

Information for Decision Making

Readings in Cost
and Managerial
Accounting

THIRD EDITION

EDITED BY ALFRED RAPPAPORT

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and Managerial Accounting

Edited by

ALFRED RAPPAPORT

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Alfred Rappaport is the Leonard Spacek Professor of Accounting and Information Systems and director of the Accounting Research Center at Northwestern University. A graduate of Western Reserve University, he received his M.S. and Ph.D. degrees from the University of Illinois.

Professor Rappaport has served on task forces for the Financial Accounting Standards Board and as a consultant to the Securities and Exchange Commission and to many companies.

A member of the American Accounting Association, Rappaport has been its vice-president. He is consulting editor for Prentice-Hall's "Contemporary Topics in Accounting" series.

The author and editor of books and numerous articles on a broad range of accounting, finance, and managerial topics, Rappaport is best known for his writings on strategic financial planning and the relationship between corporate financial reporting and management decision making.

PREFACE

The subject matter of this book may be characterized by such labels as “management information systems,” “management accounting,” and “management decision making.” More specifically, this book is addressed to the informational aspects of management systems. Information, that is, data organized to be useful for decision making, is essential to the survival of all goal-oriented organizations. Recent developments in information technology, quantitative methods, and the behavioral sciences have greatly expanded the potential of information for organizational decision making. Where once the financial accounting model served as *the* formal information system, we are now witnessing the emergence of management information systems emphasizing mathematical models, systems philosophy, *ex ante* measures, and nonfinancial as well as financial measures. Thus the primary objective of this text is to relate these advances in the management sciences, including the behavioral sciences, to the task of effectively designing and using decision-oriented information systems.

To facilitate this objective the articles have been carefully selected after an extensive search of the literature on the basis of relevance and clarity of exposition. Because the emphasis throughout the book is on concepts rather than techniques, students with only modest training in quantitative methods should be able to read the selections with relative ease and comprehension. As a further aid to the reader, a summary highlighting salient points precedes each selection.

The readings were selected and organized to enable the instructor to use the text as a supplement for the first course in cost or management accounting in either an undergraduate or an MBA curriculum. For those who find that time limits the introduction of additional material in the basic course, the text should prove a useful vehicle for a second-level readings and case course in management accounting.

Only eleven of the articles appearing in this third edition were carried forward from the second edition. This significant turnover reflects both the fast pace of the field and the greater emphasis placed on choosing readings that are most compatible with the manner in which cost and management accounting courses are typically designed.

The readings are divided into ten chapters. The readings in Chapter I, “An Overview of Management Accounting,” are primarily directed to developing a framework for viewing information systems and decision making. Some instructors may choose to assign the Horngren article at the end of the course when students have gained a better perspective of management accounting. Cost estimation and cost allocation are covered in Chapter II. Longbrake provides a particularly lucid exposition of the application of statistical cost analysis to product costing and cost forecasting. Cost forecasting with learning curves (Bump) and assessments of cost allocation in managerial accounting settings (Thomas; Zimmerman) complete the chapter.

In Chapter III, “Cost, Price, and Output Decisions,” the readings extend simple cost-volume-profit analysis to incorporate product mix (Suver and Neumann), uncertainty (Jaedicke and Robichek), and differential impact on absorption versus direct

costing net income (Ricketts and Purdy). My favorite cost-volume-profit case is Bill French (ICH-4C39R). The Brenner article provides an analysis of the role of costs and other factors in pricing decisions.

The Demski article evaluating the traditional standard cost variance model has been retained from the second edition. New articles in Chapter IV, "Standard Costs and Analysis of Variances," cover profit impact of sales and cost variances (Shank and Churchill), productivity measurement (Ross and Bullock), statistical approach to performance evaluation (Bierman, Fouraker, and Jaedicke), and investigation of cost variance approaches (Kaplan). The readings on budgeting and financial models in Chapter V emphasize the advantages of financial modeling (Krueger and Kohlmeier), the application of probabilistic profit budgets (Ferrara and Hayya), and the behavioral dimensions of budgeting (Irvine).

Chapter VI readings on capital budgeting introduce the reader to two important aspects of the subject—inflation (Van Horne) and risk (Hespos and Strassmann; Blocher and Stickney). The remaining two articles in this chapter discuss the relative importance of refining capital budgeting techniques versus improving the quality of assumptions and strategic considerations (Hastie) and extending the discounted cash flow technique to evaluate a company's entire strategic plan (Rappaport).

The topic of "decentralized financial control systems" is covered in Chapters VII, VIII, and IX under the titles "Decentralization and Performance Evaluation," "Decentralization and Transfer Pricing," and "Designing Managerial Incentives," respectively. In Chapter VII, Reece and Cool survey the *Fortune* "1,000" companies and find that accounting ROI is a widely used measure of business unit or divisional performance. Solomon then analyzes and compares the two commonly used measures of return, the discounted cash flow rate of return and the book or accounting return. Branch examines the effect of managerial decisions on accounting ROI and suggests ways of improving the use of ROI as a performance measure. The last article in Chapter VII, by Vancil, deals with principal issues of decentralized management systems design.

Chapter VIII continues the consideration of decentralized financial control systems with an examination of the difficult problem of setting transfer prices. An overview article (Abdel-Khalik and Lusk), and two cases (Manes, Barrett) are presented.

Chapter IX, "Designing Managerial Incentives," begins with a lucid treatment of the incentive problem from an economic point of view by Demski. This is followed by a compensation scheme that ties salesmen's bonuses to their forecasts (Gonik). To conclude this chapter, the micro and macro impacts of short-run executive compensation systems and the role of accounting are discussed by Rappaport.

The message that pervades all of the readings in Chapter X, "Behavioral Aspects of Information," is that information systems designers not only must consider the problem the user is trying to solve and the data required to solve it but also must consider how the content and form of the information to be communicated may affect his or her behavior. Ridgway discusses the behavioral side effects of using single, multiple, and composite quantitative criteria for performance measurement. A theoretical analysis of the relationship between accounting and decision-making processes (Ijiri, Jaedicke, and Knight) is followed by a description of how individuals are influenced not only by the information they receive but also by the information they are required to communicate (Prakash and Rappaport).

My thanks to the authors and copyright holders of the selections included in this book. I also wish to express my appreciation to the many professors who offered valuable feedback on the first two editions. I am indebted to Charles T. Horngren and

Robert S. Kaplan for their wise counsel in the selections for this edition. Special thanks go to Ron Ledwith and Sonia Meyer of Prentice-Hall, throughout the production of this third edition, and to Ram and Radha Ramanan for their proofreading.

Alfred Rappaport

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I

AN OVERVIEW OF MANAGEMENT ACCOUNTING

Management Accounting: Where Are We?

CHARLES T. HORNGREN

The best accounting measure or system is that which produces the most benefit after deducting the costs of obtaining the data. Horngren traces management accounting's evolution from an emphasis on absolute truth to the present day information economics approach.

Reprinted from W. S. Albrecht, ed., *Management Accounting and Control*, Graduate School of Business, University of Wisconsin—Madison, 1975. Used by permission of Graduate School of Business, University of Wisconsin.

This paper presents some personal reactions to the evolution of management and cost accounting. My perspective is always changing, so this critique will undoubtedly continue to be modified as the years unfold.

THE DEVELOPMENT OF MANAGEMENT ACCOUNTING COURSES

The field of management accounting has come a long distance since I first learned accounting during the late 1940s. My early schooling in accounting was like that of thousands of other students—a heavy emphasis on public accounting and the production of accounting data for external purposes. Uses of accounting data internally were given little attention in textbooks and in classes. At that time (1949), there were almost zero courses in management accounting as it is known today.

When I was an undergraduate student, the cost accounting courses and textbooks were largely concerned with how systems could trace costs to products and services for income statements and balance sheets. In an exaggerated sense, the cost accountant's main mission might have been depicted as the pursuit of absolute truth,¹ where truth was defined in terms of getting as accurate or precise costs as possible. Indeed, some "advanced" cost accounting courses were largely concerned with how to track costs in complex production settings (e.g., three or four processes with varying spoilage, shrinkage, and waste in each process).

This absolute truth approach is more accurately labeled as the historical communication approach. The approach aims at producing a unique set of historical information for all purposes. The objective is to use measurement rules that supply unambiguous information in the sense that only one measurement system is acceptable. The user can then supply his or her own adjustments as desired.

This unique historical data phenomenon had a narrowing impact on impressionable students. For example, when I began teaching management accounting in 1953, I

¹ J. Demski, G. Feltham, C. Horngren, and R. Jaedicke, *A Conceptual Approach to Cost Determination* (Ames: Iowa State University Press, 1976), Chap. 1, pp. 2–3. Also see Report of the Committee on Concepts and Standards—Internal Planning and Control, *Accounting Review*, Supplement to Vol. 49 (1974), pp. 79–81. Also see Yuji Ijiri, *Theory of Accounting Measurement* (Sarasota, Fla.: American Accounting Association, 1975), pp. 30–33.

encountered several students who (like me) initially resisted the idea that historical costs or book values might be safely ignored in some decision situations. The absolutist phenomenon also hobbled students' ability to see the potential of direct costing or contribution reporting. Inevitably, the students with heavy previous training in accounting offered the strongest opposition. Somehow these ideas were heretical because they challenged a measure that was perceived as a unique and unalterable truth.

During the 1950s, new courses in management accounting were begun in several schools. These courses were required in many MBA programs. During the 1960s and 1970s, management accounting courses have also tended to become required courses in undergraduate programs. Meanwhile, the cost accounting courses were taking on a much heavier management accounting flavor. (This paper will use "management accounting" to encompass all courses and accounting research that stress internal uses of accounting data.)

Consider why management accounting started to flourish. It remedied many defects, including the preoccupation with finding "the" unique cost. The most refreshing contribution of management accounting has been its focus on the potential uses of decisions that might be affected by the accounting data. The theme of "different costs for different purposes" was stressed—a preoccupation with finding conditional truth. This conditional truth theme has been labeled as the user decision model approach. Decision models are assumed for output levels, investments, and other purposes. Deductive reasoning is used to isolate and measure relevant data. Thus, accounting became more complex, more fascinating, and more responsive to students' perceived future roles. After all, only a slim percentage of students in accounting courses become lifelong career specialists in auditing or income taxes. Instead, the large percentage become managers or accountants who serve managers.

As I have taught various courses in management accounting through the years, I have been increasingly troubled by its decision model approach. It has too much of an ad hoc, or "let's solve this case" flavor that I find unsatisfying. There is no unity, no common element beyond the caveat that each situation "requires" different costs.

I started casting about a more robust conceptual framework that I could apply serenely in this variety of decision settings. My present views are slightly more comforting, but my quest for the grail has failed. My search for a framework will continue, but it will be a look for modest improvements in my slippery grasp of an open-ended subject. My current perceptions are an amalgamation of much influential thinking done by many individuals, too many to name without overlooking somebody. I have tested these perceptions with my classes, so let me test them with you.

FOCUS ON DECISIONS

As most of us can testify, our individual approaches to professional problems are frequently affected by our readings and by our conversations with colleagues. The authors who recently have influenced me the most have been my colleagues, Joel Demski and Gerald Feltham.² They approach these issues with more rigor and abstraction than I can muster. They also may cringe at my simplifications of their ideas. But our general philosophy is similar.

²See Joel S. Demski, *Information Analysis* (Reading, Mass.: Addison-Wesley, 1972); and Gerald A. Feltham, *Information Evaluation* (Sarasota, Fla.: American Accounting Association, 1972). The Demski-Feltham approach has influenced the American Accounting Association committee reports on management accounting. For example, see *Accounting Review*, Supplements for 1972, pp. 317-35; 1973, pp. 234-35; and 1974, pp. 79-99. Demski and Feltham have been heavily influenced by the publications of Kenneth Arrow and Jacob Marschak.

The Demski-Feltham approach has been called information analysis or information evaluation; it might also be dubbed as the “costly truth” approach (as contrasted with the “true cost” approach). They fundamentally regard management accounting as being concerned with how accounting data facilitate rational economic choices by internal decision makers. Their framework focuses on the roles of the decision maker and the accountant. The decision maker selects an action in a specific situation. The accountant provides information to facilitate the decision maker’s choice. Of course, the two roles may be performed by the same individual, different individuals, or a group.³

The costly truth approach emphasizes a method of analysis that explicitly regards the accountant as a decision maker. He (or she) must identify the information alternatives, evaluate them in terms of some set of objectives, deal with the existence of uncertainty, and choose the most desirable alternative. The information evaluation method can be plainly called a cost-benefit method whereby the accountant predicts the relationships among the accounting system, the decision maker’s choice process, the selected action, and the resulting consequences. The central thrust is expressed by the question: In a world of uncertainty, how much are you willing to pay for one information system versus another? What system are you willing to buy?

ACCOUNTING INFORMATION AS AN ECONOMIC GOOD

Information is a commodity. Measurement consumes resources. Kenneth Arrow has commented: “. . . in organizational control, as in automobiles, cuisine, and every other commodity, the benefits of improved quality [of information] must always be compared with their costs.”⁴

Accounting data are economic goods (just like cuisine and smog control devices) obtainable at various costs. The manager, therefore, buys accounting data as well as other data. Ideally, we should evaluate various types of information in terms of whether the action choices will be affected by the information in question. For example, if the information will not affect the action choice, it is valueless. On the other hand, if the information will lead the manager to a better action choice, then its value is measurable in terms of the increase in net benefit (e.g., net profit after deducting the costs of getting the information) obtained with the information as compared to the net benefit obtained without the information. In its most simplified sense, we have described a cost-benefit approach to management accounting issues. The cost of acquiring accounting information includes compilation, processing, and education, which can be enormously expensive.

Consider how the economist approaches the question of buying commodities like butter or internal accounting information. Do we see economics textbooks that tell us how much or what quality of butter the consumer needs? No. The economist tells us about the conditions of optimality (e.g., for the consumer to be in equilibrium, the marginal utility of the last dollar spent on each commodity must be equal). In

³Ijiri, *op. cit.*, p. 45, favors another approach, the *information control approach*. He states: “In a fourth method which we propose here, the same relationship is observed but is shifted to one level higher. A systems designer will now foresee all optimization behavior of accountants under each alternative rule. He will then select the one method most suitable for achieving the overall goal of the system. We may call this the *information control approach*, since one of the purposes of issuing rules is to control information processing systems by eliminating much of the discretionary activity of accountants.” Ijiri also (pp. 32–33) stresses accountability as what distinguishes accounting from other information systems.

⁴Kenneth J. Arrow, “Control in Large Organizations,” *Management Science*, 10, No. 3 (April 1964), 401.