

DONALD DEL MAR

OPERATIONS

AND

**INDUSTRIAL
MANAGEMENT**

DESIGNING AND MANAGING

FOR PRODUCTIVITY



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DESIGNING AND MANAGING

FOR PRODUCTIVITY

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TO ROBERT

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**OPERATIONS
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WERTHER and DAVIS Personnel Management and Human Resources
WOFFORD, GERLOFF, and CUMMINS Organizational Communications:
The Keystone to Managerial Effectiveness

PREFACE

"I have been devoting my whole time and almost every cent of money which I can spare from my income, to promoting the cause of Scientific Management; and my object in this work is primarily, I may say almost entirely, that of securing a larger measure of prosperity and happiness for the working people. I am, of course, and ought to be, interested in the material welfare of the companies who are using Scientific Management; but if the results of my work were merely to increase the dividends and prosperity of the manufacturing companies, I certainly should not devote my time to this object. Scientific Management is for me, then, primarily a means of bettering the condition of the working people."

Frederick W. Taylor (1857-1915)

Quoted from "Taylor the Creative Leader,"
Oliver Sheldon, *Bulletin of the Taylor Society*,
February 1924.

Operations management is concerned with the activities, concepts, and techniques employed in producing goods and services. When emphasis was on the production of goods alone, the term "production management" was used to describe these managerial responsibilities. The term "operations management" is more applicable today because of the equal emphasis on providing both goods and services.

To the student: This text was written for a one- or two-semester introductory course in the area of operations management. Its basic objective is to introduce the upper-division undergraduate or the graduate student to the quantitative and qualitative techniques and concepts most useful to those who actually manage operations. Since the text is intended to be equally applicable to both product and service industries, it would be highly repetitive to discuss material within the context of the manufacturing industries and repeat it in large part for the service sector. So separate treatment is avoided by frequent cross-references and by the choice of examples. The further illustration of both concepts and techniques is left to the instructor, and to the student's experience and imagination.

A second objective is to integrate the concepts and techniques discussed and developed within the text into a body of knowledge sufficient in both depth and breadth to enable the student to apply them to on-the-job managerial problems, particularly those involving the formulation and execution of strategy at the operations level. A third objective is to avoid presenting the student with a formulary "bag

of tricks” or another text which substitutes an undue emphasis on quantitative methods for a discussion of real problems and realistic solutions. The last objective is to interject the concept of trade-offs and general management considerations in the evaluation of decision-making alternatives. This last objective can be achieved only by employing multiple criteria in decision making in lieu of those criteria emanating from the use of narrow and short-run simplistic “optimal” decision models, formulas, and parochial managerial perspectives.

Having read this far, the perceptive student may begin to question the legitimacy of the title of this text (and texts having similar titles) relative to the topics included and the responsibilities inferred for an operations manager. This title and similar titles do not define the activities or the responsibilities assigned to operations managers. If we separated those individuals within an organization who define organizational objectives from those who are responsible for achieving them, we would note that the majority of employees are specifically hired to achieve objectives set by top managers. The purpose of this text is to provide the student with the educational background to aid him or her in formulating viable strategies for carrying out those assigned responsibilities. The actual application of the techniques discussed in this text, however, will in large part be assigned to others. It should be obvious that the strategy formulated by individuals at lower management levels, including foremen or first-line supervisors, will be very limited in scope and in execution time because of their narrow responsibilities and limited authority. Because all managerial positions, including first-line supervision, are justified on the expected synergistic effect resulting from the skillful carrying out of the assigned managerial responsibilities, it is reasonable to conclude that the greater the number of strategic alternatives a supervisor or manager can identify, the greater the probability that a viable strategy can be identified.

Regarding the tasks assigned operations supervisors and managers, it should be noted that most of their time and energy is spent in exercising the general “principles of management” discussed in introductory courses in management. These activities, functions, and responsibilities include planning, organizing, coordinating, directing, staffing, and controlling. Because their positions require that they be both formulators and implementers of strategy, they must possess the knowledge and expertise to identify problems and opportunities and to formulate and implement strategy. This requires that they receive training in general management practices and have a substantial knowledge of such diverse topics as product design, process selection, job design, work standards, quality control, production planning and scheduling, and safety.

To the instructor: The content and organization of this text is intended to exceed the AACSB requirements in the area of production or operations management. In contrast with many other texts on operations management, this text is deliberately slanted toward line rather than staff positions. This is reflected in the increased emphasis on concepts of management and somewhat decreased emphasis on quantitative analysis and operations research methodology. The material presented in the chapters is judged more relevant to the needs of operations managers than the topics in the chapter supplements. The techniques discussed in the supplements, though relevant and important for managing operations, are judged to be of lesser long-run value.

Preceding each chapter is a list of the competencies that a student should achieve from having studied the chapter. These expectations are reflected directly in the materials presented and the questions and problems at the end of each chapter.

Frequently the competency expectations and the questions and problems at the end of each chapter will require that the student integrate what was discussed in the immediate chapter with the material in preceding chapters. Each chapter begins with a brief perspective that relates the new topics to those previously discussed, reinforcing what has been learned and assisting the student in integrating the new material. It is hoped that by such means each topic will be perceived and discussed as part of the greater whole and not "just another isolated technique." The order in which the selected topics and concepts are presented in this text was chosen by considering the objectives sought and their logical interrelationships. Lastly, the chapter summaries highlight the major topics discussed.

To both student and instructor: This is not intended to be a self-instruction text. The material included requires more than a cursory reading, as can be verified by the questions and problems at the end of each chapter. Conceptual material is judged to be of equal or greater long-run value than solving parochial problems. A concerted effort has been made to fully explain and illustrate the concepts introduced so that the reader with little or no actual managerial experience can grasp the more complex dimensions of the specific topic being discussed.

Comments, criticisms, and suggestions pertaining to this text are invited as they will enable the author to better meet the requirements of instructors and students in future editions.

Having completed the manuscript for this book, I would like to acknowledge my indebtedness to many people who assisted me both directly and indirectly. Their books and articles as well as our association and conversations are reflected throughout this text. Many of their names are mentioned in the text or in the bibliographies, while I have regrettably forgotten others. I owe a considerable debt to E. I. Du Pont de Nemours and Company in whose employment I learned much about the art and science of management.

I wish to especially note the contributions of Connie Chandler, whose editorial expertise and sharp eye has been most helpful in making the manuscript more readable. Lastly, despite the editorial assistance and the helpful comments from many reviewers including Steven Campbell, Loras College; Kiran J. Desai, Middle Tennessee State University; Stephen Goodman, Florida State University; Lawrence Hill, California State University; Dan Madison, California State University; Ann Maruchek, University of North Carolina at Chapel Hill; and Robert C. Meier, Western Washington University, the residual errors due to either omission or commission are mine.

Donald Del Mar

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