Faculty Working Papers

EVALUATION OF SUBJECTS POSSIBLY INCLUDED IN COURSES ON PRODUCTION AND OPERATIONS MANAGEMENT -- REPORT OF THE RESULT OF THE SURVEY

Hirohide Hinomoto, Professor, Department of Business Administration

#722

College of Commerce and Business Administration
University of Illinois at Urbana-Champaign

FACULTY WORKING PAPERS

College of Commerce and Business Administration

University of Illinois at Urbana-Champaign

October 24, 1980

EVALUATION OF SUBJECTS POSSIBLY INCLUDED IN COURSES ON PRODUCTION AND OPERATIONS MANAGEMENT -- REPORT OF THE RESULT OF THE SURVEY

Hirohide Hinomoto, Professor, Department of Business Administration

#722

Summary

A questionnaire survey was conducted to assess the relevance of subjects discussed in texts on production and operations management. The questionnaire was distributed to members of the Advisory Council of our College and Vice Presidents of manufacturing of Fortune 500 industrial firms in Illinois. Seventy persons responded to the questionnaire. This report lists the frequency distribution of ratings of each subject given by the respondents and the weighted average of these ratings.

I. EXPLANATION OF THE REPORT

The MBA program at the University of Illinois, Urbana-Champaign, currently includes twelve courses as the core requirements for all students. Of these requirements, B.A. 467 (Production and Operations Management) is the only course dealing with subjects related to industrial operations. Since all MBA students are asked to take the course regardless of their future career interests, its main objective might appropriately be to provide students with a general background in industrial operations management rather than to train them to become experts on production management techniques.

In the Spring of 1980, a questionnaire survey was conducted to learn the thoughts of experienced professionals in industry on what mathematical-type fields should an MBA program include and what specific topics should a course on production and operations management like B.A. 467 encompass. The questionnaire was distributed to members of the Advisory Council of our College whose firms were directly or indirectly related to industrial operations and Illinois firms that were listed amoung the Fortune 500 industrial organizations. Some 70 firms responded to the questionnaire.

From the data collected in the survey, we have computed the frequency distribution of usefulness ratings of each topic given by the respondents and the weighted average of these ratings. The computed results are listed in two parts:

Part 1. Evaluation of subject areas (page 1): This part, lists the result of the respondents' evaluation regarding whether expertise on mathematically oriented subjects is necessary for MBA students.

Part 2. Evaluation of individual topics (page 2-11): This part lists the result of the survey on topics related to production and operations management. Interrelated topics are grouped together. In each group, the first topic represents the general discussion or overview of the topical area and the rest represents specific topics belonging to the topical area.

Part 1. Usefulness Ratings Given to Expertise on Subject Areas

Knowledge or Ability	Weighted Average Rating	Frequency Distribution					Total
		Essent'l 1	Very Useful 2	Useful 3	Slightly Useful 4	Not Useful 5	
. Knowledge on Production Problems in General	2.3	15 22.1%	24 35.3%	24 35.3%	3 4.4%	2 2.9%	68 100%
. Knowledge on General Operational Problems of an Industrial Firm	2.0	19 27.9%	33 48.6%	13 19.1%	2 2.9%	1 1.5%	68 100%
. Knowledge on Management Science Techniques	2.5	8 11.9%	23 34.3%	31 46.3%	4 6.0%	1 1.5%	67 100%
. Ability to Use Management Science Techniques to Solve Corporate Problems	2.6	8 11.9%	24 35.8%	24 35.8%	9 13.5%	2 3.0%	67 100%
. Knowledge on Statistics	2.8	7 10.3%	18 26.5%	28 41.2%	15 22.0%	0 0%	68 100%
. Ability to Use Statistical Techniques	3.0	3 4.3%	19 27.5%	26 37.8%	18 26.1%	3 4.3%	69 100%
. Ability to Analyze Corporate Problems with Financial Mathematics	2.4	13 19.1%	28 41.2%	19 28.0%	6 8.8%	2 2.9%	68 100%
. Knowledge on Use of Computers in Business	2.1	16 23.2%	32 46.4%	19 27.5%	2 2.9%	0 0%	69 100%

Part 2. Usefulness Ratings Given to Topics in Production and Operations Management

Topic	Weighted Average Rating	Frequency Distribution: Essent'l 1	Very Useful 2	Useful 3	Slightly Useful 4	Not Useful 5	Total
010. Overview of the types of Industrial Organization	2.6	12 17.1%	14 20.0%	35 50.1%	5 7.1%	4 5.7%	70 100%
011. The Detailed Organizational Structure of a Typical Industrial Firm	3.2	4 5.7%	10 14.3%	28 40.0%	21 30.0%	7 10.0%	70 100%
012. The Detailed Organizational Structure of a Typical Plant	2.5	2 2.9%	14 20.3%	25 36.2%	23 33.3%	5 7.3%	69 100%
013. Activities of a Production Planning and Control Department	2.6	12 17.1%	25 35.8%	21 30.0%	11 15.7%	1 1.4%	70 100%
014. Activities of a Manufacturing Department	2.6	8 11.4%	22 31.4%	27 38.6%	13 18.6%	0 0%	70 100%
020. Overview of Product Design and Development	2.6	8 11.8%	18 26.9%	33 49.3%	6 9.0%	2 3.0%	67 100%
021. Product Demand Analysis	2.8	5 7.7%	19 29.2%	30 46.2%	8 12.3%	3 4.6%	65 100%
022. Product Research and Development	3.2	0 0%	13 18.8%	33 47.9%	19 27.5%	4 5.8%	69 100%
023. Product Selection Analysis	3.0	3 4.5%	18 26.9%	23 34.3%	20 29.9%	3 4.4%	67 100%
024. Product Quality and Characteristics Decision	2.7	6 8.8%	28 41.2%	16 23.5%	16 23.5%	2 3.0%	68 100%
025. Computer Assisted Product Design (CAD)	3.6	2 3.2%	8 12.7%	19 30.2%	21 33.3%	13 20.6%	63 100%

Topic	Weighted Average Rating	Frequency Distribution: Essent'l 1	Very Useful 2	Useful 3	Slightly Useful 4	Not Useful 5	Total
Economic Analysis:							
031. Break-even Analysis in Production	2.0	26 37.1%	26 37.1%	13 18.6%	5 7.2%	0 0%	70 100%
032. Evaluation of Alternative Capital Investment Projects	1.8	32 45.7%	25 35.7%	7 10.0%	6 8.6%	0 0%	70 100%
033. Ranking Capital Investment Projects	2.1	18 26.1%	34 49.4%	11 15.9%	5 7.2%	1 1.4%	69 100%
034. Buy or Lease Analysis for Acquiring Production Machines	2.6	7 10.3%	22 32.4%	28 41.1%	10 14.7%	1 1.5%	68 100%
035. Make or Buy Analysis of Products or Parts	2.4	13 18.6%	27 38.5%	21 30.0%	7 10.0%	2 2.9%	70 100%
036. Make or Buy Analysis of Products or Parts	2.5	9 18.0%	17 34.0%	16 32.0%	6 12.0%	2 4.0%	50 100%
040. Overview of Plant Location	2.7	9 13.9%	18 27.7%	27 41.5%	8 12.3%	3 4.6%	65 100%
041. Legal, Social, Economic, and Labor Considerations of Plant Location	2.8	9 13.2%	19 27.9%	24 35.4%	12 17.6%	4 5.9%	68 100%
042. Plant Location in Relation to Markets or Sources of Raw Materials	2.9	4 5.9%	22 32.4%	25 36.7%	11 16.2%	6 8.8%	68 100%
043. Centralization and Decentralization of Production Operations	2.8	5 7.5%	24 35.8%	23 34.3%	9 13.4%	6 9.0%	67 100%
044. Logistic Analysis of Plant Location	3.0	1 1.5%	22 32.4%	26 38.2%	13 19.1%	6 8.8%	68 100%

Topic	Weighted Average Rating	Frequency Distribution: Essent'l 1	Very Useful 2	Useful 3	Slightly Useful 4	Not Useful 5	Total
050. Overview of Demand Forecasting	2.5	13 20.0%	23 35.4%	18 27.7%	8 12.3%	3 4.6%	65 100%
051. Moving Average Method	3.1	3 4.9%	11 18.0%	26 42.7%	16 26.2%	5 8.2%	61 100%
052. Exponential Smoothing Method	3.1	3 5.1%	12 20.3%	22 37.3%	18 30.5%	4 6.8%	59 100%
053. Time Series Analysis	3.2	2 3.4%	10 16.9%	26 44.1%	15 25.4%	6 10.2%	59 100%
060. Overview of Product Processing	2.6	12 18.2%	18 27.3%	23 34.8%	10 15.2%	3 4.5%	66 100%
061. Selection of Processing Methods	3.1	6 9.0%	10 14.9%	29 43.3%	17 25.4%	5 7.4%	57 100%
062. Process or Assembly Charting Techniques	3.5	1 1.5%	10 15.2%	24 36.3%	20 30.3%	11 16.7%	66 100%
063. Cost Consideration of Production Methods	2.4	19 28.3%	18 26.9%	20 29.8%	6 9.0%	4 6.0%	67 100%
064. Process Control by Computer	3.2	3 4.7%	13 20.3%	24 37.5%	19 29.7%	5 7.8%	64 100%
065. Computer Aided Manufacturing (CAM)	3.1	3 4.8%	14 22.2%	26 41.3%	15 23.8%	5 7.9%	63 100%
070. Overview of Types of Plant Layout and Work Design	2.9	7 10.3%	14 20.6%	31 45.6%	13 19.1%	3 4.4%	68 100%
071. Layout of Physical Facilities	3.2	4 6.0%	12 17.9%	24 35.8%	20 29.9%	7 10.4%	67 100%
072. Management Science Techniques Applied to Plant Layout	3.3	6 9.1%	6 9.1%	23 34.8%	25 37.9%	6 9.1%	66 100%
073. Work Place Design	3.3	4 6.0%	11 16.7%	18 27.3%	26 39.4%	7 10.6%	66 100%

Topic	Weighted Average Rating	Frequency Distribution: Essent'l 1	Very Useful 2	Useful 3	Slightly Useful 4	Not Useful 5	Total
080. Overview of Product Quality Control	2.3	18 26.1%	22 31.9%	19 27.5%	8 11.6%	2 2.9%	69 100%
081. Inspection Function in Production Organization	2.8	5 7.4%	22 32.4%	25 36.8%	11 16.2%	5 7.4%	68 100%
082. Economics of Quality Assurance	2.5	10 14.7%	25 36.8%	22 32.3%	8 11.8%	3 4.4%	68 100%
083. Statistical Quality Control - Acceptance	2.8	6 8.8%	18 26.5%	28 41.2%	14 20.6%	2 2.9%	68 100%
090. Overview of Aggregate Production Planning	2.3	17 25.0%	23 33.8%	23 33.8%	3 4.4%	2 3.0%	68 100%
091. Various Methods of Developing Master Production Schedules	2.7	6 9.0%	21 31.3%	27 40.3%	10 14.9%	3 4.5%	67 100%
092. Graphical and Charting Methods of Production Planning	3.1	1 1.5%	16 24.2%	28 42.4%	17 25.8%	4 6.1%	66 100%
093. Productive Capacity Planning	2.3	14 20.9%	25 37.3%	24 35.8%	3 4.5%	1 1.5%	67 100%
094. Judgmental Approaches for Planning Such as the Delphi Method	3.3	1 1.8%	15 26.3%	17 29.8%	16 28.1%	8 14.0%	57 100%
095. Planning Manpower Requirements	2.5	14 20.3%	21 30.4%	22 31.9%	10 14.5%	2 2.9%	69 100%

Topic	Weighted Average Rating	Frequency Distribution: Essent'l 1	Very Useful 2	Useful 3	Slightly Useful 4	Not Useful 5	Total
100. Overview of Production Scheduling	2.3	18 26.1%	18 26.1%	26 37.7%	5 7.2%	2 2.9%	69 100%
101. Various Job-Shop Scheduling Methods	3.2	3 4.5%	11 16.7%	31 47.0%	15 21.2%	7 10.6%	66 100%
102. Management Science Applied to Job-Shop Scheduling	3.4	1 1.5%	11 16.4%	24 35.8%	22 32.9%	9 13.4%	67 100%
103. Batch Scheduling by the Run-Out Method	3.6	0 0%	6 10.4%	22 37.9%	22 37.9%	8 13.8%	58 100%
104. Computer Packages for Scheduling	3.3	3 4.5%	10 15.2%	27 40.9%	19 28.8%	7 10.6%	66 100%
105. Mass Production Scheduling by the Line-of-Balance Method	3.5	1 1.8%	4 7.0%	26 45.6%	19 33.3%	7 12.3%	57 100%
106. Methods of Scheduling Flow-Process Production	3.1	4 6.5%	14 22.6%	19 30.6%	19 30.6%	6 9.7%	62 100%
110. Overview of Inventory Control	1.9	32 47.1%	13 19.1%	20 29.4%	3 4.4%	0 0%	68 100%
111. Inventory Control Policy	2.1	18 27.3%	26 39.4%	18 27.3%	3 4.5%	1 1.5%	66 100%
112. Economic Order Quantity Under Known Demand	2.6	8 12.1%	25 37.9%	21 31.8%	9 13.6%	3 4.6%	66 100%
113. Economic Order Quantity Under Uncertain Demand	2.6	7 10.6%	27 40.9%	19 28.8%	10 15.2%	3 4.5%	66 100%
114. ABC Classifcation Method	2.7	7 11.5%	16 26.2%	27 44.3%	9 14.7%	2 3.3%	61 100%
115. Commercial Computer Programs for Inventory Control Such as IMPACT	2.8	7 11.3%	16 25.8%	22 35.5%	15 24.2%	2 3.2%	62 100%

Topic	Weighted Average Rating	Frequency Distribution: Essent'l 1	Very Useful 2	Useful 3	Slightly Useful 4	Not Useful 5	Total
120. Overview of Material Requirements Planning (MRP)	2.2	21 32.3%	16 24.6%	22 33.9%	3 4.6%	3 4.6%	65 100%
121. Content of Bills-of-Materials File	3.0	6 9.2%	14 21.5%	26 40.0%	14 21.6%	5 7.7%	65 100%
122. Detailed Steps in Material Requirements Planning (MRP)	2.9	9 13.6%	10 15.2%	30 45.4%	10 15.2%	7 10.6%	66 100%
123. Computer Programs for MRP	3.1	6 9.1%	8 12.1%	33 50.0%	14 21.2%	5 7.6%	66 100%
130. Overview of Management Science Techniques	2.6	5 7.8%	21 32.8%	33 51.6%	3 4.7%	2 3.1%	64 100%
131. Linear Programming (LP)	3.2	2 3.2%	13 20.6%	26 41.3%	17 27.0%	5 7.9%	63 100%
132. Transportation Method of LP	3.3	2 3.2%	7 11.3%	28 45.2%	19 30.6%	6 9.7%	62 100%
133. Queueing Theory	3.3	1 1.7%	10 16.7%	28 46.6%	15 25.0%	6 10.0%	60 100%
134. Dynamic Programming	3.4	2 3.5%	5 8.8%	28 49.1%	15 26.3%	7 12.3%	57 100%
135. Non-linear Programming	3.4	2 3.5%	5 8.8%	25 43.8%	18 31.6%	7 12.3%	57 100%
136. Integer Programming	3.5	2 3.6%	4 7.1%	25 44.6%	16 28.6%	9 16.1%	56 100%

Topic	Weighted Average Rating	Frequency Distribution: Essent'l 1	Very Useful 2	Useful 3	Slightly Useful 4	Not Useful 5	Total
140. Overview of Analysis of Complex Systems	3.0	5 7.6%	14 21.2%	29 43.9%	14 21.2%	4 6.1%	66 100%
141. Resource Planning and Management (RPM) Networks	3.2	3 4.7%	10 15.6%	27 42.2%	18 28.1%	6 9.4%	64 100%
142. Computer Simulation Modeling	3.2	4 6.1%	10 15.4%	25 38.5%	20 30.8%	6 9.2%	65 100%
143. Use of Commercial Simulation Packages such as Industrial Dynamics	3.5	2 3.2%	6 9.7%	16 25.8%	33 53.2%	5 8.1%	62 100%
150. Overview of Job Design	2.5	11 16.4%	22 32.8%	25 37.3%	8 12.0%	1 1.5%	67 100%
151. Problems of Labor Specializations	2.8	5 7.4%	18 26.9%	28 41.8%	15 22.4%	1 1.5%	67 100%
152. Job Enrichment	2.9	7 10.5%	16 23.8%	27 40.3%	13 19.4%	4 6.0%	67 100%
153. Socio-technical Guidelines for Job Design	3.1	7 10.6%	12 18.2%	19 28.8%	23 34.8%	5 7.6%	66 100%
154. Physical Consideration in Job Design	3.0	3 4.5%	16 23.9%	24 35.8%	23 34.3%	1 1.5%	67 100%
155. Learning Curve	2.5	8 12.1%	23 34.9%	28 42.4%	7 10.6%	0 0%	66 100%

Topic	Weighted Average Rating	Frequency Distribution: Essent'l 1	Very Useful 2	Useful 3	Slightly Useful 4	Not Useful 5	Total
160. Overview of Methods, Measurement and Wage Payment	2.4	13 19.7%	21 31.8%	25 37.9%	6 9.1%	1 1.5%	66 100%
161. Work Methods Design	3.1	2 3.0%	11 16.4%	36 53.7%	16 23.9%	2 3.0%	67 100%
162. Time Study	3.2	1 1.5%	8 11.9%	37 55.2%	16 23.9%	5 7.5%	67 100%
163. Elementary Standard Time such as Work Factor Analysis	3.5	0 0%	5 7.7%	30 46.1%	23 35.4%	7 10.8%	65 100%
164. Predetermined Motion-Time Systems such as MTM and BMT	3.5	0 0%	7 10.9%	25 39.1%	24 37.5%	8 12.5%	64 100%
165. Work Sampling	3.3	0 0%	8 11.9%	36 53.7%	18 26.9%	5 7.5%	67 100%
166. Wage Incentive Plans	2.9	3 4.3%	18 26.1%	36 52.2%	10 14.5%	2 2.9%	69 100%
170. Overview of Plant and Machine Maintenance	2.8	8 11.8%	19 27.9%	27 39.7%	10 14.7%	4 5.9%	68 100%
171. Economic Analysis of Maintenance Programs	3.0	3 4.5%	19 28.3%	24 35.8%	16 23.9%	5 7.5%	67 100%
172. Equipment Replacement Analysis	3.0	5 7.7%	16 24.6%	26 40.0%	13 20.0%	5 7.7%	65 100%
173. Computerized Systems for Maintenance	3.4	4 6.2%	7 10.8%	24 36.9%	22 33.8%	8 12.3%	65 100%
174. Maintenance Policy	3.0	6 9.1%	11 16.7%	28 42.4%	16 24.2%	5 7.6%	66 100%

Topic	Weighted Average Rating	Frequency Distribution					Total
		Essent'l 1	Very Useful 2	Useful 3	Slightly Useful 4	Not Useful 5	
180. Overview of Productivity	1.9	25 37.3%	26 38.8%	14 20.9%	1 1.5%	1 1.5%	67 100%
181. Factors, Effects, and Measurements of Productivity	2.1	18 26.9%	26 38.8%	20 29.8%	3 4.5%	0 0%	67 100%
182. Productivity Patterns	2.6	9 14.1%	17 26.5%	27 42.2%	10 15.6%	1 1.6%	64 100%
183. Productivity in Manufacturing	2.4	14 20.9%	19 28.3%	28 41.8%	5 7.5%	1 1.5%	67 100%
184. Productivity in Service Industries	2.8	9 14.1%	16 25.0%	23 35.9%	13 20.3%	3 4.7%	64 100%
190. Overview of Project Management - Network Scheduling Techniques	2.6	6 9.5%	27 42.9%	22 34.9%	5 7.9%	3 4.8%	63 100%
191. PERT	2.9	3 4.9%	19 31.2%	23 37.7%	11 18.0%	5 8.2%	61 100%
192. CPM	3.0	3 5.0%	16 26.7%	24 40.0%	12 20.0%	5 8.3%	60 100%
193. Graphical Approaches such as Gantt Charts	3.0	2 3.3%	20 32.8%	19 31.1%	15 24.6%	5 8.2%	61 100%

Topic	Weighted Average Rating	Frequency Distribution: Essent'l 1	Very Useful 2	Useful 3	Slightly Useful 4	Not Useful 5	Total
200. Overview of Production Information Systems	2.4	13 19.4%	23 34.3%	25 37.3%	4 6.0%	2 3.0%	67 100%
201. Computer Packages on Production and Inventory Control such as PICS or COPICS	2.9	3 4.5%	20 30.3%	27 40.9%	12 18.2%	4 6.1%	66 100%
202. Data Base Systems	2.8	6 9.1%	19 28.8%	25 37.9%	12 18.2%	4 6.0%	66 100%
203. Bills-of-Materials Systems	3.0	4 6.2%	17 26.6%	24 37.5%	14 21.9%	5 7.8%	64 100%
210. Overview of Functions Supporting Production	2.3	13 19.4%	27 40.3%	21 31.3%	5 7.5%	1 1.5%	67 100%
211. Purchasing Organization and Function	2.6	4 6.0%	27 40.3%	26 38.8%	10 14.9%	0 0%	67 100%
212. Warehouse Management	2.8	5 7.3%	17 25.0%	31 45.6%	14 20.6%	1 1.5%	68 100%