between these two modes 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.

Once you select either the Team or Solo program, a panel like that shown in Exhibit 4.3 will appear on your monitor. This is the Game Control panel. It has hot links to all the *Micromatic* panels, plus some game reports and functions. You can also access these panels through the menu bar at the top of this panel (See the arrow in Exhibit 4.3). We will discuss the *Micromatic* Menu Bar/Game Control options, next.

Exhibit 4.3

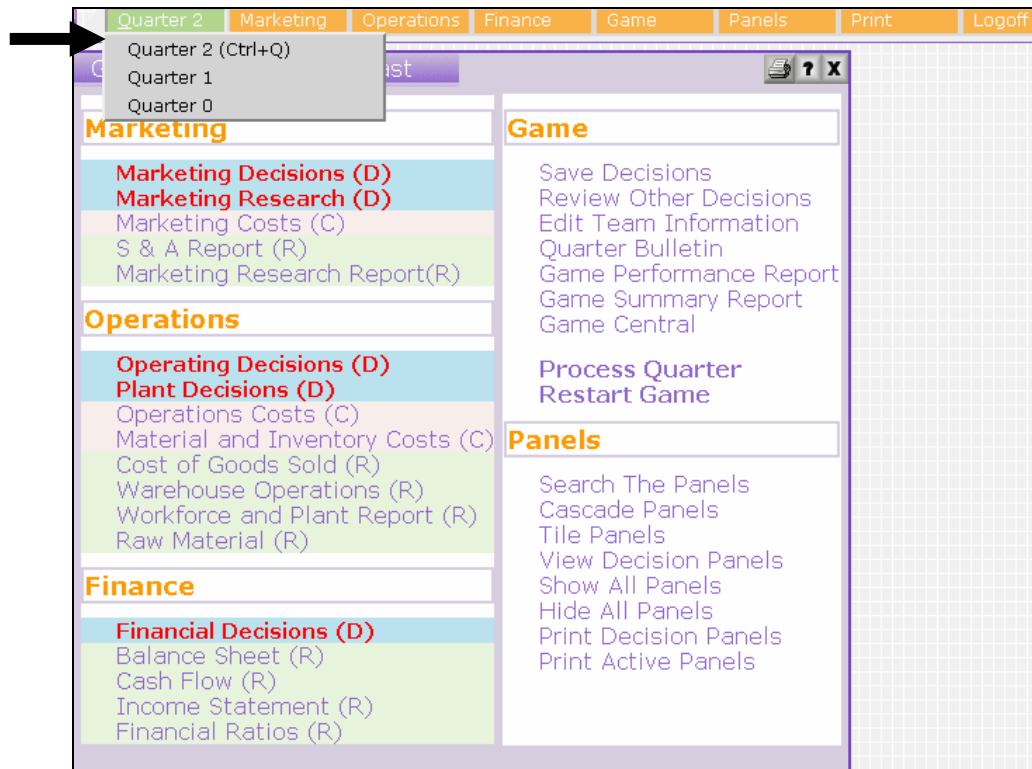


The Quarter Menu

The Quarter Menu allows you to change from one quarter of operation to a different quarter. You can use this menu to access earlier company reports and to view or print out that information.

To use this method, select the Quarter menu option. A number of buttons with numbers will appear under the Quarter heading as is shown in Exhibit 4.4. Select the button number for the quarter you wish to view. There will only be buttons for the quarters that you are able to access. So if you are forecasting for Quarter 2 as shown below, there will not be buttons for Quarter 3, 4, or higher. This is because those quarters have not yet been processed and consequently there are not yet reports to view for those quarters.

Exhibit 4.4



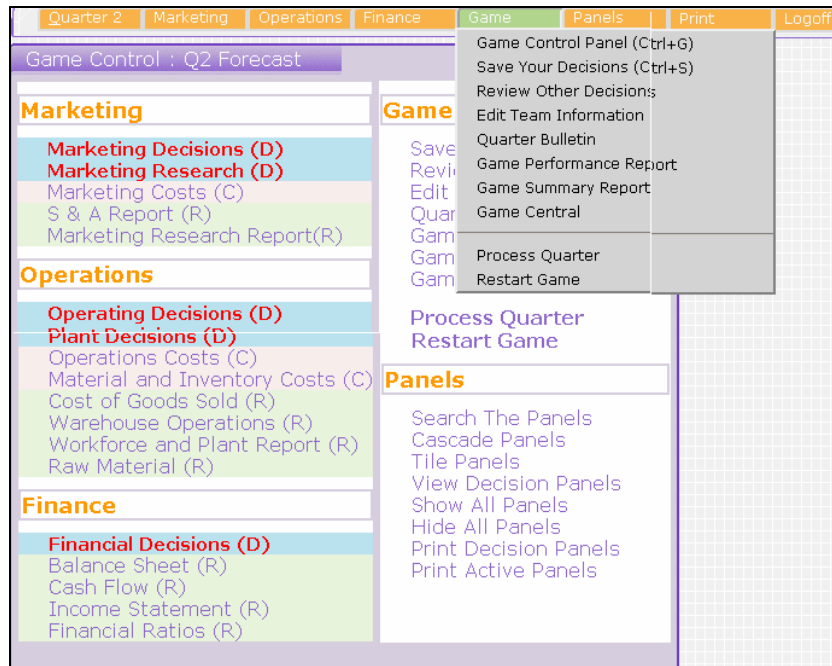
The Marketing, Operations, and Finance Menus

The Marketing, Operations, and Finance Menu options allow you to enter decisions for managing your company, to view reports that show the results of the decisions you entered (e.g., Income Statement and cost of Goods Sold), and to view cost reports that provide information on the costs of running your company (e.g., wage costs, advertising costs, and inventory costs). We will discuss each of these options in detail in Chapters 5 and 6.

The Game Menu

The Game menu provides you with eight options common to both the Team and Solo games and two options unique to *Micromatic* Solo (i.e., Process Quarter and Restart Game). See Exhibit 4.5 for a display of these options. We will discuss each of these options, below.

Exhibit 4.5



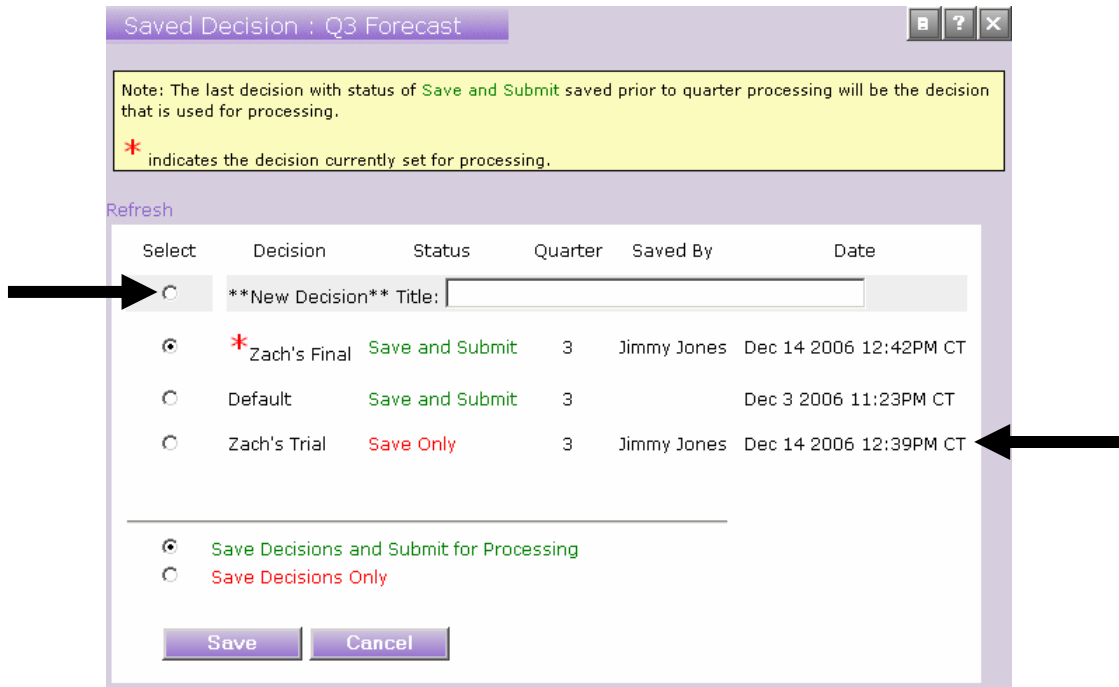
Game Control Panel (Ctrl+G). Selecting the Game Control Panel option from the Menu Bar or using the hot key “Ctrl+G” will display the Game Control Panel as the top panel, if you have other panels displayed on your monitor. As stated above, you will use the Menu Bar drop-down options or the Game Control hot links to navigate to the different panels, reports, and utilities in order to manage your *Micromatic* company and account.

Save Your Decisions (Ctrl+S). Selecting this option will display a screen like that shown in Exhibit 4.6. In the example shown, members of the team managing this company earlier have saved decisions as they worked with the forecasting program. If you wish to save your decision as one separate from an earlier decision, under Select click on the radio button for the “New Decision” option and enter a title (See left arrow in Exhibit 4.6). Once you have saved your decisions under a particular title, the next time you save your decisions, they will be automatically saved under this title unless you select the New Decisions option and enter a new title. Any decisions you save under a particular title will replace any earlier decisions saved under that title.

NOTE: *The last decisions saved and submitted for processing are the ones the program uses when a quarter is processed.* This means that even if the decisions are titled as “Default”, they will not be used unless they are the last ones saved and submitted. In the example shown in Exhibit 4.6, this means that the program will process the “Zach’s Final” saved and submitted on Dec 14 2006 at 12:42pm decisions, not the “Default” decisions saved on Dec 3 2006 at 11:23pm. The decisions marked with the * is the decisions that will be processed. Make sure that the decisions saved and submitted for processing 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.*

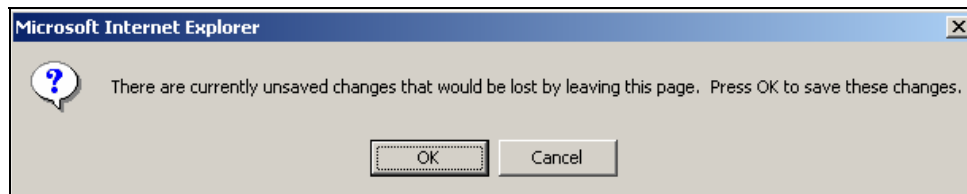
As shown in Exhibit 4.6, you have the option of “Save Decisions and Submit for Processing”, which is the default option, or “Save Decisions Only” (See right arrow in Exhibit 4.6). The “Save Decisions Only” option allows you to save decisions for later review without fear of them accidentally getting processed as the quarter’s decisions.

Exhibit 4.6



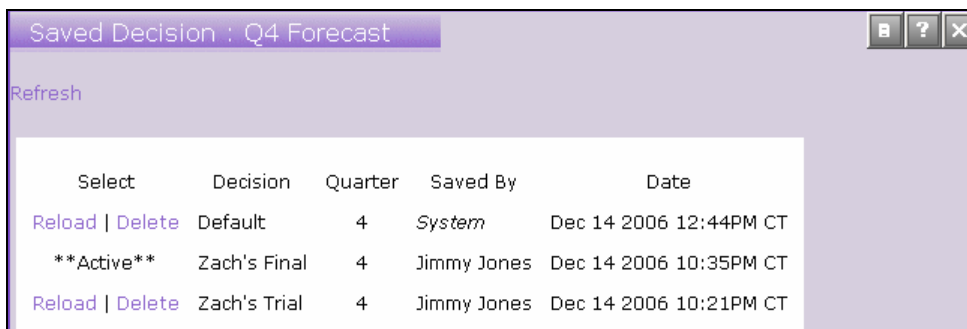
If you attempt to logout without saving your decisions, a dialog box like that shown in Exhibit 4.7 will appear on your monitor. If you want to save the latest changes that you entered, select “OK”, otherwise select “Cancel”.

Exhibit 4.7



Review Other Decisions. This option allows you to review decisions that you or your teammates saved earlier. When you select this option, a screen like that shown in Exhibit 4.8 will appear on your monitor. To review one of the saved decisions, click on “Reload” and then save it as discussed under “Save Your Decisions”, above.

Exhibit 4.8



Edit Team Information. When you select this option, a screen like that shown in Exhibit 4.9 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 4.9

Team Information : Q1 Forecast

Team Number 4

Team Name Team 4

Slogan Winners

Logo URL

Save Cancel

Quarter Bulletin, Game Performance Report, Game Summary Report. We discuss each of these reports in detail in Chapter 6.

Game Central. Selecting this option will return you to the screen shown in Exhibit 3.8. Use this option to switch between using the Team game and the Solo game.

Process Quarter (Available only for Micromatic Solo). This option is only available for the Solo version. (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 Quarter 1 by selecting the Process Quarter option. If you are satisfied with your decisions and want to proceed to the next quarter (e.g., Quarter 2), click on “Process” when the dialogue box appears on your monitor (see Exhibit 4.10). Once you say “Process,” the program will process Quarter 1’s decisions and move forward to Quarter 2.

Exhibit 4.10

Process the Current Quarter-- Mgmt300-2 Quarter 2

Processing Quarter 2

Below is a list of the decision submissions for this quarter:

Solo (Team 1) Jul 19 2005 12:23PM : Option 2 (Submitted for Processing)

Process Cancel

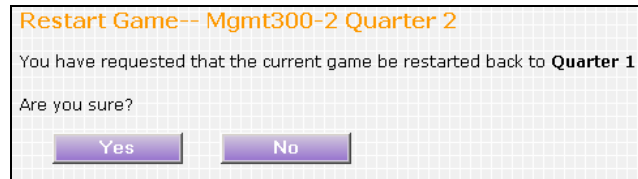
After processing Quarter 1’s decisions, you can view or print your Actual Results and Standings for that quarter by selecting the Quarter menu and then the number “1”. When you finish reviewing your results and are ready to proceed to Quarter 2 to enter decisions, choose the Quarter menu and then the number “2.” Repeat this process for each subsequent quarter of play.

Restart Game. (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* creates a new set of costs for the companies operating in the industry and the industry-wide demand for the two 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 newspaper advertising in determining sales may have increased, or decreased.

When you select this option, the dialogue box shown in Exhibit 4.11 will appear on your screen. Select “Yes” to start a new game, or “No” to keep on playing the existing game.

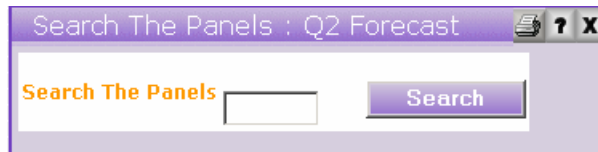
Exhibit 4.11



The Panel Menu

The panel menu options allow you to choose how you would like to display the panels. It also gives you the option to print certain panels or to search the panels for a word or set of words. You can also print selected panels by using the Print Menu option, discussed below. If you select the “Search Panels” option, a dialog box like that shown in Exhibit 4.12 will appear on your monitor. Enter the word or set of words and then click on “Search”.

Exhibit 4.12



The Print Menu

The Print menu allows you to print either just the five decision panels or the “active” panels on your monitor (i.e., those you currently have open). If you want to print all 18 of the *Micromatic* panels, you need first to select the “Show All Panels” option from the Panel Control menu.

ENTERING A DECISION

For both the Team version and the two Solo versions you will use five panels to enter your decisions regarding the operation of your business. These are the Marketing, Market Research, Operations, Plant, and Finance decisions panels (see Exhibit 4.3). In addition to the five decision panels, there are a number of panels that display reports showing the results of the decisions you made and panels that provide information on the costs of running your company. Note that *Micromatic* report panels are designated with an (R) to distinguish them from screens used for entering your panels (D) or panels with cost information (C).

We will discuss each of the decision panels in detail in Chapter 5 and the report panels in Chapter 6. When you have displayed a decisions panel, it will have a flashing cursor to guide you in entering your decisions. You cannot make entries on any of the report panels. Consequently, there is no need to move the cursor around those panels.

Exhibit 4.13 shows you the Marketing Decisions panel. This is one of the five panels that your team will use to enter its decisions for Quarter 1 and subsequent quarters as you move through the simulation exercise. What follows is a preview of *Micromatic* that describes how to enter decisions, move around a decision screen, and move from one panel to another panel.

Exhibit 4.13

Marketing Decisions : Q1 Forecast

	Region 1	Region 2	Region 3
Price	\$40	\$40	€40
Quality	\$0.00	\$0.00	€0.00
Local Newspaper Ads	9	4	
Trade Publications	5	3	
Web Marketing	\$0		
Features Development	\$0		
Ad Message	Price Quality Service Features General	Price Quality Service Features General	P Q S F G
Sales Plan			
Withdraw from Region	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sales Forecast	7,771	4,206	3,605
Actual Demand	0	0	0


Salespersons

	Region 1	Region 2	Region 3
Hire	0	0	0
Fire	0	0	0

Quick Help

MDHire: This is the number of salesreps you wish to hire in this region this quarter.

Salesreps hired in a quarter will be trained in that quarter and be ready to promote sales in the following quarter.

The *Micromatic* program will only allow you to make certain entries in specific locations. 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. You can access information on the limits for your decision entries and the costs associated with managing your company through the Info heading on the Menu bar. We will explain just how to view this information later in this chapter. You can also find information regarding a decision by clicking on the  icon next to the decision entry. Doing this will display a message like that shown in Exhibit 4.13 for the decision for hiring Salespersons.

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.

Moving the Cursor around the Decisions Screens

You can move the cursor around the decision screens by either of two methods. One method is to use the Tab key. The second method is to use the mouse, if one is connected to your computer. You can use each of these methods in combination with the other method. This means you can make one move using the mouse and the next move using the Tab key. You can switch back and forth between these two methods of moving around a decisions screen as often as you like. Each of the two methods is described briefly in the following two sections.

Using the Tab Key. When the decision screen first appears, a flashing cursor will appear next to the first decision you must make — the price you will charge for your product in Region 1. Use the Tab key to move from decision to decision on the screen. Pressing the Tab key alone will move you “forward” to the next decision entry cell. Pressing and holding the Shift key and then pressing the Tab key will move you “backward” to the preceding decision entry cell. When you reach the last decision on the screen, pressing the Tab key will take you back to the first decision on the screen. You can enter the individual decisions in any order you choose. What matters is the last set of numbers showing on the screen after you have finished entering your decisions.

If you do not want to change the number shown on the screen, press the Tab key to move to the next decision you must make. This will automatically enter the number displayed on the screen. If you wish to make a change, simply type in your new number (or letter) and press the Tab key. This will enter your new number (or letter) and move you to the next decision. Notice that when you tab to a new cell, the whole cell is highlighted. If you press the Backspace key, the whole number is erased. You must then enter a new number and press the Tab key, or the *Micromatic* program will automatically enter a zero for that decision.

If you press an Arrow key while the number is highlighted, the highlighting will disappear, but the number will remain. You can then use the Arrow key to move to a digit within the number and make a change to the existing number without having to change the whole number. For example, you could change a sales forecast number from 6,100 to 6,150. To *insert* a digit into an existing number, use the Arrow key to move to the insertion point, type in the new digit, use the Delete or the Backspace key to remove any unwanted digit(s), and press the Tab key. To *type over* a particular digit, use the Arrow key to move to the digit you want to replace, press the Insert key, then type in the new digit and tab to the next decision cell. Once you have pressed the Insert key, you will be able to type over existing numbers until you press the Insert key again and the flashing cursor returns to its original shape.

Using the Mouse. Use the mouse to move around a decisions screen the same as you would when working in any Windows environment. Simply move the mouse indicator to the decision number you want to change and click the left mouse button. The number you selected will become highlighted. Type in the number you desire and either press the Tab key or click onto a new number. Repeat this process until you have made all the changes you desire to the decisions showing on the screen.

Clicking twice on a number will allow you to edit the existing number on the screen. The first click highlights the number. The second click positions the cursor in the number so that you can type in a digit and delete unwanted digits using the Backspace or Delete keys. As with working without a mouse, pressing the Insert key allows you to type over existing numbers.

If you are at the computer, try entering some information on the Marketing Decisions screen now. None of the numbers you enter at this time will become permanent. Even during the simulation exercise, no decision is permanent until the quarter’s decisions are saved, submitted, and processed. This means the only numbers that matter are the *last* ones entered and submitted before your quarter’s decisions are processed. So feel free to experiment now. Chapter 5 explains each of the decisions you will enter on the two decisions screens.

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 \$40 each, you will see in the reports that you sold 6,000 units and made \$240,000 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 \$200,000. 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 will be the effects of your decisions, *assuming that 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. This means that if you want to view or print the actual (versus forecasted) results for the quarters of your company's operations that have been processed, you will have to use the Quarter menu, to index the program back to an earlier quarter. So, for example, after your decisions for Quarter 2 have been processed, your *Micromatic* program will automatically set up for your company's Quarter 3 decisions. To see how your company performed in Quarter 2 and to see the market research information you purchased in Quarter 2, select the Quarter menu and choose "Quarter 2" from the list that drops down from the menu heading. You will then be able to view or print the actual results of your decisions and the market research information for Quarter 2. When you are ready to begin entering your Quarter 3 decisions, select the Quarter menu again and choose "Quarter 3" to return to the Quarter 3 screens. To view the actual results for Quarter 1, you would repeat this process choosing the "Quarter 1" from the Quarter menu options.

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, each teammate should save their decisions using a different name to avoid confusion. We explained how to do this in the section on “Save Your Decisions”, above (See Exhibit 4.6). If you want to see or edit the decisions saved by one of your teammates you can do so using the “Review Other Decisions” section, also described above (See Exhibit 4.8).

The *Micromatic* program will maintain all decisions saved by both you and your teammates for the current quarter. ***By default the latest decisions saved using the “Save Decisions and Submit for Processing” option are the ones used when your instructor processes the quarter.*** So, make sure that the decisions of the last person to use this option 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 with this, go to <http://webmaster.info.aol.com/cookieguide.html> for directions or initiate a search for “How to enable cookies” on Google for your particular browser.
- ***Started *Micromatic* directly from Internet Explorer version 6.0 (with Service Pack 1) or higher.*** Do not launch the program from inside another program environment such as BlackBoard or use a different browser such as Firefox.

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. This is done to protect the server having idle programs consume its operating space and slow down its processing times. When this happens, simply restart the program.

CHAPTER 5 – MAKING YOUR DECISIONS

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**
These 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**
Operations Management decisions involve whether to self-manufacture or sub-contract the production of your product, construction or sale of plant capacity, spending on maintenance of equipment, and potential purchase of new production technology. They also involve logistical decisions related to transferring products to different regions.
- **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 may include deciding whether to issue new shares of stock, to retire outstanding shares of stock, and to issue dividends to your existing shareholders, if activated by your instructor.
- **Human Resource**
Human Resource decisions include the managing of your labor force (e.g., hiring, firing, laying off, and training of production workers). If your instructor decides to include it as part of your marketing promotion options, 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).

As just indicated, your instructor has the discretion to include, or not include, certain decisions your company has to address. These involve (a) having a sales force to promote your product, (b) operating in a third sales area (i.e., Region 3), (c) purchasing technological improvements, and (d) issuing stock and dividends, plus retiring outstanding shares. Because your instructor can choose to include these decisions beginning in Quarter 1 or in any subsequent quarter, our discussion of the decisions you face in the managing of your company will include these optional decision areas.

You will enter your decisions on five different screens. They are Marketing Decisions, Marketing Research, Operating Decisions, Plant 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., newspaper, trade publications, and the web) to create customer awareness of your product,
- the ad message communicated in your advertisements, and
- if activated by your instructor, the sales force you will use to promote product placement with the retailers. These will include decisions regarding salesrep hiring, firing, transfers, and commissions.

You will enter each of your marketing decisions on the Marketing Decisions screen (see Exhibit 5.1). Next, we discuss each of these decisions. If the options of having a sales force and/or operating in Region 3 are not activated by your instructor, these decision entries will not appear on your monitor. An example of this screen is shown as the Brief Version in Exhibit 5.1.

Exhibit 5.1

Enhanced Version

	Region 1	Region 2	Region 3
Price	\$40	\$40	€40
Quality	\$0.00	\$0.00	€0.00
Local Newspaper Ads	9	4	3
Trade Publications	5	3	3
Web Marketing	\$0		
Features Development	\$0		
Ad Message	Price Quality Service Features General	Price Quality Service Features General	Price Quality Service Features General
Sales Plan			
Withdraw from Region	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sales Forecast	7,771	4,206	3,605
Actual Demand	0	0	0

Brief Version

	Region 1	Region 2
Price	\$40	\$40
Quality	\$0.00	\$0.00
Local Newspaper	9	4
Trade Publications	5	3
Web Marketing	\$0	
Features Develop	\$0	
Ad Message	Price Quality Service Features General	Price Quality Service Features General
Sales Plan		
Withdraw Region	<input type="checkbox"/>	<input type="checkbox"/>
Sales Forecast	7,771	4,206
Actual Demand	0	0

Sales Price

- The Quarter 0 sales price was \$40 in Regions 1 & 2.
 - If Region 3 is activated by your instructor, €40 in Region 3.
- 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 last quarter. The change in price affects sales exponentially. So, the bigger the change in price, the bigger the impact of that change.
- Prices much higher than the average price charged in the region can result in very low to no sales.

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.
- Product quality is entered as a marketing decision, but is also displayed with your operations decisions and COGS Report. This is because the money spent on quality affects the cost of your product.

Local Newspaper Advertising

- Costs \$900 per page in Regions 1 & 2.
 - If Region 3 is activated by your instructor, €900 per page in Region 3
- 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 region is 99.

Trade Publications

- Cost \$3,000 per page in Regions 1 & 2.
 - If Region 3 is activated by your instructor, €3,000 per page in Region 3.
- Has an effect on sales in the quarter you purchase the ad and in the following quarter.
- Affects only the region in which you purchase the ad.
- Maximum number of pages you can buy in a quarter per region is 99.

Web Marketing

- The money spent promoting your product on the WWW affects sales in all regions

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.
- Money spent on Features Development is spent on research to discover new features to add to your product.
- It is unknown how much you need to spend to create a feature, but it is known that the more you spend the more likely a feature will be created. 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.

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 (newspapers, trade publications, 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 (Optional. May be activated by your instructor)

- **Salary** is \$3,500 per quarter per salesrep in Regions 1 & 2.
 - If Region 3 is activated by your instructor, €3,500 per page in Region 3.
- 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 salesrep is hired, for each salesrep hired there is:
 - A **hiring cost** of \$1,100 in Regions 1 & 2. If activated, €1,100 in Region 3.
 - A **training cost** of \$3,500 in Regions 1 & 2. If activated, €3,500 in Region 3.
 - A **salary cost** of \$3,500 in Regions 1 & 2. If activated, €3,500 in Region 3.
 - You can hire at most 99 Salespersons per region each quarter.
- You can pay salesreps a **commission** in an effort to increase your Salespersons performance. The higher the commission, the more motivated the salesrep is to promote your product.
- You can **transfer** salesreps to another region for \$5,000. All salesrep 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 salesrep 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 two products, 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 will also have the opportunity to make marketing research decisions each quarter. You will enter these decisions on the Marketing Research decisions screen (see Exhibit 5.2). Below the exhibit, we discuss each of these decisions. An example of the Marketing Research Report is shown in Appendix B.

Exhibit 5.2

Purchase	Items to Purchase	Cost
<input type="checkbox"/>	Sales Potential for Next 4 Quarters	\$25,000
<input type="checkbox"/>	Sales Potential: Enter Desired Quarter <input type="text" value="1"/>	\$7,500
<input type="checkbox"/>	Salesperson by Company	\$5,000
<input type="checkbox"/>	Existing Plant Capacity	\$3,000
<input type="checkbox"/>	Pages of Trade Publications	\$2,000
<input type="checkbox"/>	Pages of Local Newspaper Advertising	\$2,000
<input type="checkbox"/>	Product Quality	\$3,000
<input type="checkbox"/>	WWW Promotion	\$3,000
<input type="checkbox"/>	Total Product Features	\$5,000
<input type="checkbox"/>	Units Sold by Company	\$3,000
<input type="checkbox"/>	Unit Price by Company	\$3,000

- Click on the box (☑) for the research information desired.
- You have two options for purchasing **Sales Potential** information.
 - Sales Potential for the Next 4 Quarters provides the average demand per company for each of the next 4 quarters.
 - The second research item on 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.
- 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 on the screen. That is the total cost for the item selected, regardless of the number of companies operating in the industry.

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 quality)
- Product transfers (i.e., movement of finished goods between sales regions). Note that while this item is part of operations, for the simulation one 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. If Region 3 is not activated by your instructor, the decision entries for this region will not appear on your monitor. An example of this screen is shown as the Brief Version in Exhibit 5.3.

Exhibit 5.3

Enhanced Version

	Region 1	Region 2	Region 3
Raw Material			
Material Ordered (Units)	20,000	0	0
Liquidate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Workers			
Hired (#)	5	0	0
Discharged (#)	0	0	0
Laid Off (#)	0	0	0
Training	\$0	\$0	€0
Finished Goods			
Subcontract (Units)	0	0	0
Production (Units)	18,000	0	0
Quality/Unit	\$0.00	\$0.00	€0.00
Product Transfers			
From Region 1 To: (#)	N/A	6,000	5,000
From Region 2 To: (#)	0	N/A	0
From Region 3 To: (#)	0	0	N/A

Brief Version

	Region 1	Region 2
Raw Material		
Material Ordered (Units)	20,000	0
Liquidate	<input type="checkbox"/>	<input type="checkbox"/>
Workers		
Hired (#)	5	0
Discharged (#)	0	0
Laid Off (#)	0	0
Training	\$0	\$0
Finished Goods		
Subcontract (Units)	0	0
Production (Units)	18,000	0
Quality/Unit	\$0.00	\$0.00
Product Transfers		
From Region 1 To: (#)	N/A	6,000
From Region 2 To: (#)	0	N/A

Raw Materials

- Raw material **purchase costs** are as follows. Costs in are in Euros (€).

1 – 9,999	\$ 10 per unit in Regions 1 & 2,	If activated, €10 per unit Region 3.
10,000 – 19,999	\$ 9 per unit in Regions 1 & 2,	If activated, €9 per unit Region 3.
20,000 and above	\$ 8 per unit in Regions 1 & 2,	If activated, €8 per unit Region 3.
- **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.
- A 7% probability exists that only 80% of the raw material order will be delivered. The remaining 20% will never arrive and you will have to reorder it if you need it.
- Raw materials **carrying cost** is \$1.00 times the beginning units in raw material inventory.
- Selecting the **Liquidate** option allows you to sell off all raw material inventory 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.

Work Force

- Wages are \$2,500 per worker per quarter in Regions 1 & 2.
 - If Region 3 is activated by your instructor, €2,500 in Region 3.
- The **cost to hire** a new worker is \$3,000 plus the regular wages in Regions 1 & 2.
 - If Region 3 is activated by your instructor, €3,000 plus the regular wages in Region 3.
 - 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. You are unable to produce with a partial crew.
 - 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** is \$15.00/unit in Regions 1 & 2. Any overtime cost is in addition to the regular cost of producing the product.
 - If Region 3 is activated by your instructor, €15.00/unit in Region 3.
- **Worker turnover** is 10%. This is computed based upon the number of workers in each region. There is a 7% probability that you'll lose one additional worker per region and a 3% probability that you will lose two additional workers per region.
- **Discharged** workers leave at the beginning of the quarter and before turnover is calculated.
- **Laid off** workers leave at the beginning of the quarter. They return automatically the next quarter. The cost to lay off workers is \$1,000 per worker in Regions 1 & 2.
 - If Region 3 is activated by your instructor, €1,000/unit in Region 3.
- **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 the workers' 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, and overhead costs plus depreciation.
 - Overhead costs are equal to 50% of the total labor cost.

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.
 - The cost of subcontracted units is shown on the Material and Inventory Costs screen. The cost shown does not include money spent to improve the quality of the product.
- Production** is limited by the number of enhanced crews available, crew productivity, plant capacity, and the number of units of raw material available. Enter the number of units you wish to produce during the quarter, subject to the limitations described.
- Money spent on **quality** increases the attractiveness of the product in the marketplace and the cost to produce it. You enter this decision on the Marketing Decisions screen.
- Finished goods carrying costs is \$2.00 times the beginning units in finished goods inventory.

Product Transfers

- Enter the number of units you wish to transfer from one region to another region.
 - Transfer costs are \$4.00 per unit per region. All transfers are charged in \$.

PLANT DECISIONS

For each quarter, you will have to make a variety of decisions related to your plant facilities. These decisions will include:

- Spending on plant maintenance, which affects worker productivity.
- Increasing your production capacity (i.e., build or lease plant capacity).
- Decreasing your production capacity (i.e., sell plant capacity).
- Invest in technology improvements, if activated by your instructor.
- Sell technology improvements, if activated by your instructor.

You will enter each of your plant decisions on the Plant Decisions screen (see Exhibit 5.4). Next, we discuss each of these decisions. If decisions regarding the purchase of technological improvements and Region 3 are not activated by your instructor, these decision entries will not appear on your monitor. An example of this screen is shown as the Brief Version in Exhibit 5.4.

Exhibit 5.4

Enhanced Version

Brief Version

Plant Decisions : Q1 Forecast			
	Region 1	Region 2	Region 3
Build Plant Capacity			
Units	0	0	0
Cost (\$/Unit)	\$100	\$100	€100
Minimum Capacity	5,000	3,000	3,000
Cost	\$0	\$0	€0
Maintenance	\$0	\$0	€0
Lease Plant Capacity			
Units	0	0	0
Duration	4	4	4
Cost/Unit/Qty - 4 Qtr	\$7.00	\$7.00	€7.00
Cost/Unit/Qty - 8 Qtr	\$6.00	\$6.00	€6.00
Minimum Order	1,000	1,000	1,000
Sale of Plant			
Units	0	0	0
Minimum Capacity	5,000	3,000	3,000
Book Value	\$0	\$0	€0

Plant Decisions : Q1 Forecast			
	Region 1	Region 2	Region 3
Invest in Technological Improvements			
No Technological Improvements Available at this time			
Option #	0	0	0
Crew Size	0	0	0
Productivity	0	0	0
Cost/1000	\$0	\$0	€0
Total Cost	\$0	\$0	€0
Sell Technological Improvements			
Sell All	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Book Value	\$0	\$0	€0

Plant Decisions : Q1 Forecast			
	Region 1	Region 2	Region 3
Build Plant Capacity			
Units	0	0	0
Cost (\$/Unit)	\$100	\$100	€100
Minimum Capacity	5,000	3,000	3,000
Cost	\$0	\$0	€0
Maintenance	\$0	\$0	€0
Lease Plant Capacity			
Units	0	0	0
Duration	4	4	4
Cost/Unit/Qty - 4 Qtr	\$7.00	\$7.00	€7.00
Cost/Unit/Qty - 8 Qtr	\$6.00	\$6.00	€6.00
Minimum Order	1,000	1,000	1,000
Sale of Plant			
Units	0	0	0
Minimum Capacity	5,000	3,000	3,000
Book Value	\$0	\$0	€0
No Technological Improvements Available at this time			

Adding Plant Capacity

- **Build new plant.**
 - **Units.** Enter the number of units of production capacity you desire.
 - Current cost is \$100,000 per 1,000 units in Regions 1 and 2.
 - If activated by your instructor, €100,000 per 1,000 units in Region 3
 - 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.
 - **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.
- **Lease Plant**
 - **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.
 - Current lease cost is \$7 per unit for a 4 quarter lease and 6\$ per unit for an 8 quarter lease.
 - If activated by your instructor, costs in Region 3 are in Euros (€).
 - **Duration.** You can lease a plant for 4 quarters or for 8 quarters.

Background Information

- **Plant Facilities**
 - You currently own 10,000 units that will last through Q20. Depending on the setup your instructor chose, you currently lease 6,000 or 8,000 units that you can use through Q7. Check the Leased Capacity line on your Plant and Workforce Report to determine the number of units of plant capacity you currently have leased.
 - You must maintain 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. This applies to both plants purchased and plants leased.
 - If you are allowed to purchase or lease plant in Region 3, the minimum capacity is 3,000 units.
 - Depreciation is computed straight line over 20 quarters for your owned capacity.
- **Administrative Costs**
 - There is a fixed administrative charge of \$25,000 for operating its plant in Region 1.
 - There is an *additional* charge of \$15,000 if you have a plant operating in Region 2.
 - There is an *additional* charge of €25,000 if you have a plant operating in Region 3.
 - Additional administrative charges begin in the quarter after you order additional capacity in a new region.

Selling Plant Capacity

- **Units.** Enter the number of units of production capacity you wish to sell.
 - You must sell the oldest plant capacity first.
 - You must sell a minimum of 1000 units.
 - You can use the units sold in the current quarter.
 - You lose the capacity at the beginning of the following quarter.
 - You will receive the cash from the sale of the plant in the following quarter.

Technological Improvements (Optional. May be activated by instructor.)

- **Invest in (Purchase) Technological Improvement.**
 - **Option.** Enter the option number of the technological improvement you wish to purchase.
 - There is a one quarter delay from when you purchase a tech improvement until it is operational.
 - You pay for a technological improvement the quarter after you order it.
 - If you technologically improve capacity in a region, you must technologically improve any additional plant capacity added in that region.
 - Costs are amortized via a depreciation charge over 20 quarters.
- **Sell Existing Technological Improvement.**
 - Sell All
 - Click on the box to enter a check mark (i.e.,) to sell the tech improvement existing in that region.
 - You have to sell all the tech improvements that exist in the region you selected.
 - If you choose to sell a tech improvement, the selling price is its book value.

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 (Optional. May be activated by instructor.)
- Stock Issue or Retirement (Optional. May be activated by instructor.)

You will enter each of your finance decisions on the Finance decisions screen (see Exhibit 5.5). Below the exhibit, we discuss each of these decisions. If decisions regarding stock dividends, issuance or retirement are not activated by your instructor, these decision entries will not appear on your monitor. An example of this screen is shown as the Brief Version in Exhibit 5.5.

Exhibit 5.5

Enhanced Version

Brief Version

Short-term Loan		Dividends Issued		Bond Issue	
Request	\$0	Dividend per Share	\$0.00	Amount Requested	\$0
Extra Payment	\$0	Stock Issued		Bond Interest Rate	10.00%
Loan Interest Rate	10.00%	Number of Shares	0	First Bond	
Line of Credit	\$400,000	Stock Retired		Extra Payment	\$0
Short-term Investment		Number of Shares	0	Early Bond Penalty	3%
Deposit	\$0	Stock Broker Commission	10.00%	€ to \$ Conversion	1.20
Withdrawal	\$0	Game Minimum # Shares	120,000		
Investment Rate	5.00%	Game Maximum # Shares	240,000		
		Price	\$10.32		

Short-term Loan		Bond Issue	
Request	\$0	Amount Requested	\$0
Extra Payment	\$0	Bond Interest Rate	10.00%
Interest Rate	10.00%	Retire First Bond	
Line of Credit	\$400,000	Extra Payment	\$0
Short-term Investment		Early Bond Penalty	3%
Deposit	\$0		
Withdrawal	\$0		
Investment Rate	5.00%		

Short-Term Loan Requests

- **Request.** Enter the amount needed to ensure a positive cash flow on the Cash Flow Statement.
 - 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.
- **Extra Payment.** You can make an extra payment on your short-term loan to pay it off early, if you desire.
 - You are required to repay what you borrowed in the following two quarters in two equal payments. For example, if you borrowed \$100,000 in Quarter 2, you will pay \$50,000 in Quarter 3, and \$50,000 in Quarter 4.

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 Issued (Optional. May be activated by instructor.)

- 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.
- The program will not allow payment of dividends if accumulated retained earnings on your balance sheet are less than \$0.
- You pay dividends the quarter that you declare them.

Stock Issues (Optional. May be activated by instructor.)

- Are received in the quarter requested.
- You cannot issue stock for less than the \$10 par value, minus the broker's commission.
- 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 fees 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.

Stock Retirements (Optional. May be activated by instructor.)

- Are paid in the quarter in which they were purchased (i.e., retired).
 - The program will not allow payment of stock repurchase if accumulated retained earnings on your balance sheet are less than \$0. 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 Sales

- 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 an added charge of a 3% prepayment penalty on additional bond payments.
- The maximum number of bonds outstanding at any one time is two (2).
 - To issue an additional bond if you already have two bonds outstanding, you first must retire Bond #1. Do this by entering the amount outstanding for Bond #1 shown on the Balance Sheet. You may decide to ask for the additional money to retire the first bond as part of your new bond request.
 - If the computer denies a bond request, the extra payment for the first bond is insufficient. The program will accept extra payments greater than necessary, but not less.

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 in Exhibit 6.1, below). When you load up the *Micromatic* program, it automatically loads up the *next* quarter’s decision screens and associated reports. If you want to access the quarter that was just processed, you will have to use the Quarter option to move back to the reports you wish to view. You will also be able to view *forecast* reports that show the results of your decisions **IF** you actually sell the number of units that you forecast for the next quarter. (See discussion of forecast reports in Chapter 2.) Note that all the *Micromatic* reports are designated with an (R) to distinguish them from screens used for entering your decisions. These have a (D) after their label.

Exhibit 6.1



You can access all the *Micromatic* reports either by clicking on the desired report on the Game Control screen or using the drop-down menus displayed on the top of that screen. In addition, you can use several “hot keys” to access certain menu options. These are Ctrl+G for the Game Control Screen, Ctrl+S for Save decisions, and Ctrl+Q for the Quarter menu.

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. Note: If the options of having a sales force and/or operating in Region 3 are not enabled by your instructor, this information will not appear on your marketing reports. Appendix A provides examples of the reports without this information displayed.

- Marketing reports
 - Marketing costs
 - S & A (Selling and administrative) Report
- Operations reports
 - Operations Costs
 - Material and Inventory Costs
 - Cost of Good Sold report
 - Warehouse Operations report
 - Workforce and Plant report
 - Raw Material report
- Financial reports
 - Balance sheet
 - Cash flow statement
 - Income statement
 - Financial Ratios
- Game Performance reports
- Game Summary Report

MARKETING REPORTS

By monitoring the Marketing Cost Report you will be able to see the cost of the different marketing tools at your disposal. By accessing the S & A Report you can see what it cost to promote your product and gather information on your competitors through your marketing research decisions.

Marketing Costs Report

The Marketing Costs Report shows the costs for the different marketing tools you can use to promote the sale of your product. These costs can change from one quarter to the next. You can determine the current costs by accessing this report when you are in the current (i.e., forecast) quarter. To see the costs for earlier quarters, you need to use the Quarter menu and change to the quarter you wish to view. Exhibit 6.2 shows an example of this report. An example of this report without the costs for Salespersons and Region 3 displayed is shown in Appendix A.

Exhibit 6.2

Marketing Costs : Q1 Actual			
	Region 1	Region 2	Region 3
Trade Publications	\$3,000	\$3,000	€3,000
Newspaper Advertising Cost	\$900	\$900	€900
Salesperson Salary	\$3,500	\$3,500	€3,500
Salesperson Hiring Cost	\$1,100	\$1,100	€1,100
Salesperson Training Cost	\$3,500	\$3,500	€3,500
Salesperson Transfer Cost			
From Region 1 To:	N/A	\$5,000	\$5,000
From Region 2 To:	\$5,000	N/A	\$5,000
From Region 3 To:	\$5,000	\$5,000	N/A

S & A Report

This report shows the cost of promoting and selling the *Micromatic* product to prospective customers. This includes the costs associated with your sales force, if you have one, plus the various forms of advertising available to your company. This report also shows the costs of the decisions you made to purchase marketing research (see arrow on left side of Exhibit 6.3), any fines or refunds assigned to your company by your instructor and the fixed administrative overhead cost for operating your business. An example of this report without the Salespersons information and Region 3 displayed is shown in Appendix A.

Exhibit 6.3

	Region 1	Region 2	Region 3	Total
Salespersons				
Hiring Cost	\$0	\$0	€0	\$0
Training Cost	\$0	\$0	€0	\$0
Regular Salary Cost	\$17,500	\$10,500	€10,500	\$40,600
Commission	\$0	\$0	€0	\$0
Total Transfer Cost				\$0
Total				\$40,600
Salespersons Available	5	3	3	
Salespersons Lost (Next Qtr)	1	0	0	
Promotion				
Local Newspaper	\$9,000	\$4,500	€3,600	\$17,820
Trade Publications	\$15,000	\$9,000	€9,000	\$34,800
Web Marketing				\$0
Features Development				\$0
Number of Features				0
Competitive Information				\$18,500
Administrative Expense				\$25,000
Fines/Refunds				\$0
Total Selling/Admin Expense				\$136,720

OPERATIONS REPORTS

The operations reports reflect 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 \$40, but it cost you \$41 to produce and transport to your customer), no matter how much you sell, you will still lose money.

Operations Costs

Exhibit 6.4 provides an example of your Operations Costs report. Besides showing the cost of maintaining your workforce, it also shows the the administrative charge for overhead expenses (e.g., health care and retirement programs) and the probabilities for losing workers due to attrition. Note: If the option of operating in Region 3 is not enabled by your instructor, this region will not appear on your report. An example of this report without Region 3 is shown in Appendix A.

Exhibit 6.4

Operations Costs : Q1 Actual			
	Region 1	Region 2	Region 3
Worker Pay (\$/Quarter)	\$2,500	\$2,500	€2,500
Overtime Pay (\$/Unit)	\$15.00	\$15.00	€15.00
Hiring Cost	\$3,000	\$3,000	€3,000
Layoff Cost	\$1,000	\$1,000	€1,000
Overhead Rate	50%	50%	50%
Administrative Expense	\$25,000	\$15,000	€25,000
Normal Worker Turnover	10%	10%	10%
Probability of 1 Lost Extra Worker	7%	7%	7%
Probability of 2 Lost Extra Workers	3%	3%	3%

Material and Inventory Costs

The Material and Inventory Cost report shows the cost for maintaining goods in inventory, plus the cost of ordering raw materials for your production process (See Exhibit 6.5). It also shows the cost of having a subcontractor produce products for you and the chance of a shortage occurring in your order for raw materials. If this shortage occurs, you will not receive all the raw materials you ordered last quarter. Note: If the option of operating in Region 3 is not enabled by your instructor, this area will not appear on your report. An example of this report without Region 3 is shown in Appendix A.

Exhibit 6.5

Material and Inventory Costs : Q1 Actual			
	Region 1	Region 2	Region 3
Subcontract Finished Goods	\$30.00	\$30.00	€30.00
Raw Material Prices(\$)			
Material Purchase Order Cost	\$0	\$0	€0
Minimum Order For Low Price	20,000	20,000	20,000
Medium Price	10,000	10,000	10,000
High Price	\$10.00	\$10.00	€10.00
Medium Price	\$9.00	\$9.00	€9.00
Low Price	\$8.00	\$8.00	€8.00
Lost Material Shipment Probability	7%	7%	7%
Magnitude of Loss	20%	20%	20%
Inventory Carrying Cost (\$/Unit)			
Raw Material	\$1.00	\$1.00	€1.00
Finished Goods	\$2.00	\$2.00	€2.00
Finished Good Transfer Cost (\$/Unit)			
From Region 1 To:	N/A	\$4.00	\$4.00
From Region 2 To:	\$4.00	N/A	\$4.00
From Region 3 To:	\$4.00	\$4.00	N/A
Tariffs	\$0.00	\$0.00	€0.00

Cost of Good 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.

Note: If the option of operating in Region 3 is not enabled by your instructor, this area will not appear on your report. An example of this report without Region 3 is shown in Appendix A.

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 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

Cost of Goods Sold : Q1 Forecast				
	Region 1	Region 2	Region 3	Total
Raw Material	\$132,000	\$0	€0	\$132,000
Regular Worker Pay	\$120,000	\$0	€0	\$120,000
Overtime Pay	\$0	\$0	€0	\$0
Hiring Costs	\$15,000	\$0	€0	\$15,000
Layoff Costs	\$0	\$0	€0	\$0
Overhead	\$67,500	\$0	€0	\$67,500
Training and Development Cost	\$0	\$0	€0	\$0
Subcontract	\$0	\$0	€0	\$0
Quality	\$0	\$0	€0	\$0
Lease	\$36,000	\$0	€0	\$36,000
Depreciation	\$50,000	\$0	€0	\$50,000
Plant Maintenance	\$0	\$0	€0	\$0
		Units	Total	\$/Unit
Total Manufacturing & Subcontract Costs		16,000	\$420,500	\$26.2813
Beginning Finished Goods Inventory		2,023	\$80,256	\$39.6718
Total Manufacturing Cost of Goods Sold		18,023	\$500,756	\$27.7843
Ending Finished Goods Inventory		4,046	\$112,415	\$27.7843
Manufacturing Cost of Goods Sold		13,977	\$388,340	\$27.7843

Warehouse Operations Report

The Warehouse Operations Report (Exhibit 6.7) shows the finished goods in 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 and the cost of maintaining finished products in inventory.

Note: If the option of operating in Region 3 is not enabled by your instructor, this area will not appear on your report. An example of this report without Region 3 is shown in Appendix A.

Exhibit 6.7

Warehouse Operations : Q1 Forecast				
	Region 1	Region 2	Region 3	Total
Finished Goods				
Beginning Inventory	1,229	794	0	
Units Assembled	16,000	0	0	
Units Subcontracted	0	0	0	
Product Transfers				
From Region 1 To:	N/A	6,000	0	
From Region 2 To:	0	N/A	0	
From Region 3 To:	0	0	N/A	
Units Available for Sale	11,229	6,794	0	
Units Sold	7,771	6,206	0	
Ending Inventory	3,458	588	0	
Sales Lost (Stock outs)	0	0	3,605	
Warehouse				
Transportation Cost	\$0	\$24,000	\$0	\$24,000
Tariff Charges	\$0	\$0	€0	\$0
Inventory Carrying Cost				\$4,046
Total Warehouse Operations Cost				\$28,046

Workforce and Plant Report

The Workforce and Plant Report 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 (See Exhibit 6.8). This report also shows the production capacity you have available that quarter, either through use of plant you purchased or plant you leased. Depending on the setup your instructor chose, you currently lease 6,000 or 8,000 units that you can use through Q7. Check the Leased Capacity line on your Plant and Workforce Report to determine the number of units of plant capacity you currently have leased. Note: If the option of operating in Region 3 is not enabled by your instructor, this area will not appear on your report. An example of this report without Region 3 is shown in Appendix A.

Exhibit 6.8

Workforce and Plant Report : Q1 Forecast				
	Region 1	Region 2	Region 3	
Workforce				
Number of Beginning Workers	53	0	0	
Number Discharged	0	0	0	
Number Lost to Turnover	5	0	0	
Number Laid Off	0	0	0	
Total Available	48	0	0	
Hired for Next Quarter	5	0	0	
Crew Size	3	3	3	
Crews	16	0	0	
Crew Productivity	1,000	1,000	1,000	
Production Potential w/o Overtime	16,000	0	0	
Plant				
Owned Capacity	10,000	0	0	
Leased Capacity	6,000	0	0	
Leased Cap Expiring Next Quarter	0	0	0	
Total Current Capacity	16,000	0	0	
Owned Capacity Ordered	0	0	0	
Owned Capacity Under Construction	0	0	0	
Leased Capacity Ordered	0	0	0	

Raw Material Report

The Raw Material Report (Exhibit 6.9) 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, per unit cost, and inventory cost of maintaining an inventory of raw materials for production of your product in the various regions. To view the costs for a particular region, click on the appropriate tab. Note: If the option of operating in Region 3 is not enabled by your instructor, this region will not appear on your report. An example of this report without Region 3 is shown in Appendix A.

Exhibit 6.9

Raw Material : Q1 Forecast			
Region 1		Region 2	
Region 1			
	Units	Cost	\$/Units
Beginning Inventory	4,000	\$32,000	\$8.00
Receipts	20,000	\$160,000	\$8.0000
Available	24,000	\$192,000	\$8.0000
Usage	16,000	\$128,000	\$8.0000
Final Inventory	8,000	\$64,000	\$8.0000
Received Next Qtr	20,000	\$160,000	\$8.0000
Available Next Qtr	28,000	\$224,000	\$8.0000
Carrying Cost		\$4,000	
Total Material Cost		\$132,000	

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 6.10). 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 6.10

Balance Sheet : Q1 Actual	
Current Assets	Current Liabilities
Cash \$43,833	Short-term Notes Payable \$25,000
Accounts Receivable \$396,853	Estimated Income Tax \$34,425
Short-term Investment \$0	Total Current Liabilities \$59,425
Material \$44,723	Long-term Liabilities
Finished Goods \$75,049	Bond Payable 1 \$285,000
Total Current Assets \$560,458	Bond Payable 2 \$0
Long-term Assets	Total Liabilities \$344,425
Plant & Equipment \$1,400,000	Stockholder Equity
Accumulated Depreciation \$140,000	Stock (Par \$10) \$1,600,000
Net Plant \$1,260,000	Accumulated Retained Earnings -\$123,966
Total Assets \$1,820,458	Stockholder's Equity \$1,476,034
	Total Liabilities & Stockholder Equity \$1,820,459
	Market Price of Stock \$11.24

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 actually 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 provides information on the cash your company received and paid out this quarter. Exhibit 6.11 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 6.11

Cash Payments		Cash Receipts	
Subcontract and Raw Material	\$164,000	Cash	\$441,590
Short-term Interest	\$1,250	Collection of AR	\$614,760
Bond Interest	\$7,500	Stock Issuance	\$0
Dividends Declared	\$0	Bond Sale	\$0
Income Taxes Paid	\$0	Plant Sale	\$0
Bond Retirement	\$15,000	Interest Income	\$0
Stock Retirement	\$0	Investment Withdrawal	\$0
Plant Payments and Maintenance	\$0	Cash Balance	
Lease Payment	\$36,000	Total Cash Receipts	\$1,056,350
Short-term Loans	\$0	Total Cash Payments	\$677,896
Investment Deposit	\$0	Net Cash Flow	\$378,454
Labor, Quality, Overhead	\$290,760	Short-term Loan Granted	\$0
Warehouse Operations	\$48,046	Emergency Loan	\$0
S & A Payments	\$115,340	Net Cash Balance	\$378,454

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 6.12 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 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 share holders 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 6.12

Income Statement : Q1 Actual		
	Current	YTD
Net Sales	\$793,706	\$793,706
Manufacturing Cost of Good Sold	\$528,449	\$528,449
Gross Profit	\$265,257	\$265,257
Selling and Administrative Expense	\$136,720	\$136,720
Warehouse Operations	\$50,936	\$50,936
Operating Profit	\$77,601	\$77,601
Net Interest	\$8,750	\$8,750
Income Before Income Taxes	\$68,851	\$68,851
Provision for Income Taxes	\$34,425	\$34,425
Net Income After Taxes	\$34,426	\$34,426
Dividends Declared	\$0	\$0
Retained Earnings	\$34,426	\$34,426
Number of Outstanding Shares	160,000	
Earnings per Share	\$0.22	\$0.22
Dividends per Share	\$0.00	\$0.00

Financial Ratios Report

The Financial Ratios Report 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 Quicktips link (📘) for a short description.

Exhibit 6.13

Financial Ratios : Q4 Forecast	
Current	📘 19.2028
Quick	📘 13.0565
Debt to Total Assets	📘 0.1506
Times Interest Earned	📘 14.5727
Inventory Turnover	📘 3.1449
Fixed Assets Turnover	📘 0.6833
Total Asset Turnover	📘 0.3815
Return On Sales	📘 0.1295
Return On Total Assets	📘 0.0494
Return On Equity	📘 0.0271

GAME 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 Bulletin, the Game Performance Report, and Game Summary Report. We will discuss each of these next.

Bulletin

The Bulletin may have a message that your administrator wants to pass on to you. In *Micromatic Team*, this message can change after your administrator processes company decisions. So do not forget to check the bulletin after each time your administrator processes your *Micromatic* decisions for a quarter. It is your responsibility to be aware of the information provided in the Bulletin. In *Micromatic Solo Exam*, this message will not change from the initial message since you are able to process decisions without the game administrator’s involvement.

Game 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. In those cases where you see “TTT” instead of numbers, it means that the company was terminated from the industry and is no longer part of the simulation exercise.

Exhibit 6.14 provides an example of this report. We will use this example to explain how the *Micromatic* program calculates the points assigned to each company in the Index Pts and the Awards columns. To access this report, select the Game Performance Report option and then click on the Excel icon (see the arrow below) to open the report as an Excel worksheet. Having this report displayed in Excel will allow you to conduct easily any analysis of the data that you wish.

Exhibit 6.14

Quarter: 2 Go

Click on the icon below to open Excel.

Micromatic									
Team 2: Team 2									
9/26/2004									
Sales									
Quarter 2					Game to Date				
Company	Results	Index Pts	Award (5)	Position #	Results	Index Pts	Award (5)	Position #	
1	\$643,640	100	5	1	\$1,341,040	100	5	1	
2	\$626,120	97	5	3	\$1,298,880	96	5	3	
3	\$626,120	97	5	3	\$1,298,880	96	5	3	
4	TTT	TTT	TTT	TTT	TTT	TTT	TTT	TTT	
Average	\$631,960				\$1,312,933				
Net Income After Taxes									
Quarter 2					Game to Date				
Company	Results	Index Pts	Award (25)	Position #	Results	Index Pts	Award (25)	Position #	
1	\$16,168	100	25	1	\$54,919	100	25	1	
2	\$7,286	45	11	3	\$44,201	80	20	3	
3	\$7,286	45	11	3	\$44,201	80	20	3	
4	TTT	TTT	TTT	TTT	TTT	TTT	TTT	TTT	
Average	\$10,247				\$47,774				

Calculation of Points Awarded

For each of the factors, the report shows each company’s performance, plus an evaluation and a ranking of that performance. The column under each heading — Sales, Net Income, etc. — shows what each

company in the industry achieved for that factor in that quarter. For example, in Exhibit 6.15, Company 1 had sales revenues for Quarter 2 of \$643,640 and net income of \$16,168. Both of these figures are taken from the company's Income Statement for the quarter.

The Index Pts and Award columns show the number of points awarded based on each company's performance on that factor. For the Index Pts, the company that performed the best on that factor receives 100 points. The Index Pts for the rest of the companies are based on their performance relative to the company that achieved the best performance for that factor. For example, in Exhibit 6.15, Company 2 received 45 index points for its performance on the Net Income factor. That is, its net income of \$7,286 was 45% of Company 1's net income of \$16,168.

The Award points granted to each company for their performance on a particular factor are calculated based on the maximum possible points that could be awarded for that factor multiplied by that company's Index Pts divided by 100. In Exhibit 6.15, Company 2 was granted 11 award points ($25 * .45 = 11$).

As with the Quarter Performance Report, the Game-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 Game-to-Date Report, these calculations are based on all quarters of operation. For the sales and net income the Game-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 of 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.

Game Summary Report

The Game Summary Report allows you to generate a quarter-by-quarter display of the results for your company. Exhibit 6.15 provides an example of this report. This report will allow you to see easily your performance over time. As with the Game Performance Report, you can convert this report to an Excel worksheet file (See Exhibit 6.16) by clicking on the Excel icon (see the arrow below). You can use this worksheet to develop charts and graphs to help you manage your company.

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

EXAMPLES OF REPORTS *WITHOUT* OPTIONAL DECISION AREAS

Marketing Costs : Q1 Forecast			
	Region 1	Region 2	
Trade Publications ⓘ	\$3,000	\$3,000	
Newspaper Advertising Cost ⓘ	\$900	\$900	

S & A Report : Q1 Forecast				
	Region 1	Region 2	Total	
Promotion				
Local Newspaper ⓘ	\$8,100	\$3,600	\$14,940	
Trade Publications ⓘ	\$15,000	\$9,000	\$34,800	
Web Marketing ⓘ			\$0	
Features Development ⓘ			\$0	
Number of Features ⓘ			0	
Competitive Information ⓘ			\$0	
Administrative Expense ⓘ			\$25,000	
Fines/Refunds ⓘ			\$0	
Total Selling/Admin Expense ⓘ			\$115,340	

Operations Costs : Q1 Forecast			
	Region 1	Region 2	
Worker Pay (\$/Quarter) ⓘ	\$2,500	\$2,500	
Overtime Pay (\$/Unit) ⓘ	\$15.00	\$15.00	
Hiring Cost ⓘ	\$3,000	\$3,000	
Layoff Cost ⓘ	\$1,000	\$1,000	
Overhead Rate ⓘ	50%	50%	
Administrative Expense ⓘ	\$25,000	\$15,000	
Normal Worker Turnover ⓘ	10%	10%	
Probability of 1 Lost Extra Worker ⓘ	7%	7%	
Probability of 2 Lost Extra Workers ⓘ	3%	3%	

Material and Inventory Costs : Q1 Forecast			
	Region 1	Region 2	
Subcontract Finished Goods ⓘ	\$32.00	\$32.00	
Raw Material Prices(\$)			
Material Purchase Order Cost ⓘ	\$0	\$0	
Minimum Order For Low Price ⓘ	20,000	20,000	
Medium Price ⓘ	10,000	10,000	
High Price ⓘ	\$10.00	\$10.00	
Medium Price ⓘ	\$9.00	\$9.00	
Low Price ⓘ	\$8.00	\$8.00	
Lost Material Shipment Probability ⓘ	7%	7%	
Magnitude of Loss ⓘ	20%	20%	
Inventory Carrying Cost (\$/Unit)			
Raw Material ⓘ	\$1.00	\$1.00	
Finished Goods ⓘ	\$2.00	\$2.00	
Finished Good Transfer Cost (\$/Unit)			
From Region 1 To: ⓘ	N/A	\$4.00	
From Region 2 To: ⓘ	\$4.00	N/A	

Cost of Goods Sold : Q1 Forecast			
	Region 1	Region 2	Total
Raw Material ⓘ	\$132,000	\$0	\$132,000
Regular Worker Pay ⓘ	\$120,000	\$0	\$120,000
Overtime Pay ⓘ	\$0	\$0	\$0
Hiring Costs ⓘ	\$15,000	\$0	\$15,000
Layoff Costs ⓘ	\$0	\$0	\$0
Overhead ⓘ	\$67,500	\$0	\$67,500
Training and Development Cost ⓘ	\$0	\$0	\$0
Subcontract ⓘ	\$0	\$0	\$0
Quality ⓘ	\$0	\$0	\$0
Lease ⓘ	\$36,000	\$0	\$36,000
Depreciation ⓘ	\$50,000	\$0	\$50,000
Plant Maintenance ⓘ	\$0	\$0	\$0
	Units	Total	\$/Unit
Total Manufacturing & Subcontract Costs ⓘ	16,000	\$420,500	\$26.2813
Beginning Finished Goods Inventory ⓘ	2,023	\$80,256	\$39.6718
Total Manufacturing Cost of Goods Sold ⓘ	18,023	\$500,756	\$27.7843
Ending Finished Goods Inventory ⓘ	4,046	\$112,415	\$27.7843
Manufacturing Cost of Goods Sold ⓘ	13,977	\$388,340	\$27.7843

Warehouse Operations : Q1 Forecast			
	Region 1	Region 2	Total
Finished Goods			
Beginning Inventory	1,229	794	
Units Assembled	16,000	0	
Units Subcontracted	0	0	
Product Transfers			
From Region 1 To:	N/A	6,000	
From Region 2 To:	0	N/A	
Units Available for Sale	11,229	6,794	
Units Sold	7,771	6,206	
Ending Inventory	3,458	588	
Sales Lost (Stock outs)	0	0	
Warehouse			
Transportation Cost	\$0	\$24,000	\$24,000
Inventory Carrying Cost			\$4,046
Total Warehouse Operations Cost			\$28,046

Workforce and Plant Report : Q1 Forecast			
	Region 1	Region 2	
Workforce			
Number of Beginning Workers	53	0	
Number Discharged	0	0	
Number Lost to Turnover	5	0	
Number Laid Off	0	0	
Total Available	48	0	
Hired for Next Quarter	5	0	
Crew Size	3	3	
Crews	16	0	
Crew Productivity	1,000	1,000	
Production Potential w/o Overtime	16,000	0	
Plant			
Owned Capacity	10,000	0	
Leased Capacity	6,000	0	
Leased Cap Expiring Next Quarter	0	0	
Total Current Capacity	16,000	0	
Owned Capacity Ordered	0	0	
Owned Capacity Under Construction	0	0	
Leased Capacity Ordered	0	0	

Raw Material : Q1 Forecast				
Region 1				
Region 1				
	Units	Cost	\$/Units	
Beginning Inventory ⓘ	4,000	\$32,000	\$8.00	
Receipts ⓘ	20,000	\$160,000	\$8.0000	
Available ⓘ	24,000	\$192,000	\$8.0000	
Useage ⓘ	16,000	\$128,000	\$8.0000	
Final Inventory ⓘ	8,000	\$64,000	\$8.0000	
Received Next Qtr ⓘ	20,000	\$160,000	\$8.0000	
Available Next Qtr ⓘ	28,000	\$224,000	\$8.0000	
Carrying Cost ⓘ		\$4,000		
Total Material Cost ⓘ		\$132,000		

APPENDIX B

EXAMPLE OF MARKET RESEARCH REPORT

Micromatic

2/18/2007
0:00

Complete Test

Team 1 Solo

Quarter 6

Company	Features	Available Sales Persons			Trade Publications		
		Region 1	Region 2	Region 3	Region 1	Region 2	Region 3
1	0	3	1	0	5	3	3
2	2	5	8	6	3	3	3
3	3	6	8	6	3	3	3
4	2	6	6	4	4	3	3
5	11	5	6	7	3	3	3
6	4	6	8	7	3	3	3

Company	Units Sold			Sales Price		
	Region 1	Region 2	Region 3	Region 1	Region 2	Region 3
1	2000	2080	0	41	42	43
2	5511	6458	10255	46	46	46
3	3031	6369	10255	47	47	46
4	5558	6359	9969	46	46	46
5	5517	6289	10255	46	46	47
6	4989	6384	10255	47	47	47

Company	Newspaper Advertising			WWW	Quality		
	Region 1	Region 2	Region 3		Region 1	Region 2	Region 3
1	9	4	3	0	0.00	0.00	0.00
2	8	10	6	6000	2.02	1.55	1.01
3	7	6	11	4000	1.52	1.43	1.03
4	5	5	6	4000	1.61	2.28	1.02
5	6	7	6	4000	1.34	1.16	1.21
6	9	6	7	3000	1.55	1.47	1.06

Company	Existing Plant Capacity			Quarter	Sales Potential		
	Region 1	Region 2	Region 3		Region 1	Region 2	Region 3
1	18000	0	0	7	6888	5262	9181
2	18000	0	0	8	5716	5466	8944
3	18000	0	0	9	6256	5246	8455
4	18000	0	0	10	4639	4816	8211
5	18000	0	0				
6	18000	0	0				