

## **Chapter 1 Introduction**

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## 1.1 Scope

The Spreadsheet Operations Manager (SOM) is a comprehensive set of 26 professional worksheet models for use with Microsoft Excel. These models automate a variety of operations tasks. Forecasting is the first step in most operations management problems. SOM forecasting models include simple exponential smoothing and a powerful trend-adjusted smoothing model that can produce linear, exponential, or damped-exponential forecasts. Both simple and trend-adjusted smoothing can be used with two types of seasonal adjustment, additive and multiplicative.

Inventory and production planning tools include the standard EOQ and modified versions for backorders, quantity discounts, and problems where reorders are received gradually over time. A reorder point model computes safety stocks that meet a target probability of shortage during leadtime or a target number of shortages. To locate distribution centers for inventories, the center-of-gravity model is available. In material requirements planning, you can compute gross and net requirements and planned order receipts and releases. In aggregate production planning, you can experiment with work force and overtime strategies to meet monthly production targets. Other production planning tools include run-out time management across a group of products and estimation of the effects of learning curves.

The scheduling models sequence jobs on a single work station to minimize lateness or average processing time. In flow shops with work stations in series, the scheduling models also minimize makespan.

SOM includes all of the quality control models commonly used in practice. These models design sampling plans and monitor the following results: sample means and ranges, individual observations, percent defective in samples, and sample defects per unit.

Finally, queues and waiting times are issues in most service businesses. SOM worksheets automate all of the practical models for queuing analysis and simplify the what-if analysis necessary to design staffing plans.

## 1.2 References

The worksheets in SOM perform most of the quantitative analysis in three textbooks:

Chase, R. B., Aquilano, N. J., and Jacobs, F. R., *Production and Operations Management* (Ninth Edition), Homewood, Illinois: Irwin/McGraw-Hill, 2001.

Heizer, J. and Render, B., *Operations Management* (Seventh Edition), Prentice-Hall, 2004.

Levin, R. I., Rubin, D. S., Stinson, J. P., and Gardner, E. S., Jr., *Quantitative Approaches to Management* (Eighth Edition), New York: McGraw-Hill, 1995.