

Preface

The idea for this book began with a discussion at a professional meeting regarding teaching materials. As educators in schools of business, we each were looking for materials and teaching approaches to motivate students of operations management regarding the usefulness of the models and methods presented in the basic OM course. Our experience has been that many of the basic OM concepts have been “fleshed out” and so deeply developed to the point where basic insights are often lost in the details. Over the years, we both have been heavily influenced by Art Geoffrion’s classic article “The Purpose of Mathematical Programming is Insight, Not Numbers,” *Interfaces*, 1976. We believe that this principle is fundamental in educating users of the “products” we deliver in the classroom, and so our project—this book—was initiated with a great deal of enthusiasm. Our first task was to enlist the assistance of well-known individuals in the field who have the professional credentials to gain the attention of potential readers, yet are able to tell their story in language appropriate for our target audience. We think you will agree that we have been successful in our choice of authors.

The purpose of this book is to provide a means for making selected basic operations management models and principles more accessible to students and practicing managers. The book consists of several chapters, each of which is written by a well-known expert in the field. Our hope is that this user-friendly book will help the reader to develop insights with respect to a number of models that are important in the study and practice of operations management. We believe that one of the primary purposes of any model is to build intuition and generate insights. Often, a model is developed to be able to better understand phenomena that are otherwise difficult to comprehend. Models can also help in verifying the correctness of an intuition or judgment. As an example, managers may use the SPT (shortest processing time) method to schedule completion of paperwork with the objective of “clearing their desk”—removing as many jobs from their desk as quickly as possible. As it turns out, it can be easily shown that SPT sequencing minimizes average job flow time (see Chap. 1). Thus, in this case, it is comforting to know that the manager’s intuition is correct. However, it is also essential to know when (and why!) intuition fails, and a well-structured model should convey this information. In spite of the fact that many educators recognize the intuition-building power of simple models, we are not aware of any existing book that has a focus similar to ours.

As mentioned above, Chap. 1 deals with the shortest process time principle. Chapter 2 contains insight on the knapsack problem—a problem that often arises as a subproblem in more complex situations. The notion of process flexibility, and how to efficiently attain it, is the subject of Chap. 3, while queuing concepts are the subject of Chap. 4. A key relationship between flow rate, flow time, and units in the system—Little’s Law—is discussed in Chap. 5. In Chap. 6, the use of the median, as opposed to mean, is shown to be a best choice in certain situations. The news-vendor model, a means of balancing “too much” versus “not enough,” is the subject of Chap. 7, while the economic order quantity inventory model is covered in Chap. 8. The pooling principle, a means of mitigating variance, is the topic of the final chapter.

To ensure that the book is accessible by our target audience, the chapters are written with students and managers in mind. Reading the book should help in developing a deeper appreciation for models and their applications. One measure of accessibility is that individuals only vaguely familiar with OM principles should be able to read and comprehend major portions of the book. We sincerely hope that the book will meet this test.

This book should appeal to three major audiences: (a) teachers of introductory courses in OM, (b) students who are taking one of their first courses in OM, and (c) managers who face OM decisions on a regular basis.

As professors who have considerable experience in teaching OM, we have found that students value insights gained by the models and tools that are the subject of this book. In addition, early in our careers we experienced a certain level of “discomfort” in teaching some of these models. This discomfort arose because as teaching “rookies” we lacked the maturity and experience to do proper justice to the material. Thus, we hope that the background and examples provided by the book will be of considerable help to “new” teachers.

Finally, we hope that the book will also appeal to those managers who believe that decision technology tools can be brought to bear on the problems they face.

Although each chapter of this book treats a different fundamental OM concept, we have made every effort to have a uniform writing style and (as much as possible) consistency in notation, etc. With this in mind, the book can be used in its entirety in an OM course. Alternatively, individual chapters can be used in a stand-alone situation since material does not “build” progressively through the book. For our managerial audience, we see the book as an excellent reference source.

We sincerely hope that you will find the book useful and that it will be a valuable addition to your personal library.

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