CASES AND APPLICATIONS

in

Microsoft®
EXCEL
5.0

HOLT / KOTTAS / MARX

CASES AND APPLICATIONS IN MICROSOFT® EXCEL 5.0

Jack A. Holt

John F. Kottas

Gretchen Marx

IRWIN

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PREFACE

Thank you for selecting *Cases and Applications in Microsoft Excel 5.0* for use in your classroom. It is intended to be used in three ways: as a tutorial guide to the student learning Excel, as a complete pedagogical aid for the instructor and student, and as a reference guide for the student as he or she is completing the exercises and cases for this and subsequent classes.

This book is an outgrowth of our many years of teaching people to use electronic spreadsheets. We know students learn best through doing and practice. Hence, we strongly believe in the utilization of hands-on tutorials followed by lots of practice with exercises and cases. As in many schools, our students have access to Excel in computer labs but do not have access to Excel reference materials. Consequently, they need an economical reference guide to Excel. In addition, we know that instructors like to pick and choose the material and exercises that they feel best meet their students' needs and abilities. Not finding a spreadsheet text to satisfy these needs, Jack Holt decided in 1986 to write such a text. That original text, based on Lotus™ 1-2-3, went through five editions, each time being updated to incorporate the latest changes in the software including the current Lotus Release 5.0 version. By 1995, Microsoft's products were clearly dominating the desktop applications market. This text has now been completely rewritten for Microsoft Excel and reflects user-friendly Windows 3.X features not available in earlier Excel releases.

Our goal is to take students with little or no spreadsheet experience and help them become confirmed, knowledgeable, and confident Excel users. The book describes, for those students who don't have prior experience, general computer terms important for all users to understand. We introduce the student to the flexibility of using both the keyboard and mouse to perform Excel operations. In our many years of teaching, we have observed that a major problem for many new and experienced users alike is how to find their files once they have created them, so we have included a chapter on how to perform file operations using File Manager. Again, our goal is to help students become self-sufficient Excel users, which includes helping them understand the basics of using computers.

More than 40 percent of *Cases and Applications in Microsoft Excel 5.0* is tutorials, exercises, and cases. The balance is a reference guide to using Excel. Its guided hands-on examples and tutorials help new Excel users take those important early steps. Reinforcing practice is provided by more than 30 exercises and cases with subjects that range from accounting and finance to marketing and operations and with a difficulty range from very easy to very challenging.

In Chapter 1 we seek to provide perspective on the nature of this highly flexible and powerful business analysis and presentation tool, which has brought the microcomputer to the desks of middle and upper management. Chapter 2 is designed to help the student without much computer background navigate around what can be intimidating territory in which they are required to speak what amounts to a foreign language. Chapters 3 to 6 begin the tutorials with a guided overview of many common worksheet functions and are designed to get students using the computer right away. From our experience teaching Excel in the

classroom, we have found that a one-time walk-through of Excel's features is not sufficient to develop proficiency or master its use. Therefore, all of the material introduced in these chapters is reiterated in more detail in subsequent chapters.

Chapters 7 through 15 provide thorough coverage of fundamental Excel features, using Bayside Raquet and Fitness Club as the vehicle to present realistic business situations analyzed with Excel spreadsheets. In addition to financial statements, examples used in the hands-on tutorials in each chapter include membership lists, scheduling, inventory management, and other samples of organizational data. These chapters contain more than 35 hands-on tutorials through which students practice worksheet design, data entry and editing, formatting, styling, and charting. Advanced Excel features including data tables, database analysis, regression analysis, and macros are covered in Chapters 16 through 20.

Each chapter is designed to cover one topic to facilitate use of the text as a reference document. Most students should be able to complete the first six chapters independently in one or more visits to the lab. You may wish to review in class, and to allocate more hands-on lab time for each of the other chapters, in particular the more advanced chapters toward the end of the text. Throughout the text are boxed hints that give students special instructions or alert them to a particular feature that is being emphasized in the text. This new edition features screen captures throughout to guide students through the GUI interface that is at the core of Excel and the Windows environment.

The last part of the text contains 27 exercises designed to enhance the students' mastery of the material presented in the preceding chapters. The primary topic of each exercise and case is shown in a table at the beginning of the exercises. However, you may choose to assign any of the exercises at any point in the semester after the listed chapter is covered. The final portion of the text also contains seven business cases that will challenge the students once they have mastered using Excel. We encourage you to assign as many of these cases as possible. They represent the type of work students will be required to do in their careers after college and will give them better understanding of how to make use of Excel's capabilities in their other courses of study.

We hope you and your students enjoy this text. It is based on over 70 years of teaching and learning experience. Please feel free to send your comments to us.

Jack A. Holt
John F. Kottas
Gretchen Marx

c/o Garrett Glanz, Sponsoring Editor
Richard D. Irwin, Inc., Publishers
1333 Burr Ridge Parkway
Burr Ridge, IL 60521
(708) 789-4000

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CHAPTER 1

Overview of Spreadsheet Analysis and Excel

This chapter describes what a spreadsheet is and gives insight into why this genre of computer software has brought the microcomputer to the desks of managers and professionals. It explains some of the history behind spreadsheet programs and concludes with a description of the organization and contents of this book. The chapter also includes suggestions for working through the tutorials, exercises, and cases.

WHAT IS A SPREADSHEET?

A computer-based spreadsheet is built around a huge, electronic sheet of paper designed to perform mathematical calculations with computer speed. This electronic worksheet has a multitude of columns and rows whose intersections form a matrix of cells. This matrix organization has important implications for this visual and easy-to-use, yet flexible and powerful, analytical milieu. Your computer screen provides a movable view of only a small fraction of the cells in the matrix.

In any cell, you can enter one of three types of information: a number, a formula, or text. A number is the lowest level input that forms the basis for numerical analysis. Cell formulas specify how to compute new values from the values associated with other cells. The values associated with other cells are referenced in terms of the unique column and row designators that identify each cell. A formula can be as simple as adding the numbers in two other cells or as complex as figuring the internal rate of return associated with the cash flow values found in a series of cell locations.

It is important to recognize that a cell containing a formula does not display the formula; instead, the cell displays a single number, which is the current computed value of the cell formula. Whenever any cell's value changes, every formula dependent on that cell is instantaneously revised and its new value displayed.

Text entries are typically used to label and describe the various components of the numerical analysis undertaken and are given a null computational value. Text is also used as descriptive data in lists.

Because every cell possesses identical capabilities, you can arrange the components of your analysis in whatever manner best meets your needs within this visually oriented matrix. This visual orientation, coupled with design flexibility; automatic recalculation; and an arsenal of layout, formatting, and analysis tools, has made the spreadsheet a powerful and widely used business-analysis tool.

ILLUSTRATIONS OF WHAT SPREADSHEET ANALYSIS CAN DO

To illustrate the spreadsheet environment, consider its use in reporting and analyzing the profit/loss status of the hypothetical Ballwin plant, which is part of the XYZ Corporation. Figure 1.1 gives a summary of the plant's profit/loss statement for 1995. Notice how the two-dimensional worksheet matrix lends itself to the layout of Ballwin's profit/loss statement. Notice, too, how the labels clarify what the numbers represent. Column B contains the financial figures—revenue, expenses, and profit—for the first quarter of 1995, column C for the second quarter, and so on until you reach column F, which gives totals for the year.

Each row describes a different financial category. Across the top of the table is a title identifying it as the profit/loss statement for the 1995 operations of the Ballwin plant. Figure 1.1 does not show how the Total Expense, the Profits, and the Year values were obtained. The cell contents are the result of cell formulas. The total expense formula for the first quarter in cell B14 simply adds the values in cells B10, B11, and B12. The formula in cell D16 for profit/loss in the third quarter is the value associated with cell D7 less the value in cell D14.

These cell formulas have two interesting characteristics. First, if any cell used in a formula is changed, such as B10, then the cell containing the formula, such as B14, automatically reflects the new value. Second, if the XYZ Corporation standardizes profit/loss reporting for all its plants using the model in Figure 1.1, the formulas and almost all of the text have to be developed only once. A prebuilt application like this, which is meant to be used by different people, is called a template.

While worrying about rebuilding the Figure 1.1 model from scratch at each plant and for every year may seem ridiculous, you must consider the size and nature of the reporting/analysis templates used in business. These templates involve hundreds of row categories and tens of columns. Many hours are invested in devising a template that best meets the needs of the firm. Great care is taken to ensure the validity of the formulas employed. Many hours are spent using the spreadsheet's extensive formatting and printing capabilities to achieve a desirable appearance. Frequently, the

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FIGURE 1.1   Ballwin Plant 1995 Profit/Loss Statement

	A	B	C	D	E	F	G
1		1995 Profit/Loss					
2		Statement					
3		Ballwin Plant					
4							
5							
6		Qtr 1	Qtr 2	Qtr 3	Qtr 4	YEAR	
7	REVENUE	25,578	28,072	28,053	22,275	103,978	
8							
9	EXPENSES						
10	Cost of Goods Sold	12,533	13,755	13,746	10,915	50,949	
11	Overhead	8,000	8,000	8,400	8,400	32,800	
12	Other	2,450	1,500	3,000	1,200	8,150	
13							
14	Total Expenses	22,983	23,255	25,146	20,515	91,899	
15							
16	PROFIT	2,595	4,817	2,907	1,760	12,079	
17							
18		Note: All figures in thousands of dollars					
19							

spreadsheet's protection features are used to limit where data entries can be made. On large, complex templates, the spreadsheet's programming language is used to turn the template into a menu/macro-driven application, which can be used by people with little or no knowledge of the underlying spreadsheet.

Many firms today use spreadsheets as a consolidation tool. Consider the XYZ Corporation. Within two weeks after the end of the fiscal year, each of XYZ's 30 plants telecommunicates its completed profit/loss templates to corporate headquarters. XYZ headquarters has a master template that automatically draws in the data of the plant templates and consolidates these data to form the corporation's profit/loss report.

While the spreadsheet is frequently used in the reporting and consolidation of historical data, its real power resides in its ability to help project and analyze data. For example, it is natural that XYZ Corporation would like to project profit/loss statements for each of its plants over the next five years and combine the plant projections into a consolidated one for the corporation. To make such projections, the spreadsheet's ratio, charting, and regression analysis tools could be used to identify trends and seasonality in each plant's historical sales and expense data. Once these trends and seasonal patterns are discovered, formulas can be developed that will project the plant's profit/loss statements for the next five years. The spreadsheet's charting capabilities show how profits are likely to evolve.

Figure 1.2 shows such a projection for the Ballwin plant under the anticipated annual sales growth rate of 4 percent and other estimates of what is most likely to happen. Since there is significant uncertainty about some of the assumptions driving these projections, spreadsheet "what-if" analysis can be employed. Figure 1.2 shows the results of a what-if analysis of profits based on different assumed annual rates of sales growth. In this case, annual profits will not continue to grow unless the sales growth rate is over 5 percent a year, an optimistic figure. This is a clear indication that something needs to be done. Possibly the firm needs to undertake a cost-containment/reduction program at the Ballwin plant, or maybe its products need to be redesigned to become more competitive in the marketplace. Perhaps the firm needs to use a different advertising/promotion strategy. For the myriad of options open to XYZ, worksheet models can be built and what-if analyses performed to give the firm insight into how best to deal with the Ballwin situation.

FIGURE 1.2   Ballwin Plant Projected Growth