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*This book is dedicated to:
My wife Kusum, daughter Chetna
and grand-daughters Esha and Neha*

Preface

I have taught Materials Management at IIT Delhi, AIT Bangkok and MDI Gurgaon for the past four decades in the systems perspective that this book has adopted. I did not come across any book which would give a balanced coverage on quantitative and qualitative aspects of Materials Management in the holistic sense. My students were primarily relying on the lecture notes developed by me from a variety of sources and were inspiring me to write a book that meets their needs. The idea of writing this book was in my mind for nearly two decades. In the meantime, the term supply chain management became a buzz word and I wondered if I have missed the opportunity to tell the future generations about how I had looked at managing materials all these four decades of my teaching and research. I realized that managerial terminologies might have seasonality but the role of materials management in the integrated systems framework that I have been preaching will perhaps never diminish and hence I ventured to write down on the subject that has been so significant in shaping my career in teaching and research. Perhaps response of readers to this book will determine if my emphasis on systems thinking in managing materials has had some merit.

Materials account for more than half the cost of doing business and remain the biggest single element of cost. If an organization manages its materials well, it seems to be doing well. Companies with high inventory turnover ratios have done invariably much better than those with lower ratios. The objective of materials manager focussed in this book is to get most out of each rupee (or dollar) invested in materials, by addressing the hidden as well as visible costs related to managing materials. In simple terms, if we can manage materials to reduce inventories, eliminate waste, avoid shortages and reduce purchase bill – all simultaneously – we are doing well on materials management front.

The book has 21 Chapters. Systems approach has been explained in the first chapter, which also gives an overview of the various facets of the systems approach. Inventories are the central focus of materials management and are seen as ‘a usable but idle resource’ which brings out the conflicting costs in managing inventories. Chapters on inventory control are understandably quantitative in nature, but effort has been made to keep the modeling complexity simple to retain the manager’s interests in it. Purpose of models is to gain managerial insights, and this focus has been retained in the book throughout. Macro view through aggregate inventory

models, exchange curve, selective inventory management (SIM) and the coverage analysis has been dovetailed with micro view in managing individual item's inventory and the sensitivity analysis is discussed to develop rational operating inventory policies.

In the past, there have been books on materials management which focussed only on inventories in a very thorough but only mathematical sense. On the other hand, there have been books which are basically descriptive with some focus on classical EOQ model. In the true spirit of integrated systems approach, this book provides an optimal blend of the two extremes and perhaps that will be the USP of this book.

The dilemma of materials management vs. supply chain management is attempted to be resolved here by treating these concepts in complementary mode rather than competitive mode. Supply chain management looks at systems integration facilitated through IT to look at 'supply through the system' as a shared objective. It tends to provide overall philosophy, strategy and concepts which must then be pursued in depth at the firm level in managing materials into, through and out of it. Thus the two concepts can and even should coexist. I cannot imagine materials management to be ever out of focus for any company trying to remain competitive. Hence the subject will remain important for ever.

The structure of this book has been designed to treat it like a textbook for post-graduate students in business, management and industrial engineering. Hence each chapter starts with an introduction, develops the concept, presents models wherever required and concludes with the chapter summary. It then includes conceptual review/questions and numerical questions and a 'case study' at the end. Managerial insights from the models are the main learning outcomes expected from each chapter. The so-called case study included in each chapter is intended only for facilitating learning by critically examining a constructed, realistic situation, though these are not the 'real' studies of any particular situation. A number of questions are raised at the end of the situation to encourage better understanding of the issues discussed in the chapter. Since all these cases are 'constructed', the names of firms and various actors in each case are hypothetical and randomly generated with 'Rajeev' – as one common name in all these constructed cases who portrays a senior person, generally serious in inspiring the performance and attempts to reconcile various view points. I hope readers will like this new way of projecting a 'case study' as a tool to facilitate learning, keeping it simple and focused, free from too much data and long dialogues.

I have attempted to borrow from the best sources available to me on the subject and have given them due credit wherever possible. I am indebted to the authors of various books, theses and papers whose work I have included and acknowledge their contributions, as the knowledge created is essentially a continuously accumulated contribution of many people engaged in the profession and ought to be recognized. I have tried to prevent any errors and omissions as far as possible but I will be happy to rectify if readers detect any errors and let me know. Any suggestions to improve the work in its future editions are also welcome and will be gratefully acknowledged.

I would like to place on record my deep appreciation to my countless students who liked the subject the way I was teaching and encouraged me to document it in a book so that they can find one single book adequate for the full semester course. I should have responded to their call much earlier, but better late than never. All my former doctoral students – 37 of them – have been like an extended family, and I owe to all of them the strength and energy with which I have been able to sustain for the past 46 years of my teaching career, but some with whom I have had continued interaction must be specifically acknowledged: Dr. Upendra Kumar, Prof. A. Subash Babu, Prof. G. Padmanabhan, Prof. Suresh Garg, Prof. Ravi Shankar, Prof. A. Noorul Haq, Prof. A. K. Vij, Dr. Rajesh Chadha, Dr. Rupesh Pati, Prof. B. S. Sahay and Prof. K. M. Mital are some of those who have interacted more with me. I also thank Prof. S. G. Deshmukh, my second generation of former scholars (scholar's scholar) who has been a source of strength and inspiration to me and has been a wonderful colleague as well, at IIT Delhi. I wish my dear former student and colleague late Prof. Arun Kanda was here to see this book as he constantly reminded me to write this but I could not do it while he was with us in this world.

My wife, Kusum, has played a major role in supporting me and in shaping me as a person as well an academic. I place on record my deep appreciation for her role. My daughter, Chetna, and grand-daughters, Esha and Neha, are the source of strength to me and I have decided to dedicate this book to these special persons in my life. I also thank my son-in-law, Mr. Rajeev Dewan, and my sister-in-law, Mrs. Saroj Rajware, for their continuous support.

At the end, I place on record my deepest sense of appreciation to my Senior Executive Assistant, Mr. Aroop Goswamy, for his enthusiasm in supporting me through secretarial assistance in preparing the manuscript. His passion matched with mine to deliver the manuscript as planned. I also thank Mr. Lalit Narayan Lal, Sr. Executive Assistant (Graphic Designer) and Mr. Jatin Sharma for their help. I am grateful to ITM University, Gurgaon; the Chancellor and members of the Governing Body for providing the right and congenial academic environment so that I could write a textbook while still performing the function of the Vice Chancellor of the University. By writing this book, I have attempted to fulfill my commitment to myself; long overdue, but it is up to the readers to let me know if it was worth it. I shall be grateful to receive any feedback and suggestions for further improvement.

Gurgaon, Haryana, India
March 2014

Prem Vrat

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