双语教学丛书

商业流程管理

Managing Business Process Flows

拉维·恩纽平迪(Ravi Anupindi)
森尼尔·乔普瑞(Sunil Chopra)
舒德凯·D·德什穆克(Sudhakar D. Deshmukh) 著
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前　言

商业流程管理（Managing Business Process Flows，MBPF）是研究运营中的某些核心观念的一种创新方法，它和财务、营销一起构成了商业的3个主要功能领域。MBPF认为运营管理即为对业务流程的设计和管理，并把这个观点作为研究运营的统一范例。

MBPF使用一种有说服力的方法分3步讨论核心观念。首先模拟并了解流程以及其中的各种“流”；然后研究流程结构和业绩指标之间的因果关系；最后，通过筛选管理方法（“流程驱动力”）并考察它们对流程业绩的影响来实施管理措施。

本书（包括4个部分）的目的是说明管理者如何计划和控制流程结构和流程驱动力以实现所希望的企业流程业绩。

第1部分，流程管理与战略。引入了商业流程和管理战略的基本概念。流程是所有生产和运输产品（包括商品和服务）以满足客户需求的组织的核心技术。流程是利用资本和人力资源，经过一系列相互联系的工序，把投入转换为产出的过程。流程管理战略是指建立所提供的产品特征的竞争优势，并匹配流程能力和目标产品特征。

第2部分，流程评估。探讨了关键的流程业绩衡量指标、它们之间的关系以及控制它们的管理方法，尤其是流程时间、流率和存货这3个影响流程业绩的运作指标。可以通过缩短关键工序的时间来减少流程时间，通过提高流程产能来提高流率，通过减少批量规模来减少存货。在这部分中，我们将重点研究平均价值而暂且忽略不确定性对流程业绩的影响。流程时间、流率和存货的平均价值可以利用利特尔（Little）法则联系起来。

第3部分，流程变动。探讨了流程中的不确定性对流程业绩的影响，同时也探讨了规划并控制它的管理方法。在流入和流出出现变动的情况下，安全存货可用来维持材料和产品的可获得性。因为流入和加工时间存在可变性，安全产能可以使流程时间最小化。安全时间为客户服务时间提供了一个可靠估计。反馈控制用来随时动态地监控和调整流程业绩。

第4部分，流程整合。通过最经济的流程网介绍信息流和物流同步原则。理想状况是消除额外成本、缺陷、延迟和存货所造成的浪费。长期的方法是促使流程更加集约、灵活和可预测，减少由于规模经济和流程变化所带来的预测的频繁变动。它需要不断地披露并消除无效率、死板和变动的根源，利用信息技术整合各种分支流程，其目的是设计和控制流程使其连续流动而没有等待、存货和缺陷。最后，我们总结出改进流程的不同的哲学理念。

附录包括：

- MBPF“方法”的总结。期望MBPF清单对行动导向型的读者会有所帮助。
- 概率和统计的背景资料。假设本书的读者已经对这些概念有所了解。

本书的许多练习题都已经用流程模型建模，读者可以从本书的网站（http：//www．prenhall．com/anupindi）上下载这些模型。

Preface

Managing Business Process Flows (MBPF) is a novel approach to studying some of the core concepts in operations, one of the three major functional fields in business together with finance and marketing. MBPF views operations management as the design and management of business processes and uses this process view as the unifying paradigm to study operations.

MBPF uses a logical and rigorous approach to discuss core concepts in three steps. First model and understand the process and its flows. Then study causal relationships between process structure and certain performance metrics. Finally, formulate implications for managerial actions by filtering out managerial levers ("process drivers") and their impact on process performance.

The objective of the book, which consists of four parts, is to show how managers can plan and control process structure and process drivers to achieve desired business process performance.

Part I, Process Management and Strategy, introduces the basic concepts of business processes and management strategy. Processes are core technologies of all organizations for producing and delivering products (including goods and services) aimed at satisfying customer needs. Processes involve transforming inputs into outputs by means of capital and labor resources that carry out a set of interrelated activities. Process management strategy involves establishing competitive priorities about product attributes to provide, and matching the process capabilities with the targeted product attributes.

Part II, Process Flow Measurement, examines key process measures, their relationships, and managerial levers for controlling them. In particular, flow time, flow rate, and inventory are three operational measures that affect the financial measures of process performance. Flow time can be decreased by shortening critical activity times, flow rates can be increased by increasing the process capacity, and inventory can be decreased by reducing the batch sizes. Throughout this part, our focus will be on the average values, ignoring for now the impact of uncertainty in process performance. The average values of flow time, flow rate, and inventory are related through the *Little's Law*.

Part III, Process Flow Variability, studies the effect of uncertainty in flows on the process performance, and the managerial levers to plan for and control it. Safety inventory is used to maintain material and product availability in spite of variability in inflows and outflows. Safety capacity is used to minimize flow times due to variability in inflows and processing times. Safety time is used to provide a reliable estimate of response time to serve a customer. Finally, feedback control is used to monitor and adjust the process performance dynamically over time.

Finally, Part IV, Process Integration, concludes with principles of synchronization of flows of materials and information through a network of processes most economically. The ideal is to eliminate waste in form of excess costs, defects, delays, and inventories. Instead of responding to the economies of scale and variability in flows, the long term approach is to reduce the need for such responses by making processes lean, flexible and predictable. It requires continual exposure and elimination of sources of inefficiency, rigidity, and variability, and use of information technology to integrate various subprocesses. The goal is to design and control the process for continuous flows without waits, inventories, and defects. We conclude with different philosophies of process improvement.

The Appendices contain

- a summary of the "levers" to manage business processes. It is hoped that MBPF Checklist will be useful to the action-oriented reader.
- some background material in probability and statistics. A reader of this book is assumed to have knowledge of these concepts.

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Finally, a student version of the simulation software ProcessModel is enclosed with the book. ProcessModel can be used to design, simulate and communicate processes. The capabilities of the software include flowcharting components, simulation logic and animation. Additional features of the software include hierarchical modeling (to develop levels of detail) and layering capability (to organize complex charts), statistical distribution generator, an extensive library of built-in flowcharting graphics, built-in business diagram templates, statistical process control charting capability, and a state of the art flowcharting package. The software comes complete with a built-in comprehensive training program and an online manual.

Several problem sets from the book chapters have been modeled using ProcessModel. These can be accessed from the book web site located at:

http://www.prenhall.com/anupindi

This book has evolved from a set of notes written by the authors and used in teaching the core Operations Management class at the Kellogg Graduate School of Management. We are grateful to the students in the full-time (MM), the part-time (TMP), and the executive masters program (EMP) at Kellogg for their patience and support with the early versions of this manuscript. In addition, several schools other than Kellogg have used the manuscript in its custom published form. We are particularly indebted to Larry Robinson at Cornell University and George Monahan at the University of Illinois at Champaign Urbana, for several in-depth comments on the manuscript that have resulted in significant improvements. At Kellogg, in addition to us, Krishnan Anand has used the manuscript to teach the TMP students. His suggestions and comments, especially the Loan Application Flow example in chapter 3, are greatly appreciated. We are also grateful to several reviewers of early versions of the manuscript for their constructive suggestions.

In addition, we appreciate the efforts of several people at Prentice Hall. The manuscript has benefited significantly from extensive and meticulous reviews from Ronald Librach, our developmental editor, and Carey Lange, our copy editor. Evyan Jengo was our patient and quality-inspiring production manager; she masterfully incorporated our mass of last-minute changes in the manuscript. We appreciate the efforts of Tom Tucker, our editor, in patiently coordinating the entire project. We acknowledge Scott Baird, CEO of ProModel Corporation, for developing some of the exercises in the problem sets using ProcessModel software.

Finally, all of us have been influenced in various ways by how we were taught operations at our respective alma maters. Parts of the book reflect what each of us imbibed from the various classes we took. So, we thank our mentors and other faculty at Northwestern University, Carnegie Mellon University, Stanford University, State University of New York at Stony Brook, and University of California at Berkeley. Last, but not least, we would like to thank our families for their support during this effort.

Ravi Anupindi
Sunil Chopra
Sudhakar D. Deshmukh
Jan A. Van Mieghem
Eitan Zemel

Kellogg Graduate School of Management
Northwestern University

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PART

I

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