SEVENTH ANNUAL MEETING

OF THE

PRODUCTION AND OPERATIONS MANAGEMENT SOCIETY

Sponsored by

KRANNERT GRADUATE SCHOOL OF MANAGEMENT

PURDUE UNIVERSITY

MARCH 30 - APRIL 2, 1996

University Place Conference Center and Hotel
at Indiana University - Purdue University
Indianapolis, Indiana
1996 OFFICERS AND BOARD MEMBERS

President
Sushil K. Gupta
Florida International University, USA

Founder and Past President
Kalyan Singh
University of Baltimore, USA

Past President
Martin K. Starr
Columbia University, USA

President-Elect
Roger W. Schmenner
Indiana University, USA

Vice President-Finance
Robert F. Bordley
General Motors Research Laboratories, USA

Vice President-Education
James R. Evans
University of Cincinnati, USA

Vice President-Meetings
Burton V. Dean
San Jose State University, USA

Vice President-Member Activities
Aleida V. Roth
University of N. Carolina, Chapel Hill, USA

Vice President-Publications
Yash Gupta
University of Colorado at Denver, USA

Regional Vice President-Americas
David McCutcheon
University of Victoria, Canada

Regional Vice President-Europafrica
Sven B. Axson
Lund University, Sweden

Regional Vice President-Australasia
John T. Flanagan
University of Wollongong, Australia

Board Members
Robert S. Collins
IMD, Switzerland

Hau Lee
Stanford University, USA

Aris Melliassanos
Westinghouse Electric Corporation, USA

David M. Upton
Harvard Business School, USA

Executive Director
William R. Duguid
Florida International University, USA

Founder and Editor-in-Chief
Production and Operations Management
Kalyan Singh
University of Baltimore, USA

Secretary
Mark L. Spearman
Georgia Institute of Technology, USA
POM-96 BULLETIN

Number 7

Production and Operations Management Society

PROGRAM

of the

SEVENTH ANNUAL MEETING

Sponsored by

KRANNERT GRADUATE SCHOOL OF MANAGEMENT*

PURDUE UNIVERSITY

University Place, Indianapolis, Indiana

MARCH 30 - APRIL 2, 1996

CO-SPONSORED BY

University of Baltimore
Florida International University
Indiana University
Lund University
University of Nebraska-Lincoln
Informs Section on Manufacturing and Service Operations Management

*In conjunction with its Center for the Management of Manufacturing Enterprises (CMME) and its Center for International Business Education and Research (CIBER).
# TABLE OF CONTENTS

Message from the General Chair ........................................... A2
Message from the Contributed Papers Program Chairs .................. A3
Meeting Committee ............................................................ A4
General Information ........................................................... A6
Preregistration ................................................................. A6
   Registration .............................................................. A6
   Accommodations ....................................................... A6
   Transportation ......................................................... A6
   Weather ................................................................. A7
   Message Boards ....................................................... A7
   Continuous Breaks .................................................... A7
   Exhibits ................................................................. A7
No Smoking Policy ........................................................... A7
Contributed Paper Sessions ................................................ A7
Information for Speakers .................................................. A7
Information for Session Chairs ......................................... A8
POMS Business Meeting .................................................... A8
POMS Evening Reception ................................................ A8
POM Doctoral Student Consortium ..................................... A8
POMS Luncheon ............................................................. A8
Registration Form ........................................................... A9
Hotel Registration Form ................................................... A10
Hotel Maps ................................................................... A11
Master Schedule ............................................................ A13
How to use this Bulletin .................................................... A15
Session Schedule ........................................................... A16
Saturday Teaching Workshops ............................................ A17
Plenary and Semi-Plenary Sessions Information and Abstracts ...... A18
Workshops Associated with the Semi-Plenary Sessions ............... A27
Invited Papers Sessions Abstracts ...................................... A28
Contributed Paper Abstracts .............................................. 1
Participant Index ............................................................ 20
MESSAGE FROM THE GENERAL CHAIR

Welcome to POM-96, the seventh annual meeting of the Production and Operations Management Society, cosponsored by the Krannert Graduate School of Management, Purdue University. An outstanding program has been developed by the Plenary Sessions Co-Chair Leroy Schwarz and Contributed Papers Co-Chairs Marc Schniederjans and Sven Axsater.

The theme of the meeting is Teaching POM: Visions, Topics, and Pedagogies. At this meeting, outstanding teachers and practitioners will present their visions of what an education in POM should be, what topics should be taught, and what pedagogies should be used. The program includes (1) workshops on case-writing in POM and teaching international POM on Saturday; (2) invited and contributed papers related to teaching, research, and practice on Sunday; and (3) plenary and semi-plenary sessions on Monday and Tuesday.

I take this opportunity to thank everyone on the POM-96 Program Committee, including the track chairs, for their innovative ideas and their countless hours of work. I offer you my best wishes for a professionally rewarding meeting.

Kalyan Singhal
University of Baltimore
Founder of POMS
MESSAGE FROM THE CONTRIBUTED PAPERS PROGRAM CHAIRS

On behalf of the Program Committee we welcome you to the 1996 Annual Production and Operations Management Society Meeting. We hope you agree that this program offers papers that will be of interest to everyone who works or teaches in the area of production and operations management.

The contributed papers for this meeting are included in eighteen different tracks. Please review the "How To Use This Bulletin" section to identify each track. You can also use the "Session Schedule" to match up the track with the time, location and specific session. For other sessions, such as the Saturday workshops, see the section on "Saturday Teaching Workshops"; for the invited paper sessions, see the section on "Invited Papers Sessions Abstracts"; and for the Plenary and Semi-Plenary sessions, see the section on "Plenary and Semi-Plenary Session Information and Abstracts." You may also want to consult the "Master Schedule" to determine the timing of other meeting functions.

We would like to thank the many people who have contributed their time and energy to help make this meeting a success. We extend to each of them our warmest thanks.

Best wishes,

Marc J. Schniederjans  
Department of Management  
College of Business Administration  
University of Nebraska-Lincoln  
Lincoln, Nebraska 68588-0491  
USA

Sven Axsater  
Department of Industrial Engineering  
Lund University  
P. O. Box 118  
S-221 00 Lund  
SWEDEN
MEETING COMMITTEE

General Chair
Kalyan Singhal, University of Baltimore

Plenary Sessions Co-Chairs
Leroy Schwarz, Purdue University
Kalyan Singhal, University of Baltimore

Contributed Paper Sessions Co-Chairs
Marc J. Schniederjans, University of Nebraska-Lincoln
Sven Axsater, Lund University

Program Committee

Ken Baker, Dartmouth University
Suresh Chand, Purdue University
Maqbool Dada, Purdue University
Stephen A. DeLurgio, University of Missouri-KC
James A. Fitzsimmons, University of Texas
M. Therese Flaherty, University of Pennsylvania
Stephen Graves, M.I.T.
Jatinder N.D. Gupta, Ball State University
Sushil K. Gupta, Florida International University
Warren Hausman, Stanford University
Robert Hayes, Harvard University
James Hoffman, Florida State University
Peter Jackson, Cornell University
Corrinne Karuppan, Southwest Missouri State University
Kenneth Kendall, Rutgers University
Gyu C. Kim, Northern Illinois University
Paul Kleindorfer, University of Pennsylvania
Scott Lever, Indiana University
Jose Machuca, GIDEAO
Miguel Machuca, GIDEAO
Herbert Moskowitz, Purdue University
Jack Muckstadt, Cornell University
Steven Nahmias, Santa Clara University
John Paxton, Wayne State College
Claudia H. Pragman, Mankato State University
Amitabh Raturi, University of Cincinnati (Informs)
Barry Render, Rollins College
Aleda Roth, University of North Carolina
A. Ruiz, GIDEAO
Roger Schmenner, Indiana University
Leroy B. Schwarz, Purdue University
Jaya Singhal, University of Baltimore
Kalyan Singhal, University of Baltimore
Mark Spearman, Georgia Tech
V. Sridharan, Clemson University
Ashok Srinivasan, Purdue University
Martin Starr, Columbia University
Kathryn Stecke, University of Michigan
Brian Talbot, University of Michigan
David Upton, Harvard University
James Ward, Purdue University
COMMITTEE CHAIRS

Doctoral Student Consortium
James R. Evans, University of Cincinnati
College of Business Administration
Carl H. Lindner Hall
Cincinnati, OH 45221-0020

Exhibits
Drew Rosen, University of North Carolina
Cameron School of Business Administration
The University of North Carolina at Wilmington
Wilmington, NC 28403-3297

Local Arrangements
Mark Ippolito, Indiana University

TRACK CHAIRS

Teaching the POM Core Course
Suresh Chand, Purdue University

Teaching International Operations
Roger Schmenner, Indiana University

Incorporating the Real-World in Teaching POM
Brian Talbot, University of Michigan

Case Writing/Using Cases in Teaching POM
Mark Spearman, Georgia Tech

New Teaching Paradigms
Martin Starr, Columbia University

Vision of an Education in POM
Robert Hayes, Harvard University

Cross-Functional Linkages in Teaching POM
Paul Kleindorfer, University of Pennsylvania

New Teaching Pedagogies
Barry Render, Rollins College

Service Operations
Corrinne Karuppan, Southwest Missouri State University

Manufacturing Strategy
James Hoffman, Florida State University

Computer Integration in POM
Kenneth Kendall, Rutgers University

Design and Physical Systems
V. Sridharan, Clemson University

Inventory Management
Gyu C. Kim, Northern Illinois University

International Operations Management
Jaya Singhal, University of Baltimore

TQM and Benchmarking
Stephen A. DeLurgio-University of Missouri-KC

New Topics in POM
Ken Baker, Dartmouth College
GENERAL INFORMATION

PREREGISTRATION

Preregistration for the meeting is highly recommended. To encourage preregistration, a significant discount is offered.

To preregister for the meeting, complete a preregistration form (one can be found in this bulletin) and mail it with a check or money order to POMS, Florida International University, University Park Campus, PC543, Miami, FL 33199, USA, phone (305) 348-1413.

PREREGISTRATION PAYMENT WILL NOT BE ACCEPTED AFTER MARCH 7, 1996.

REGISTRATION

The registration desk for the meeting will be located in the Slate Foyer of the Conference Room. It will be opened to accommodate preregistered and non-preregistered attendees at the following times:

<table>
<thead>
<tr>
<th>Day</th>
<th>Date</th>
<th>Times</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saturday</td>
<td>March 30</td>
<td>12:30pm-6:00pm</td>
</tr>
<tr>
<td>Sunday</td>
<td>March 31</td>
<td>7:00am-5:30pm</td>
</tr>
<tr>
<td>Monday</td>
<td>April 1</td>
<td>7:00am-4:30pm</td>
</tr>
<tr>
<td>Tuesday</td>
<td>April 2</td>
<td>7:00am-12:15pm</td>
</tr>
</tbody>
</table>

ALL ATTENDEES, INCLUDING SPEAKERS, ARE EXPECTED TO REGISTER.

ACCOMMODATIONS

A block of rooms has been reserved for meeting attendees at the University Place. The hotel is located 9 miles (or approximately 12 minutes) from the Indianapolis International Airport, just off Highways 65 and 70, in the city of Indianapolis. Special reduced rates, indicated on the room registration form, have been negotiated for meeting attendees. Attendees are encouraged to register early to be assured space at the reduced rates. Room request will be honored on a first-come, first-serve basis.

TRANSPORTATION

AIR TRANSPORTATION TO INDIANAPOLIS: All major domestic airlines serve Indianapolis International Airport. For more information, you can call them at (317) 487-9594.

LIMOUSINE AND TAXI SERVICE TO THE HOTEL: There are a number of limousine and taxi services available from the airport. For those flying in through the Indianapolis International Airport, it is suggested that you travel to the hotel via “Indy Connection” which is a limousine service. The Indy Connection counter and phone are in the Ground Transportation Center located outside the terminal across from baggage claim #2 at the airport. The cost for the trip is $7.00 if you take the Indy Connection. If you take a cab, the cost will range from $17.00 to $20.00. The airport is located 9 miles (or approximately 12 minutes) from the hotel.
WEATHER

The weather in late March and early April averages a high of 55°F (13°C) to a low of 35°F (2°C).

MESSAGE BOARDS

A bulletin board for messages will be located by the registration desk in the Slate Foyer of the Conference Room. Attendees are encouraged to periodically check for messages at this center.

CONTINUOUS BREAKS

Continuous breaks will be offered on Sunday, Monday, and Tuesday. The continuous break each day will begin with an extended continental breakfast served from 7:00am to 11:00am each day. The breakfast will include a variety of beverages, pastries, fruits, etc. From 11:00am to 4:00pm, the break will include soft drinks, coffee, and an assortment of snack items. All registered POMS members are encouraged to take advantage of these services.

EXHIBITS

Exhibits will be located in the 2nd floor lobby.

NO SMOKING POLICY

There will be no smoking in any of the rooms in which all sessions will be held, not in exhibit areas.

CONTRIBUTED PAPER SESSIONS

The program has been organized around eighteen tracks. Sessions will last 90 minutes. If possible, the papers will be presented in the order listed in the Bulletin.

Requests for papers presented at the meeting should be made directly to the speaker, not to the session chair or members of the meeting committee.

All session chairs, speakers, and meeting attendees, whether or not members of POMS, are expected to register for the meeting and pay the appropriate fees.

INFORMATION FOR SPEAKERS

The total amount of time allotted to each speaker depends on the number of papers in the session. The time allowed by the chair includes the formal presentation, questions from the audience and discussion. Each speaker is encouraged to leave some time for questions from the audience. Speakers are also encouraged to bring copies of their paper to the meeting for distribution to interested members of the audience.
Speakers are reminded that the meeting rooms will contain only overhead projectors and that they are responsible for additional equipment and preparing their own transparencies at their own expense. It is advisable to bring along blank transparencies and markers for last minute revisions and responses to questions.

In the event the session chair is absent, then of those speakers present, the last speaker scheduled should assume the chair’s duties.

INFORMATION FOR SESSION CHAIRS

Each session will last for 90 minutes. The speakers should present their papers in the order listed in the bulletin, if possible. Each presentation should be allotted an equal amount of time. Session chairs are responsible for starting and ending each presentation on time and for alerting speakers when they have five minutes of their allotted time remaining.

Each room will be equipped with an overhead projector. Speakers will be responsible for arranging any additional equipment at their own expense.

POMS BUSINESS MEETING

On Monday from 5:15pm to 6:15pm in Room 206, there will be a meeting for all members of the Production Operations Management Society. Those who are interested in becoming members are also welcome to attend.

POMS EVENING RECEPTION

On Monday from 6:30pm to 8:00pm in the Ball Room, there will be a reception to celebrate the 7th Annual Meeting. All POMS members are invited to attend.

POMS DOCTORAL STUDENT CONSORTIUM

Date: Sunday, 31 March 1996 Room: 216 Time: 1:30pm-5:00pm

Chair: James R. Evans, University of Cincinnati

The Consortium will provide an excellent opportunity for doctoral students to present their research and obtain feedback from prominent academicians and practitioners from industry. Faculty members and business executives will also share with the students their thoughts on emerging trends and challenges in our field.

POMS LUNCHEON

On Monday, April 1, 1996, from 11:45am to 1:45pm, a luncheon will be held. The luncheon will be held in the Ball Room. The cost of the luncheon is included in the registration fee, but tickets for nonregistered guests may be obtained at the Registration Area at a cost of $25.00 each.
POM-96 REGISTRATION FORM
MARCH 30 - APRIL 2, 1996
PRE-REGISTRATION DEADLINE: MARCH 7, 1996

Last Name               First               Initial

Affiliation

Address

Address

Address

City              State           Zip

Province          Country

FOR OFFICE USE ONLY

Check #
Amount$
Date Received

REGISTRATION FEE

The registration fee includes the continuous morning breakfasts and afternoon coffee breaks on
March 31 to April 2, the April 1 luncheon and the April 1 evening reception.

<table>
<thead>
<tr>
<th>Before March 7</th>
<th>After March 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Member</td>
<td>$180</td>
</tr>
<tr>
<td>Nonmember</td>
<td>$235</td>
</tr>
<tr>
<td>Student/Retired Member</td>
<td>$80</td>
</tr>
</tbody>
</table>

Less Abstract fee $50 ($20 for Students and Retired members) if already paid

TOTAL ENCLOSED

The registration fee includes attendance at the Saturday afternoon workshops on teaching POM.

☐ Check enclosed        ☐ Please charge my: ☐ VISA ☐ MasterCard

Account # ___________________________ Expiration Date ____________

Signature______________________________

Your fee must accompany this form because POMS cannot bill you. Make check payable to POMS,
Florida International University, University Park Campus, PC 543, Miami, Florida 33199, USA,
phone (305) 348-1413. In case you are using a credit card, you can also fax this form to
(305) 348-1908. The pre-registration fee will be refunded if written notice of cancellation is
received at the above address on or before March 28, 1996.
UNIVERSITY PLACE AT INDIANA UNIVERSITY-PURDUE UNIVERSITY

ANNUAL MEETING OF THE PRODUCTION AND OPERATIONS
MANAGEMENT SOCIETY
MARCH 30 - APRIL 2, 1996
Hotel Reservation Form

Names__________________________________________________________
(ALL OCCUPANTS)
Address

Phone __________________________________________________________

Arrival Day __________________ Date __________ Number of Nights ______

Please check
☐ Single / $95       ☐ Double / $105

Rates subject to 10% tax. To guarantee accommodation, all reservation requests must be received by
March 8, 1996. The above rates will remain in effect until March 8, 1996.

Your reservation request must be accompanied by the first night’s deposit.

☐ Check enclosed

Please charge my: ☐ VISA   ☐ MasterCard   ☐ Discover  ☐ American Express

Account #_____________________________________________________

Signature_____________________________________________________

Send, or fax, completed form to: University Place (Attn: Group Reservation)
Conference Center and Hotel
850 West Michigan Street
Indianapolis, IN 46202

Phone in USA: (800) 627-2700 or (317) 274-3196
Fax:          (317) 274-3878
Internet: uplace@indyems.iupui.edu

Special Requests:______________________________________________

A-10
**Interstate 65:**
From the north, take Exit 114 and follow West St. (Martin Luther King Jr. St.) south to Michigan St. and turn right.
From the south, turn on to I-70 West from I-65. Take Exit 79A and follow West St. (Martin Luther King Jr. St.) north to Michigan St. and turn left.

**Interstate 70:**
If coming from the west on I-70, some of the exits will be closed due to construction until November 1995. Suggest continuing on I-70 to I-65, north on I-65 to Exit 114.
From the east, turn on to I-65 North from I-70 — need to get to far left lane. Take Exit 114 to West St. (Martin Luther King Jr. St.) then south to Michigan St. and turn right.

**After you are...**
on Michigan St., continue west to University Blvd. and turn right. Take University Blvd. one block to North St. and turn right. There is underground parking immediately past the main entrance to the Conference Center and Hotel.
<table>
<thead>
<tr>
<th>DAY</th>
<th>EVENT</th>
<th>TIME</th>
</tr>
</thead>
<tbody>
<tr>
<td>SATURDAY</td>
<td>Registration</td>
<td>12:00 p.m. - 6:00 p.m.</td>
</tr>
<tr>
<td></td>
<td>Workshops</td>
<td>1:30 p.m. - 5:00 p.m.</td>
</tr>
<tr>
<td>SUNDAY</td>
<td>Registration</td>
<td>7:00 a.m. - 5:30 p.m.</td>
</tr>
<tr>
<td></td>
<td>Exhibits</td>
<td>9:00 a.m. - 5:00 p.m.</td>
</tr>
<tr>
<td></td>
<td>Doctoral Consortium</td>
<td>1:30 p.m. - 5:00 p.m.</td>
</tr>
<tr>
<td></td>
<td>Invited Paper Sessions</td>
<td>8:30 a.m. - 5:00 p.m.</td>
</tr>
<tr>
<td></td>
<td>SA Contributed Paper Sessions</td>
<td>8:30 a.m. - 10:00 a.m.</td>
</tr>
<tr>
<td></td>
<td>Break</td>
<td>10:00 a.m. - 10:30 a.m.</td>
</tr>
<tr>
<td></td>
<td>SB Contributed Paper Sessions</td>
<td>10:30 a.m. - 12:00 p.m.</td>
</tr>
<tr>
<td></td>
<td>Lunch</td>
<td>12:00 p.m. - 1:30 p.m.</td>
</tr>
<tr>
<td></td>
<td>SC Contributed Paper Sessions</td>
<td>1:30 p.m. - 3:00 p.m.</td>
</tr>
<tr>
<td></td>
<td>Break</td>
<td>3:00 p.m. - 3:30 p.m.</td>
</tr>
<tr>
<td></td>
<td>SD Contributed Paper Sessions</td>
<td>3:30 p.m. - 5:00 p.m.</td>
</tr>
<tr>
<td>MONDAY</td>
<td>Registration</td>
<td>7:00 a.m. - 5:30 p.m.</td>
</tr>
<tr>
<td></td>
<td>Exhibits</td>
<td>9:00 a.m. - 5:00 p.m.</td>
</tr>
<tr>
<td></td>
<td>Plenary Session Introduction</td>
<td>8:00 a.m. - 8:15 a.m.</td>
</tr>
<tr>
<td></td>
<td>Visions of an Education in POM Session</td>
<td>8:15 a.m. - 10:00 a.m.</td>
</tr>
<tr>
<td></td>
<td>Break</td>
<td>10:00 a.m. - 10:30 a.m.</td>
</tr>
<tr>
<td></td>
<td>Teaching Paradigms Session</td>
<td>10:30 a.m. - 12:00 p.m.</td>
</tr>
<tr>
<td></td>
<td>Lunch</td>
<td>12:00 p.m. - 1:30 p.m.</td>
</tr>
<tr>
<td></td>
<td>Semi-Plenary Sessions</td>
<td>1:30 p.m. - 3:00 p.m.</td>
</tr>
<tr>
<td></td>
<td>- Executive Education</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Experiential Learning</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Break</td>
<td>3:00 p.m. - 3:30 p.m.</td>
</tr>
<tr>
<td></td>
<td>Semi-Plenary Sessions</td>
<td>3:30 p.m. - 5:00 p.m.</td>
</tr>
<tr>
<td></td>
<td>- Incorporating the Real World</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- International POM</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Business Meeting</td>
<td>5:15 p.m. - 6:15 p.m.</td>
</tr>
<tr>
<td></td>
<td>POM Reception</td>
<td>6:30 p.m. - 8:00 p.m.</td>
</tr>
<tr>
<td>TUESDAY</td>
<td>Registration</td>
<td>7:00 a.m. - 11:30 a.m.</td>
</tr>
<tr>
<td></td>
<td>Exhibits</td>
<td>9:00 a.m. - 5:00 p.m.</td>
</tr>
<tr>
<td></td>
<td>Teaching the Core Course in POM Workshop:</td>
<td>8:00 a.m. - 9:30 a.m.</td>
</tr>
<tr>
<td></td>
<td>Experiential Learning in Global Manufacturing Systems</td>
<td>8:00 a.m. - 9:30 a.m.</td>
</tr>
<tr>
<td></td>
<td>Break</td>
<td>9:30 a.m. - 9:50 a.m.</td>
</tr>
<tr>
<td></td>
<td>New Topics</td>
<td>9:50 a.m. - 11:20 a.m.</td>
</tr>
<tr>
<td></td>
<td>Workshop:</td>
<td>9:50 a.m. - 11:20 a.m.</td>
</tr>
<tr>
<td></td>
<td>Simulating International Operations Management Workshop:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Factory Physics and Transparent-Box Business Simulators</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lunch</td>
<td>11:20 a.m. - 12:10 p.m.</td>
</tr>
<tr>
<td>Event</td>
<td>Time</td>
<td></td>
</tr>
<tr>
<td>-----------------------------------------</td>
<td>-----------------</td>
<td></td>
</tr>
<tr>
<td>Integrating POM with Other Areas</td>
<td>12:10 p.m. - 1:40 p.m.</td>
<td></td>
</tr>
<tr>
<td>Workshop:</td>
<td>12:10 p.m. - 1:40 p.m.</td>
<td></td>
</tr>
<tr>
<td>Team Learning and the Electronic Bookshelf</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Break</td>
<td>1:40 p.m. - 2:00 p.m.</td>
<td></td>
</tr>
<tr>
<td>Mathematical Modeling</td>
<td>2:00 p.m. - 3:30 p.m.</td>
<td></td>
</tr>
</tbody>
</table>
HOW TO USE THIS BULLETIN

The contributed papers program is organized around the following 18 tracks:

<table>
<thead>
<tr>
<th>TRACK NUMBER</th>
<th>TRACK NAME</th>
<th>TRACK CHAIR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Teaching the POM Core Course</td>
<td>Suresh Chand</td>
</tr>
<tr>
<td>2</td>
<td>Teaching International Operations</td>
<td>Roger Schmenner</td>
</tr>
<tr>
<td>3</td>
<td>Incorporating the Real-World in Teaching POM</td>
<td>Brian Talbot</td>
</tr>
<tr>
<td>4</td>
<td>Case Writing/Using Cases in Teaching POM</td>
<td>Mark Spearman</td>
</tr>
<tr>
<td>5</td>
<td>New Teaching Paradigms</td>
<td>Martin Starr</td>
</tr>
<tr>
<td>6</td>
<td>Vision of an Education in POM</td>
<td>Robert Hayes</td>
</tr>
<tr>
<td>7</td>
<td>Cross-Functional Linkages in Teaching POM</td>
<td>Paul Kleindorfer</td>
</tr>
<tr>
<td>8</td>
<td>New Teaching Pedagogies</td>
<td>Berry Render</td>
</tr>
<tr>
<td>9</td>
<td>Operations Planning, Scheduling and Control Systems</td>
<td>Claudia H. Pragman</td>
</tr>
<tr>
<td>10</td>
<td>Service Operations</td>
<td>Corrinne Karuppan</td>
</tr>
<tr>
<td>11</td>
<td>Manufacturing Strategy</td>
<td>James J. Hoffman</td>
</tr>
<tr>
<td>12</td>
<td>Computer Integration in POM</td>
<td>Kenneth Kendall</td>
</tr>
<tr>
<td>13</td>
<td>Design and Physical Systems</td>
<td>V. Sridharan</td>
</tr>
<tr>
<td>14</td>
<td>Inventory Management</td>
<td>Gyu C. Kim</td>
</tr>
<tr>
<td>15</td>
<td>International Operations Management</td>
<td>Jaya Singhal</td>
</tr>
<tr>
<td>16</td>
<td>TQM and Benchmarking</td>
<td>Stephen A. De Lurgio</td>
</tr>
<tr>
<td>17</td>
<td>New Topics in POM</td>
<td>Ken Baker</td>
</tr>
<tr>
<td>18</td>
<td>Special Sessions</td>
<td>John Paxton</td>
</tr>
</tbody>
</table>

The session numbers may be explained with reference to the following diagram:

```
X
  
Y
  
  I

J

K

XYI(J).K
```

- X refers to the day of the week (S:Sunday)
- Y refers to the session within the day (A: first morning session, B: second morning session, C: first afternoon session, D: second afternoon session)
- I refers to the track number (see list above)
- J is optional, it is only used when more than one session is scheduled at the same time within one track (some tracks were large enough to require this); the parallel sessions are numbered (1), (2), and (3)
- K is the paper number in the session in the order they will be presented

If you are interested in a particular track, you would focus on the third position and look for the number of the track of interest.
## SESSION SCHEDULE

<table>
<thead>
<tr>
<th>Room</th>
<th>Session</th>
<th>Title</th>
<th>Chair</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:30am-10:00am</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>102</td>
<td>SA1(1)</td>
<td>New Teaching Approaches for the POM Core Courses</td>
<td>Brad C. Meyer, Drake University</td>
</tr>
<tr>
<td>134</td>
<td>SA1(2)</td>
<td>New Ideas for Teaching POM in Large Classes</td>
<td>David R. Grimmett, Austin Peay State University</td>
</tr>
<tr>
<td>138</td>
<td>SA3.1</td>
<td>The Real-World and POM</td>
<td>Paul Dreyfus, University of Memphis</td>
</tr>
<tr>
<td>206</td>
<td>SA5(1)</td>
<td>New POM Teaching Paradigms</td>
<td>L. Leslie Gardner, University of Indianapolis</td>
</tr>
<tr>
<td>208</td>
<td>SA5(2)</td>
<td>Emerging POM Trends and Teaching Paradigms</td>
<td>Amitabh Raturi, University of Cincinnati</td>
</tr>
<tr>
<td>222</td>
<td>SA10.1</td>
<td>Service Operations and Quality Management</td>
<td>Dyan L. Haugen, St. Cloud State University</td>
</tr>
<tr>
<td>223</td>
<td>SA13</td>
<td>Redesigning the POM System</td>
<td>Will Price, University of the Pacific</td>
</tr>
<tr>
<td>226</td>
<td>SA15</td>
<td>International Operations Management (II)</td>
<td>Antonio Fleury, Universidade de Sao Paulo</td>
</tr>
<tr>
<td>232</td>
<td>SA18</td>
<td>The Future of Published Research in Operations Management</td>
<td>Jack Meredith, Wake Forest</td>
</tr>
<tr>
<td>10:30am-12:00pm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>102</td>
<td>SB1</td>
<td>Changing the POM Core Course</td>
<td>Dyan L. Haugen, St. Cloud State University</td>
</tr>
<tr>
<td>134</td>
<td>SB2</td>
<td>Teaching POM in an International Context</td>
<td>Randolph M. Russell, University of Calgary</td>
</tr>
<tr>
<td>138</td>
<td>SB3.1</td>
<td>Instructional Issues in the Real-World of POM</td>
<td>Jim Evans, University of Cincinnati</td>
</tr>
<tr>
<td>206</td>
<td>SB8</td>
<td>New POM Pedagogies</td>
<td>Roberta Russell, Virginia Tech</td>
</tr>
<tr>
<td>208</td>
<td>SB9</td>
<td>POM Scheduling</td>
<td>V. Daniel R. Guide, Jr., Air Force Institute of Technology</td>
</tr>
<tr>
<td>222</td>
<td>SB11</td>
<td>POM Manufacturing Strategy</td>
<td>Jaime Fensterseifer, PPG/PFRGS</td>
</tr>
<tr>
<td>223</td>
<td>SB14</td>
<td>Inventory Management I</td>
<td>Leonora Fuxman, St. John's University</td>
</tr>
<tr>
<td>226</td>
<td>SB16</td>
<td>Total Quality Management Topics</td>
<td>Marc J. Schindelers, University of Nebraska-Lincoln</td>
</tr>
<tr>
<td>232</td>
<td>SB18</td>
<td>Workshop on “Visual Basic” for POM</td>
<td>John Paxton, Wayne State College</td>
</tr>
<tr>
<td>1:30pm-3:00pm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>102</td>
<td>SC1</td>
<td>Redesigning the POM Core Course</td>
<td>Susan E. Pariseau, Merrimack College</td>
</tr>
<tr>
<td>134</td>
<td>SC2</td>
<td>International POM Education</td>
<td>Ronald Ebert, University of Missouri-Columbia</td>
</tr>
<tr>
<td>138</td>
<td>SC4</td>
<td>Case Usage in POM Teaching</td>
<td>Sharon Johnson, Worcester Polytechnic Institute</td>
</tr>
<tr>
<td>206</td>
<td>SC6</td>
<td>New Visions of POM Education</td>
<td>Jacob V. Simons, Jr.</td>
</tr>
<tr>
<td>208</td>
<td>SC9</td>
<td>Planning and Scheduling</td>
<td>John C. Goodale, Ball State University</td>
</tr>
<tr>
<td>222</td>
<td>SC12</td>
<td>Integrating the Computer in POM</td>
<td>Kenneth E. Kendall, Rutgers University</td>
</tr>
<tr>
<td>223</td>
<td>SC14</td>
<td>Inventory Management (II)</td>
<td>Norman Ware, AFIT/LAS</td>
</tr>
<tr>
<td>226</td>
<td>SC16</td>
<td>Topics in Quality Management</td>
<td>Behnam Nakhai, Millersville University</td>
</tr>
<tr>
<td>232</td>
<td>SC18</td>
<td>Workshop on Process Potential and Capability Assessments</td>
<td>Tsong-Hung Chang, University of Wisconsin-Milwaukee</td>
</tr>
<tr>
<td>3:30pm-5:00pm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>102</td>
<td>SD1</td>
<td>Changing the POM Core Course</td>
<td>Francois M. Julien, University of Ottawa</td>
</tr>
<tr>
<td>134</td>
<td>SD2</td>
<td>Teaching Global POM</td>
<td>Germaine H. Saad, Widener University</td>
</tr>
<tr>
<td>138</td>
<td>SD5</td>
<td>Changing the POM Teaching Paradigm</td>
<td>Mark A. Turmquist, Cornell University</td>
</tr>
<tr>
<td>206</td>
<td>SD7</td>
<td>Cross-Functional POM Teaching Linkages</td>
<td>Satya S. Chakravorty, Kennesaw State College</td>
</tr>
<tr>
<td>208</td>
<td>SD10</td>
<td>Service Operations Planning</td>
<td>L. Drew Rosen, University of North Carolina</td>
</tr>
<tr>
<td>222</td>
<td>SD13</td>
<td>Physical Systems Management</td>
<td>David Rogers, University of Cincinnati</td>
</tr>
<tr>
<td>223</td>
<td>SD15</td>
<td>International Operations Management (I)</td>
<td>Robert T. Amsden, University of Dayton</td>
</tr>
<tr>
<td>226</td>
<td>SD17(1)</td>
<td>Interesting Topics in POM</td>
<td>Diane H. Parente, SUNY-University of Buffalo</td>
</tr>
<tr>
<td>232</td>
<td>SD17(2)</td>
<td>New Topics in POM</td>
<td>Michael H. Way, Indiana University</td>
</tr>
</tbody>
</table>
SATURDAY TEACHING WORKSHOPS

On Saturday, March 30, 1996 in the afternoon two special teaching workshops will be presented in Room 206. All registered POMS-96 members are invited to attend. Time and abstract information is presented below.

Day: Saturday  Time: 1:30pm-3:00pm  Room: 206

Teaching International Operations Management, M. Therese Flaherty, Wharton School, University of Pennsylvania

International operations management is taught to growing audiences in introductory, operations strategy, and advanced special topics courses. The subject can be highly strategic and implementation-oriented; it also has a strong analytical foundation in economics and operations research. This workshop presents experience, materials, and references to the practitioner and research literatures for each approach. The workshop includes a question-and-answer period. Experienced teachers are asked to share their experience and materials.

Day: Saturday  Time: 3:30pm-5:00pm  Room: 206

Developing Cases in POM, David Upton, Harvard School of Business, Harvard University

This workshop will explore the challenges of developing teaching cases in POM. It will describe the key elements in the process of case development and examine issues that commonly arise during that process. Finally, we will look at some characteristics of teaching cases that appear, at least in POM, to result in much better learning experiences for both teacher and students.
PLENARY AND SEMI-PLenary SESSION INFORMATION AND ABSTRACTS

Two days of plenary and semi-plenary sessions have been organized for April 1-2 where outstanding teachers and practitioners will present their visions of what an education in POM should be, what topics should be taught, and what pedagogies should be used. Each session contains a variety of papers, speakers, and commentators. These sessions include:

Visions of an Education in POM. Chair: Kalyan Singhal, University of Baltimore
Teaching Paradigms. Chair: Martin Starr, Columbia University
Executive Education. Chair: Warren Hausman, Stanford University
Experiential Learning. Chair: James Ward, Purdue University
Incorporating the Real World. Chair: Brian Talbot, University of Michigan
International POM. Chair: Roger Schmenner, Indiana University
Teaching the Core Course in POM. Chair: Suresh Chand, Purdue University
New Topics. Chair: Ken Baker, Dartmouth College
Integrating POM with Other Functional Areas. Chair: Paul Kleindorfer, Wharton School
Mathematical Modeling. Chair: Stephen Graves, M.I.T.

There will be a brief introduction to the plenary and semi-plenary sessions from 8:00 a.m. to 8:15 a.m. in the Auditorium. The date, time, location and additional abstract information on each of the plenary and semi-plenary sessions are as follows:

Visions of an Education in POM. Chair: Kalyan Singhal, University of Baltimore
Day: Monday Time: 8:15am-10:00am Room: Auditorium
Speakers: Robert Hayes, Harvard University; William Lovejoy, University of Michigan; Jeffrey Miller, Boston University
Commentator: Jack Meredith, Wake Forest University

Presentations:
Title: POM Teaching and Research in the 21st Century
Abstract: It is clear that Operations Management will continue to expand its scope over the foreseeable future. Having added quality management, operations strategy, service management, new product development, and many other topics to its repertoire over the past two decades, we are being pushed -- by practitioners as well as by our students -- to extend our reach both horizontally (to encompass the whole supply chain and the interface with marketing and other functions) and internationally. In addition, the increasing speed and sophistication of computer technology, and the potentially enormous impact of the internet will profoundly expand the teaching tools and methodologies we can employ in addressing these increasingly complex issues.

Meeting the challenges posed by this ever-broadening conceptualization of our mission and the new tools available to us will require that we explore an array of means to broaden ourselves, our departments, our teaching and our research. We need to reconsider the conceptual underpinnings of POM, drawing upon the diversity represented by our enlarged mission and constituency. We may wish to attract new people to our departments, having very different backgrounds than in the past. We will have to learn how to attract such people, how to prepare them to be effective teachers and researchers in POM, and how to work effectively with them.

The locations of faculty, students and potential partners in the learning experience, as well as the methods we employ in our teaching and research will be transformed, forcing us to reconsider how we organize to do our work, and when and where we do it. Competitive dynamics will also
alter the way we think about the "products" or our research and teaching, who we think of as partners, (and competitors) and where we look for information.

The panelists will describe some of the ways their schools are attempting to address these issues, and some of the specific problems they are encountering. The general panel discussion will focus on how to prepare for, and implement, these changes.

Teaching Paradigms.  Chair: Martin Starr, Columbia University
Day: Monday       Time: 10:30am-12:00pm          Room: Auditorium
Speakers:    Barry Render, Rollins College; Leroy Schwarz, Purdue University;
            Mark Spearman, Georgia Tech; and Wallace Hopp, Northwestern University
Commentators: Lee Krajewski, Notre Dame; Gary Eppen, University of
               Chicago; Paul Zipkin, Duke University

Presentations:
Barry Render
Title:  Communicating in the POM Class: An Author's Perspective
Abstract: Teaching POM is a dynamic, exciting, and demanding process because the field itself and the technology available in and out of the classroom are also rapidly changing. This paper presents a paradigm for teaching POM in the mid-1990's that has many components. Coming from an author's perspective, a central teaching decision must be the textbook selected, which in turn effects the style of teaching through ancillaries such as software, cases, presentation graphics, CD-ROM and videos. The paper also looks to the future, discussing such concepts as modular courses, custom publishing, textless teaching, and distributed learning.

Leroy Schwarz
Title:  The Information/Control/Buffer Portfolio: An Operations Management Teaching Paradigm
Abstract: This talk will introduce and illustrate the use of the "Information/Buffer/Control (I/C/B) Portfolio" paradigm in teaching Operations Management. Briefly stated, the I/C/B Portfolio views the management of operations as three closely-related systems: (1) as an information-system, which provides information for decision-making; (2) as a control-system, which plans and controls production; and (3) as a buffer-system, which compensates for imperfections in the information- and/or control-system. The I/C/B Portfolio paradigm has been proven effective in introducing students to what operations management is and to what operations managers do. In addition, it provides a useful framework for comparing different types of management systems (e.g., MRP versus JIT). Even more important, it is effective in motivating students to think creatively about designing and managing new management systems and in providing a link between operations management, technology management, and management information systems.

Mark L. Spearman and Wallace Hopp
Title:  Factory Physics
Abstract: Recently, there has been much concern over the "dumbing down" of P/OM courses. However, there is no desire to return to the days of teaching courses where methodology was emphasized over realism. Meanwhile, our customers in industry have been inundated by a blizzard of management buzzwords. While each idea contains its kernel of truth, there is little to indicate what will work in a given situation. For some time, P/OM researchers have endeavored to provide a "systematic description of the underlying behavior of production systems". We call our attempt, "Factory Physics". This talk describes our experience teaching P/OM using this framework.
Executive Education. Chair: Warren Hausman, Stanford University  
Day: Monday  Time: 1:30pm-3:00pm  Room: Auditorium  
Speakers: James Freeland, University of Virginia; Joseph Thomas, Cornell University; and Warren Hausman, Stanford University  
Session Abstract: This panel will share recent experiences with executive education both for operations management and for the operations component of general management programs.

Experiential Learning. Chair: James Ward, Purdue University  
Day: Monday  Time: 1:30pm-3:00pm  Room: 208  
Speakers: Peter Jackson, Cornell University; John Muckstadt, Cornell University; Herbert Moskowitz, Purdue University; Hans Thorelli, Indiana University; and James Ward, Purdue University  
Presentations:  
Peter Jackson and John Muckstadt  
Title: Experiential Learning for Global Manufacturing and Distribution  
Abstract: During the past fifteen years, we have developed several major experiential learning modules for engineering and business. In this talk, we will describe the Nova Manufacturing Company, a simulated company that manufactures and distributes products in a global marketplace. Nova faces a complex set of strategic and logistical issues complicated by variability in exchange rates, demand rates, process yield, and process capacity. The choice of organizational and information system structure will critically affect its ability to compete. Students develop an integrated manufacturing and distribution strategy together with detailed operational policies by working through a series of highly structured gaming experiences and analytical exercises.

Herbert Moskowitz and James Ward  
Title: The Electronic Bookshelf: Instilling a Continuous Learning Culture in Manufacturing Education Through Active Learning and Information Technology  
Abstract: We have developed a three step instructional concept primarily aimed at two objectives: first, the integration of management and engineering curriculum for students in our manufacturing related programs, and second, instilling a continuous learning culture in these students and programs. The three steps are (1) involve cross-functional teams in a real-life business problem context (active learning), (2) require teams to not only solve a “live” problem but to design the processes to solve it, and (3) share best practices and knowledge with all subsequent students (and practitioners) to obviate the practice of ‘reinventing the wheel’. We discuss two work packages designed around these concepts: (1) New Product Development that involves the integration of project management, quality function deployment (QFD), and design for manufacturing and assembly (DFM&A), and (2) Process Control for Quality and Productivity Improvement which involves the integration of concepts from engineering, statistical quality control, design of experiments, and management.

Hans B. Thorelli  
Title: INTOPIA - Simulation of Global Production Strategy  
Abstract: International Operations Simulation/Mark 2000 (INTOPIA) is an International Business Strategy exercise with full representation of all major functional areas in an MNC. This talk will focus on production strategy at the corporate level of the MNC as illustrated by the simulation. The simulation includes components (microchips), chiefly made from PC production
but for the supplementary purposes (upgrading, replacement) also for end customers. Assuming you
are a PC maker, overall operations strategy questions include: where to make the PC, will they be
low-end or frontier models, make or buy chips, economic and political risk if chips made in another
part of the world, kanban logistics, synchronization of chips and PC technology, entry and exit
barriers, transfer price in vertically integrated operations.

**Incorporating the Real World. Chair: Brian Talbot, University of Michigan**
**Day: Monday**  **Time: 3:30pm-5:00pm**  **Room: Auditorium**
**Speakers:** William Hanson, M.I.T. and Craig Marks, University of Michigan
**Commentators:** Edward Davis, University of Virginia; and Wallace Hopp,
Northwestern University

Abstracts: None

**International POM. Chair: Roger Schmenner, Indiana University**
**Day: Monday**  **Time: 3:30pm-5:00pm**  **Room: 208**
**Speakers:** Ravi Kumar, University of Southern California; and Robert
Schmenner, Indiana University
**Commentator: To Be Announced**

Presentations:

Ravi Kumar
**Title:** IOM 537: Information Systems Management for Global Operations--USC
Experiences in Europe
**Abstract:** This class deals with the use of information technology and information
systems strategy to support and coordinate global operational strategies in manufacturing and service
companies. Included in this class is an international consulting project, comprised of 5 consulting
groups (with 6 students each) serving 5 client companies in 2 countries (either in Europe or Asia).
There is a mandatory field trip to these companies during the Spring Break week where face-to-face
business meetings are held in those countries.

In the last four years, we have visited London/Paris, Singapore/Kuala Lumpur,
Milan/Munch, Osaka/Seoul and our next trip is to Taipei/Hong Kong. Some of the companies
visited include World Bank, Sanwa Bank, Korea First Bank, Singapore Telecom, France Telecom,
Italtel, Siemens, BMW, Magneti Marelli, Dainler-Benz Aerospace, Korean Air, Rolls Royce,
Reuters, Du Pont, UPS and Motorola.

In this talk, we will focus on the design and implementation of such a class as well as the
lessons that we have learned.

Robert Schmenner
**Title:** Getting International
**Abstract:** Teaching the international aspects of business well is an increasingly
important task for a business school. Many think it will be a "outpoint" in differentiating the
effectiveness of business programs. There are a variety of ways by which internationalism can enter
into a business school curriculum and into the intellectual lives of its faculty. This presentation
addresses these concerns and discusses the options for operations management faculty, both at the
philosophical level but also at the nitty-gritty level of making it happen.
major operations investments, and investments in quality management programs.

Mathematical Modeling (Sponsored by the Informs Section on Manufacturing and Service Operations Management). Chair: Stephen Graves, M.I.T.
Day: Tuesday       Time: 2:00pm-3:30pm       Room: Auditorium
Speakers: Karla Bourland, Dartmouth; and Stephen Graves, M.I.T.

Presentations:
Karla Bourland
Title: Models and Intuition
Abstract: In many institutions, mathematical models have been the primary focus in operations management education for many years. Yet, for many of our MBA graduates, the core OM course may be the only OM course they every take. What is it that these investment bankers, brand managers, and future CEOs need to learn from a core OM course? Is it possible to give intuition without mathematical models? Can mathematical models get in the way of developing intuition? We suggest that in many cases, the latter is true, and seek an open dialog on this with those in attendance.

Stephen Graves
Title: Software Tools for Teaching OM Models
Abstract: Mathematical models play an important role in teaching the concepts and principles of operations management, especially for the broad topics of materials management, capacity planning, and system design. Models can be used to develop insights or intuition; for demonstrating or discovering important principles; and for structuring actual decisions and providing decision support. In this talk we describe our development of several software applications of operations management models and techniques, and discuss our experience with using these applications in teaching. In particular, we show how we have used the software to create synergy between our teaching and research missions, i.e., to bring our research into the classroom.
WORKSHOPS ASSOCIATED WITH THE SEMI-PLENARY SESSIONS

Tuesday, April 2

8:00-9:30am
Title: Experiential Learning in Global Manufacturing System Design
Room: 206
Speakers: Peter Jackson and Jack Muckstadt, Cornell University
Abstract: This workshop will provide more in-depth coverage of the material introduced in the speakers’ Monday semi-plenary talk.

9:50-11:20am
Title: Simulating International Operations Management - INTOPIA Workshop
Room: 206
Speaker: Scott Lever, Indiana University
Abstract: This workshop will provide more in-depth coverage of the material introduced in Hans Thorelli’s Monday semi-plenary talk.

9:50-11:20am
Workshop Title: Factory Physics and Transparent-Box Business Simulators
Room: 208
Speaker: Mark Spearman, Georgia Tech
Title: Cycle-Time Reduction Using Factory Physics
Abstract: This workshop will provide more in-depth coverage of the material introduced in the speaker’s Monday semi-plenary talk.

Speakers: Jośe Machuca, Miguel Machuca and A. Ruiz, Gideo Research Group
Title: Systems Approach and Transparent-Box Business Simulators: A New Approach for Teaching POM
Abstract: Over the last few years, our research group (GIDEAO), following an original idea (Machuca J. A. D. (1991, 1992a and 1992b) has been developing transparent-box games (based on Systems Thinking/ System Dynamics Models) whose main feature is that the causal structure representing the interrelationships between variables of the System is always accessible to the user of the game, who can thus reflect on the causes underlying the results obtained and thereby improve decision-making and the learning process. This presentation is focused to show: 1) How the methods and tools presently used for P.O.M. teaching are insufficient to cope with an ever more complex reality; 2) how the proposed paradigm and methods may represent, in our view, an advance on the current situation of teaching in our field. We have been experiencing it during three years and we have become confident about our research.

12:10-1:40pm
Title: Team Learning and the Electronic Bookshelf: Applications to New Product Design and Process Improvement
Room: 206
Speakers: Herbert Moskowitz and James Ward, Purdue University
Abstract: This workshop will provide more in-depth coverage of the material introduced in the speakers’ Monday semi-plenary talk.
INVITED PAPER SESSIONS ABSTRACTS

On Sunday, March 31, 1996 a series of five invited paper sessions will be presented. All registered POMS-96 members are invited to attend. Time and abstract information is presented below.

Day: Sunday  Time: 8:30am-10:00am  Room: 236

Teaching Service Operations Management to Various Audiences
Chair: James A. Fitzsimmons, University of Texas
Panel Members: David A. Collier, The Ohio State University; and Michael J. Showalter, Florida State University

Service operations management is a growing topic of interest among different student markets. The panel members will discuss their experiences teaching service operations management in a variety of venues including executive education, offering the course in Europe, as an undergraduate core operations course, and contrasting the MBA elective when offered for day students - versus - night students. Sample course syllabi will be distributed to those attending the session. Finally, the initiation of a Web page for service operations management will be discussed.

Day: Sunday  Time: 10:30am-12:00pm  Room: 236

Teaching International Operations Management
Chairs: Aleda Roth, University of North Carolina; and Martin K. Starr, Columbia University

Presentation:
Martin K. Starr
Title: Considerations for Teaching International Operations Management

Business schools need to offer two distinctly different POM tracks. One emphasizes domestic POM course materials (OM). The other focuses on international aspects of operations management (IOM). Training of instructors differs significantly for the two courses. IOM accentuates operations crossing borders where different languages, cultures and currencies apply. The IOM syllabus employs cases and examples based on companies and/or divisions located in many different countries. Three important drivers of the international P/OM curricula should be recognized. 1) supply chain management - P/OM is responsible for coordinating sources, making and delivering goods and services across global boundaries; 2) portfolio management - P/OM can reduce the systems risk by geographically diversifying operations; 3) capabilities management - P/OM can capitalize on special global opportunities. Teaching how these three international drivers interact is the IOM challenge to curriculum development and instructors’ methods. There is a need for discussion about whether the standards for best practice P/OM transfer easily across country boundaries. We also want to consider what teachers have to offer when complete information can be delivered by the Internet.

Day: Sunday  Time: 1:30pm- 3:00pm  Room: 236

Designing and Teaching of Operations Management Curricula
Chair: Steven Nahmias, Santa Clara University
Panel Members: To be announced

Abstract: None

A-28
Innovative Teaching Methods in Production/Operations Management
Chair: J. N. D. Gupta, Ball State University
Panel Members: Ralph D. Badinelli, Virginia Polytechnic Institute and State University; Shane J. Schvaneveldt, Weber State University; and Nouir Maanavi, Norfolk State University

Presentations:
Jatinder N.D. Gupta and Enar A. Tunc
Title: POM Core Course in the MBA Program: Paradigms for Teaching and Research in the Twenty-First Century
Abstract: This paper argues that the teaching of Production and Operations Management (POM) courses in the MBA programs has followed a traditional set of assumptions that may be very limited in its utility to the practice of POM. Through a review of literature, focused group discussions, and the emerging trends in business education is the USA and abroad, this paper develops possible programs for research and teaching the core MBA course in Production and Operations Management. Some experiences and suggestions for effective teaching in the emerging twenty-first century MBA programs are also described.

Shane J. Schvaneveldt
Title: Teaching Operations Management with Popular Film Scenes
Abstract: This presentation will explore issues and ideas for using popular films in the teaching of production and operations management. Short film scenes can be used to introduce topics, provide humor and variety in presentations, and to motivate class discussion. To illustrate their instructional use, popular film scenes illustrating a variety of operations management topics will be shown or discussed. Attendees will also be invited to share their own ideas and experiences.

Directions in Cross-functional Teaching
Chair: Ashok Srinivasan, Purdue University
Panel Members: Dilip Chhajed, University of Illinois, James D. Blocher, Indiana University; Ashok Srinivasan, Purdue University, and Lynda Thoman, Purdue University

Presentations:
Dilip Chhajed
Title: Six Blind People and the Elephant: After the Surgery
Abstract: Beginning with Fall 1995, the Illinois MBA program has adapted a new curriculum. This talk will discuss some of the main features of the curriculum, its development, as well as its implementation. The surgery is over and the elephant is coming into focus.

Doug Blocher
Title: Integrative Teaching: Lessons from the Past and Ideas for the Future
Abstract: After four years of offering a new integrative MBA program, Indiana University faculty are involved in reengineering what most there view a success. Experience with this program has led many to ask what an integrative program really is and what it takes to
successfully deliver such a program. Some lessons from this experience and some ideas for improvement will be discussed.

Ashok Srinivasan and Lynda Thoman
Title: Integration of Accounting and Operations in Traditional Programs
Abstract: A large number of business programs (both MBA and undergraduate) continue to offer distinct courses in functional areas of management thus presenting a challenge for integration. We present our experiments with integrating accounting and operations both in the MBA and undergraduate programs.

Day: Sunday           Time: 10:30am-12:00pm           Room: 216

Teaching Manufacturing
Chair: Kathryn Stecke, University of Michigan
Panel Members: Sridhar Tayur, Carnegie Mellon University; and Urban Wemmerlov, University of Wisconsin-Madison; and David Upton, Harvard Business School
SUNDAY, 8:30am-10:00am

SA1(1) Title: New Teaching Approaches for the POM Core Courses
Chair: Brad C. Meyer, Drake University

SA1(1.1) A Novel Approach to Using the Computer in the Core POM Course, Brad C. Meyer, College of Business and Public Administration, Drake University, 2507 University Avenue, Aliber Hall, Des Moines, IA 50311-4505

The typical use of the computer in an introductory POM course is as a calculating aid for mathematical models. Current technology provides the means for a broader use of the computer in POM. The author has developed a course with numerous computerized "laboratory" assignments for learning concepts and techniques in POM. These include QuickTime movies for work measurement and methods analysis; interactive computer animations for control charts, inventory models, and queuing; and use of a spreadsheet to model MRP relationships.

SA1(1.2) Customization of Operations Management, Anshuman Khare, 9 Jawahar Lal Nehru Road, George Town, Allahabad 211002, India

In the rapidly changing Indian scenario, the customer orientation of the future production/operations managers is a must. It has to revolve around the assimilation of the following ideology(s): a. Producers think they are making products; while the customers think they are buying services. b. Producers worry about visible mistakes; customers are lost because of invisible mistakes. c. Producers think their technology creates products; customers think their desires create products. d. Producers organize for managerial convenience; customers want organizations structured for their convenience. e. Producers seek a high standard of performance; customers seek a high standard of living.

SA1(1.3) Incorporating New Quality Tools in the POM Curriculum, Richard Luebke, Department of Management, 313-D Law library, School of Business, Miami University, Oxford, OH 45056; Byron Finch, School of Business, 307 Law Hall, Miami University, Oxford, OH 45056

The quality improvement (QI) story and the seven new management tools have proved to be of significant value in the quality improvement efforts of business and industry. Despite the importance placed on these tools by American and Japanese businesses, they have not been widely integrated in the operations and quality management texts. This paper provides a brief overview of these tools, and provides examples of how they have been used in Japan and the U.S. Suggestions for how these tools might be incorporated into the undergraduate curriculum is also discussed.

SUNDAY, 8:30am-10:00am

SA2(2) Title: New Ideas for Teaching POM in Large Classes
Chair: David R. Grimmell, Austin Peay State University

SA2(2.1) Using Acts and Plays in the Teaching of Production/Management, David R. Grimmell, Austin Peay State University, College of Business, Economics, Management & Marketing, PO Box 4426, Clarksville, TN 37044

Two challenges of teaching POM relate to the fear of numbers and to interpersonal communication. Many of our students in the typical required POM course not only have limited numerical skills, but also rarely build on their verbal deficiencies. Over the years, the author has turned from cases to plays in an effort to break through these barriers and to allow the students to come out of their shell. Real world characters and personalities are included in the skits (along with the numbers), and the students seem to enjoy the process as well. A specific act will be presented and audience members will be asked to participate.

SA2(2.2) Optimal Minimization of Cheating on POMS Exams in Large Auditorium Classrooms, Marc J. Schmieder, University of Nebraska-Lincoln, College of Business Administration, Department of Management, Lincoln, NE 68588-0491

Exams over the subject of POMS involve both qualitative and quantitative content. The diverse nature of the content in POMS exams can invite student cheating, particularly in large auditorium classrooms. We are currently in a period of time when many researchers feel that college exam cheating is at an all time high and expanding classroom sizes is only going to exacerbate the problem. The purpose of this paper is to report on a five-year research study examining student cheating in POMS courses at the University of Nebraska-Lincoln. The paper demonstrates how a classical optimization technique can be used to determine optimal proctoring levels for large classroom sections of POMS.

SA2(2.3) Social Constructivist Approach to the Introductory Operations Management Course, Dave Christy, Department of Management Science and Information Systems, 303 Beam Building, College of Business Administration, Penn State University, University Park, PA 16802

Large undergraduate instruction in operations and logistics management at Penn State is being redesigned in topical presentation and instructional support technology. The social constructivist philosophy organizes knowledge around observable phenomena. Our course, and the multimedia material that will support it, is organized around six topics: 1) products and services, 2) continuous processes, 3) batch/repetitive processes, 4) intermittent/job shop processes, 5) projects, and 6) the supply chain. Traditional topics of material management, scheduling resources, measurement of quality, and technology
are introduced into the discussion of processes within the context of productive systems where they are likely to be employed.

SUNDAY, 8:30am-10:00am  Room: 138

SA3  Title: The Real-World and POM  
Chair: Paul Dreyfus, University of Memphis

SA3.1 Applied Leadership: A POM Educational Dimension, Paul Dreyfus, MIS and Decision Sciences, University of Memphis, Memphis, TN 38152; Michael Vineyard, MIS and Decision Sciences, University of Memphis, Memphis, TN 38152

This paper proposes the addition or enhancement of an "applied leadership" dimension to the POM curriculum. The premise is that applied leadership skills are necessary for graduates to be able to successfully implement POM strategies and processes in today's complex interactive business environment. The "applied leadership" dimension is a blend of leadership, teamwork, and problem solving training skills taught using experiential methods. At present there are few business courses that teach how to get workers involved to support the successful implementation of these processes. This paper will discuss usefulness of applied leadership, content areas, and teaching methods.

SA3.2 Reflect Real Life: Teach Operations Through Drivers Not Techniques, How Davies, Cheltenham and Gloucester, College of Higher Education, PO Box 220, The Park, Cheltenham, United Kingdom GL50 2QF; Roy Staughton, Cheltenham and Gloucester, College of Higher Education, PO Box 220, The Park, Cheltenham, United Kingdom GL50 2QF

There is a fundamental difference between the way operations is taught in business schools and the way it is practiced in successful organizations. Course outlines and textbooks use real life material but devote individual lessons or chapters to specific techniques or concepts. Successful businesses select tools and approaches only after having developed a clear understanding of the drivers influencing operations. Drivers define the role operations has to play in supporting a chosen market and reveal appropriate techniques. Techniques without strategy spell disaster for companies and disenchantment for students. This paper reports on the successful use of drivers to structure courses at undergraduate, postgraduate and post-experience levels.


This paper shows how to use video interviews with managers and the actual data available in companies to make case studies real and relevant and a more efficient learning process. Twelve videos have been prepared covering the organization of technology, the role of inventory, the fulfillment of a new marketing strategy, the search for an improved profit position. Teaching this way provide a live learning context in which the students, having been taught the basic models and concepts on the issue, have to confront with the teachers, the real situation in hand, the views of the managers and the available data to support an argument. It prepares the students realistically to make a contribution to a business on completion of their course.

SUNDAY, 8:30am-10:00am  Room: 206

SA5(1)  Title: New POM Teaching Paradigms  
Chair: L. Leslie Gardner, University of Indianapolis

SA5(1.1) Teaching Process Improvement by Doing Process Improvement, L. Leslie Gardner, School of Business, University of Indianapolis, 1400 East Hanna Avenue, Indianapolis, IN 46227-3697

This paper presents a step-by-step approach to teaching process improvement in a POM course in an undergraduate school of business. Groups of students identify obstacles to learning in their classroom, survey the other students to determine the most important problems, analyze the problems using tools such as Pareto charts and Ishikawa diagrams, and develop detailed suggestions for improvement. Improvements are implemented and evaluated. This process has the added benefit of serving as a classroom assessment tool.

SA5(1.2) No-Surprises Teaching, Jacob V. Simons, Jr., 3585 Woodgreen Drive, Beavercreek, OH 45434

Traditional approaches to teaching typically lead to several uncomfortable surprises for both students and teachers. Students are surprised about such things as assignment requirements, exam questions, and grading results. Instructors are surprised about such things as student preparation, student learning, and student reactions. In most cases, these surprises result in degradation of the learning experience. Numerous ways in which the opportunity for surprises to originate are described and potential solutions offered. The Speaker's experience with several of these methods is shared.

SA5(1.3) An Experiment to Illustrate Design Concepts, Muhammad Razi, Department of Information Systems, School of Business, Virginia Commonwealth University, 1015 Floyd Avenue, PO Box 844000, Richmond, VA 23284; Glenn H. Gilbreath, Department of Information Systems, Virginia Commonwealth University, 1015 Floyd Avenue, PO Box 84400, School of Business, Decision Sciences, Richmond, VA 23284

Design of experiments (DOE) is recognized as an important tool in production and operations management. DOE provides a mechanism for gaining knowledge about the effects of various process conditions and engineering characteristics on critical response, such as measure of quality. Traditional methods of teaching DOE that rely exclusively on mathematics hinder
learning and ultimately, applied use. Visual displays and simple calculations may be used to increase the understanding of DOE. This paper shows how simple experiments emphasizing graphical methods improve the effectiveness of instruction in DOE. These methods are useful in both the college classroom and in employee training programs.

SUNDAY, 8:30am-10:00am  Room: 208

SA5(2)  Title: Emerging POM Trends and Teaching Paradigms  
Chair: Amitabhr Raturi, University of Cincinnati

SA5(2).1 Empirical Research in OM: Are We Making Progress?, Gary D. Scudder, Owen Graduate School of Management, Vanderbilt University, Nashville, TN 37203

This paper examines the progress over the last 10 years of the field of Operations Management in performing and publishing empirical research. Published articles since 1985 are classified on the basis of topic coverage, methodologies used, and research design. Summary conclusions are developed as an assessment of the progress. Implications of empirical research for enhancing the classroom experience will be discussed, along with further research directions.

SA5(2).2 Emerging Business Mission and Operating Paradigm for Production Enterprises: Educational Implications, Ahmet Satir, Concordia University, Department of Decision Sciences and MIS, Montreal, Quebec, Canada H3G 1M8

Based on a historical perspective and recent developments and trends, a business mission and an operating paradigm for production enterprises are proposed. A value constellation, comprising of supply, capital and societal segments, is defined to establish the boundaries of business domain for the emerging business mission and paradigm. Frameworks are developed and argued in the context of Value Constellation Management and Supply Chain Management to operationalize the proposed mission and paradigm, respectively. Educational implications are discussed in terms of curriculum design.

SA5(2).3 Two Courses for Learning the Practice of Operations Research, B. Curtis Eaves, Department of Operations Research, Stanford University, Stanford, CA 94305-4022

Operations Research (OR) and/or Management Science is about building, researching, testing, and revising a model or models of an operation with the intent of improving the operation in some way. The word operation means a problem, task, system, project, or opportunity in the real world, and model usually means a mathematical model. From one perspective and in the simplest terms, there are the mathematical models of OR and the mathematical theory thereof. Then there is a mountain of other skills required for the practice of OR. This paper is not about OR theory or even OR modeling, but rather about courses for learning the practice of OR. It describes an extended effort in the Department of Operations Research at Stanford University to develop an environment for learning the practice of OR. Over a twenty-year period this effort has explored, retreated, and grown in many dimensions some of which have broken new ground. Our purpose here is to provide an account of these courses and of the reactions elicited from students, instructors, and problem sponsors in the hope that various features will be studied, criticized, and perhaps, developed for adopted elsewhere.

SUNDAY, 8:30am-10:00am  Room: 222

SA10  Title: Service Operations and Quality Management  
Chair: Dyann L. Haugen, St. Cloud State University

SA10.1 Scheduling and Quality in Field Service Support Systems, Dyann L. Haugen, Department of Management, St. Cloud State University, 720 Fourth Avenue South, St. Cloud, MN 56301; Arthur Hill, Carlson School of Management, University of Minnesota, Minneapolis, MN 55455

This research addresses the problem of scheduling a given number of technicians to visit customer sites to perform emergency maintenance on equipment such as office machines or robots. In particular, we examine the problem where response times are guaranteed by customer contracts. We call this the field service scheduling problem (FSSP). The traditional approach to the FSSP is to use dispatching rules. This research proposes a dynamic scheduling procedure that attempts to minimize tardiness with respect to the response times defined by service guarantees. A simulation experiment is used to compare dispatching rules with this new procedure. The performance measures include four customer service/quality measures. The results of the experiments clearly show that the scheduling procedure dominates the dispatching rules on all four performance measures.

SA10.2 ISO-9000: The Quality of Certification Services, Jean Harvey, Department of Administrative Sciences, University of Quebec at Montreal, PO Box 6192, Downtown Station, Montreal, Quebec, Canada H3C 4R2; Isabelle Perron, Department of Administrative Sciences, University of Quebec at Montreal, PO Box 6192, Downtown Station, Montreal, Quebec, Canada H3C 4R2

Without a tight certification process, the ISO standard cannot produce any of the benefits it was meant to generate. Poor certification services could even discredit the standard and bring back the old ways. Since measurement is a pre-condition for improvement, it may be time to measure the quality of certification services. Registrars are professional service organizations. Applying quality of service models to this context, preliminary results from an on-going study of the Canadian context are presented.
SA10.3 Total Quality Function Deployment (TQFD) Applications, Bahador Ghahramani, University of Missouri-Rolla, 223 Engineering Management Bldg, Department of Engineering Management, Rolla, MO
65401

TQFD is a systematic approach prioritizing and tracking, evaluating and analyzing manufacturing operations in their actual product - or service - realization process. This is a state-of-the-art approach driven by customer needs and carried out by cross-functional teams supporting their operations utilizing charts and tables. TQFD enables manufacturing operations projects to incorporate expertise from varying sources involved in an operation. This process enables an operation's manager with the following technical capabilities: (a) translating customer requirements and needs into effective technical specifications. (b) Identifying critical operations issues throughout the manufacturing operations. (c) Focusing efforts on these critical issues.

SUNDAY, 8:30am-10:00am Room: 223

SA13 Title: Redesigning the POM System Chair: Will Price, University of the Pacific

SA13.1 The Limits of Technology in Warehouse Operations, Will Price, University of the Pacific, Eberhardt School of Business, 3601 Pacific Avenue, Stockton, CA 95211

With a definition of technology that includes both automation and information systems, this research provides a methodology to observe the extent of technology existing in a warehouse operation as many seek productivity by becoming increasingly "peopleless and paperless". The study reports on a test of the research design for a small sample of distribution center operations. For any company there is a current limit to the technology implemented and this research seeks to identify the factors driving investment decisions and those limiting technology initiatives.

SA13.2 Business Process Reengineering: Comparing Serial and Parallel Systems, Kelly B. Nichols, Operations and Decision Technologies, Tenth and Fee Lane, Indiana University, Bloomington, IN 47405-1701

During the past few years corporate use of business process reengineering has become widespread. Many consultants have developed rules for process design. One rule is to run activities in parallel. The goal of this paper is to examine analytical and simulated queuing models for both serial and parallel systems in order to understand why a parallel system is preferred. Both the analytical calculations and simulation results show the average queue delay for the parallel system to be much lower than the average queue delay for the serial system, even when the serial system has a longer mean processing time.

SA13.3 A Comparison of Assembly Lines and Cells Based on Product Types, Kaushik Sengupta, Operations Management, School of Business, Indiana University, Bloomington, IN 47405; F. Robert Jacobs, Operations Management, School of Business, Indiana University, Bloomington, IN 47405

While past research have compared job shops with cells, no previous study has compared assembly lines with cells. This research compares mixed model assembly lines with flow line cells. Multiple production run models and customized environments by considering different product life cycle lengths, model frequencies, and demand biases. The study addresses issues related to product and process design features in the context of standard or custom product environments and assembly lines or cells. The results of the research are expected to establish the basis for comparison between assembly lines and cells, based on the type of products manufactured.

SUNDAY, 8:30am-10:00am Room: 226

SA15 Title: International Operations Management (II)
Chair: Afonso Fleury, Universidade de Sao Paulo

SA15.1 The Formation of Production Engineers for Productive Restructuring in Developing Countries, Afonso Fleury, Production Engineering Department, Escola Politecnica, Universidade de Sao Paulo, Caixa Postal 61548, CEP 05424-970 Sao Paulo, Brazil

As the majority of Latin American countries, Brazil is currently moving into a new model of industrialization, abandoning the imports substitution policies and adopting competitive patterns associated with open competition in globalized markets. That macro change brings completely new demands for industrial concerns in general and generates demand for Production Engineers with a rather different professional profile. Consequently, the formation of Industrial Engineers must be reconsidered. In this paper, the characteristics of the new role of PEs is presented and the educational process that must be implemented to support its formation is discussed.

SA15.2 Total Quality Management in Taiwan and Mainland China, Subba S. Rao, University of Toledo, Department of ISOM, College of Business Administration, Toledo, OH 43606; Luis Solis, University of Toledo, Department of ISOM, College of Business Administration, Toledo, OH 43606; Chin-shun Pan, University of Toledo, Department of ISOM, College of Business Administration, Toledo, OH 43606

As part of an ongoing study of international quality management practices at the University of Toledo, this paper presents some of the results of a survey on TQM practices conducted in Taiwan and Mainland China. About 210 companies were covered in the survey. A questionnaire developed earlier and used in other studies was employed. In this paper we will bring out the similarities and differences in selected dimensions of TQM practices in the two countries. In particular, we will study in detail the relationships among quality results, customer orientation, leadership, and demographic variables in the two countries.
SA15.3 Transfer of Manufacturing Technology in Developing Countries, Vladimir Vinohovich, 507 Thrush Drive, Dresher, PA 19025; Savas Öztalay, Widener University, School of Management, One University Place, Chester, PA 19013

Most of manufacturing operations in the world has been shifting out of developed countries into developing countries. Such a shift demands massive amounts of transfer of manufacturing technology around the world. This paper studies methodologies and processes used in acquiring, transferring, and adopting new manufacturing technologies in developing countries which have significant manufacturing base supported by old technologies. The first section summarizes current technology base and organizational structure associated with this base. The second section establishes the need for a new technology base and how to transfer appropriate technology. The third section deals with the organizational and cultural impact of the new technology. The final section provides examples from two such countries, Yugoslavia and Turkey.

SUNDAY, 8:30am-10:00am Room: 232

SA18 Title: The Future of Published Research in Operations Management Chair: Jack Meredith, Babcock Graduate School of Management, Wake Forest University, PO Box 7659, Winston-Salem, NC 27109

The editor of the journal will report on the current state of the Journal of Operations Management, including rates and statistics. The review processes and philosophies of the journal will be described and plans for the future outlined. The editor will then describe his plans for the future of the journal and prognosticate on the types of papers that will probably be published in the journal in the future.

SUNDAY, 10:30am-12:00pm Room: 102

SB1 Title: Changing the POM Core Course Chair: Dyan L. Haugen, St. Cloud State University

SB1.1 Improving the MBA Operations Course. Dyan L. Haugen, Department of Management, St. Cloud State University, 720 Fourth Avenue South, St. Cloud, MN 56301

This paper addresses teaching the MBA operations course with improved methods. We discovered from a survey of MBA alumni what issues the students had with the teaching of courses. Several problems and issues were identified from the survey results. In response to the problems identified in this survey, the MBA operations course was redesigned to address these needs. Computer work, additional writing, group work, and more cases were added to the course. In addition, a feedback mechanism was added to the course so that we could receive timely feedback as the course progressed through the quarter. Responses from this tool were used to improve the quality of this course on a real-time basis (rather than a quarter later when the students would no longer be in the class).

SB1.2 Re-engineering the POM Curriculum, Larry Tauec, University of North Carolina-Greensboro, Bryan School of Business and Economics, Greensboro, NC 27412-5001; Kwasi Amoako-Gyampah, University of North Carolina-Greensboro, Bryan School of Business and Economics, Greensboro, NC 27412-5001; Vidya Gargeya, University of North Carolina-Greensboro, Bryan School of Business and Economics, Greensboro, NC 27412-5001

The Operation Management faculty at UNCG have re-engineered both the graduate and undergraduate degree programs to better fit the student needs of an urban, liberal arts university, with an evening MBA Program. The Bryan MBA Program is 85 percent part-time students, with roughly 40 percent from manufacturing backgrounds. Courses in this area have focused on 1.5 credit hour offerings, with both required strategy courses and elective "tools" courses in TQM, Implementing TQM, Project Management, and Forecasting. The undergraduate program formerly consisted of two required courses in production planning and inventory management, both of which had low enrollments. Courses are now focused on general "tools", software expertise, field based projects, and international emphasis.

SB1.3 TQM in the POM Survey Course: No Way?, Loretta Ferguson, Clemson University, Office of Assessment, B-17 Hardin Hall, Box 345155, Clemson, SC 29634-5155; Chris Craighead, Clemson University, Department of Management, 101 Sirrine Hall, Clemson, SC 29634-1305; J. Wayne Patterson, Clemson University, Department of Management, 101 Sirrine Hall, Clemson, SC 29634-1305

The rush to include total quality management (TQM) in the Operations Management survey course has not received enthusiastic support. In many cases, the topic is only referenced briefly and is not a part of the pedagogy applied in the course. Change is required in order to improve the survey course to make it more relevant to our customers. The purpose of this paper is to address the conflict(s) faced by faculty on both sides of the issue. Understanding their dilemma will help to identify methods for integrating new ideas into changing bodies of knowledge with more proficiency if not with less pain.

SUNDAY, 10:30am-12:00pm Room: 134

SB2 Title: Teaching POM in an International Context Chair: Randolph M. Russell, University of Calgary
SB2.1 On Teaching Global Logistics: Issues in Global Manufacturing, Procurement, and Distribution, Randolph M. Russell, Faculty of Management, University of Calgary, 2500 University Drive NW, Calgary, Alberta, Canada T2N 1N4

Intrafirm trade comprises more than one third of total worldwide trade. Configuration of global supply chains focuses on key issues in global manufacturing and distribution. An alternative to manufacturing is to buy from the world's best suppliers. To understand world trade, transportation and elements of the transaction process must also be understood. This paper outlines many topics that can be addressed in a course in global logistics and provides a bibliography of readings and cases to support these topics. Strategies for teaching, such as identifying guest speakers and exercises exploiting the Journal of Commerce and the Internet are also discussed.

SB2.2 Teaching Service Operations: The Field Project, Jean Harvey, Department of Administrative Sciences, University of Quebec at Montreal, PO Box 6192, Downtown Station, Montreal, Quebec, Canada H3C 4R2

Whereas case studies are useful in service operations courses to help focus on implementation issues, only a field project can build up self-confidence and give the student a taste for the feeling that one actually made a difference. Service outlets are plentiful and within easy access from universities. However, focusing on operations is not easy, as marketing, human resource and operations management are closely linked in service operations. After trying to exploit this opportunity and to find better ways to deal with the problems that surfaced over a period of three years, the author shares some of his learning on the "do's and don'ts" of the field project.

SB2.3 Facility Layout and Competitive Strategy: An Application of Discovery Learning, Vincent A. Vargas, Decision and Information Analysis, Goizueta Business School, Emory University, Atlanta, GA 30322; Richard D. Metters, Professor of Operations Management, Owen Graduate School of Management, Vanderbilt University, 401 21st Avenue South, Nashville, TN 37203

Evidence from the research literature on learning suggests that active involvement in the learning process is vitally important for the master of critical thinking skills. We present an in-class exercise in which students make decisions regarding the layout of a small manufacturing firm. Students grapple with the layout problem under different assumptions regarding product volume and variety. Students deduce the appropriateness of a product versus a process layout and evaluate the relative costs and benefits. Students also "discover" the cellular manufacturing concept and some of its associated benefits. The exercise concludes with a lecturette that summarizes the learning and relates it to the product-process matrix and operations strategy.

SUNDAY, 10:30am-12:00pm Room: 138

SB3 Title: Instructional Issues in the Real-World of POM
Chair: Jim Evans, University of Cincinnati

SB3.1 Delivering an Introductory POM Course for EMBA's via Interactive Distance Learning/Video Conferencing, Jeff McGill, School of Business, Queen's University, Kingston, Ontario, Canada K7L 3N6; John Gordon, School of Business, Queen's University, Kingston, Ontario, Canada K7L 3N6

In 1994, the authors responded to the challenge of designing and delivering an Introductory/Survey POM course to 80 EMBA students spread from Whitehorse in the Yukon to St. John's in Newfoundland. The unique dimension to this challenge was that the course was case-based and delivered in real-time to a 4000 mile classroom. The course involved real-time case discussion, role playing, a field trip by each of 14 site groups, and a videotaped oral presentation of a case analysis by each of the groups. This paper/presentation will deal with the course design, training required to use the technology involved, advantages and disadvantages of this format, and the lessons to be incorporated in a 1996 version of the course.

SB3.2 How Multi-Media and the Internet Can be Exploited in Teaching POM, Judy D. Holmes, Department of Economics & Business Administration, Furman University, 3300 Pointsett Highway, Greenville, SC 29613

It is critical to incorporate the latest information systems technology into the curriculum for the Production Operations Management discipline. Information Systems technology plays a special role in production operations management. In addition to teaching POM students to use traditional management science software packages, to develop control charts, PERT/CPM networks, determine planned order releases using Material Requirements planning, solve forecasting problems, ABC Analysis, etc., it is critical to teach students to be able to model problems (as templates) using spreadsheets and to engage in what-if analysis and goal-seeking analysis. Successful modeling requires a knowledge of template creation and macros. It is also critical for business students to be on the "cutting edge" as managers learn to utilize the Internet as an information resource and advertising tool. Students at a small southeastern liberal arts college (Furman University) are being taught these ideas. The Information Systems paradigm shift that is occurring in practice must be paralleled in Academe.

SB3.3 Information Systems for Global Operations, Ravi Kumar, University of Southern California, School of Business Administration, Department of Management and Organization, Los Angeles, CA 90089-1421

This class, comprised of 5 consulting groups of 6 students each, do projects for 5 companies located in 2 countries. We have a field visit to these companies during our Spring Break week, and have face-to-face business meetings in those countries. In the
last four years, we have visited London/Paris, Lumper, Milan/Munich, Osaka/Seoul, and next year we will go to Taipei/Hong Kong. Some of the companies visited are World Bank, Sanwa Bank, Korea First Bank, Singapore Telecom, France Telecom, Iaitel, Siemens, BMW, Motorola (Kuala Lumpur and Seoul), DuPont, Reuters, UPS, Korean Air, etc. We have cases on these companies and use some of them in the classwork.

SUNDAY, 10:30am-12:00pm  Room: 206

SB8  Title:  New POM Pedagogies  
Chair:  Roberta Russell, Virginia Tech

SB8.1 The Development of a CD-ROM for Teaching POM, Roberta Russell, Department of Management Science, Pamplin College of Business, Virginia Tech, Blacksburg, VA 24061-0235; Bernard W. Taylor, Department of Management Science, Pamplin College of Business, Virginia Tech, Blacksburg, VA 24061-0235

The authors will relate their experiences in developing a CD-ROM for the intro POM course. Issues addressed include: (1) using CD-ROM as a presentation tool, (2) developing a database of multimedia material, (3) constructing specific lectures, (4) choosing navigation options, and (5) assigning individual student sessions. A demonstration of the CD-ROM is planned with time allotted for audience feedback.

SB8.2 An Experience with Distance Education for a Single Customer, Jacob V. Simons, Jr., 3585 Woodgreen Drive, Beavercreek, OH 45434; Craig M. Brandt, AFIT/LAL, 2950 P Street, Building 641, Wright-Patterson AFB, OH 45433

The Air Force's Mobility Warfare Center asked the Air Force Institute of Technology's graduate logistics school to offer a master's program in conjunction with the center's other courses, despite geographical separation of the two organizations. The approach selected employs two different methods for offering the required graduate courses. The first method consists of a two-week on-site immersion in a single topic at a time. The second consists of one-way video, two-way audio satellite transmission of graduate courses in a more traditional format. This presentation will summarize actions taken to date, learning outcomes, student reactions, instructor reactions, and future plans.

SB8.3 The Sticklebrick Experiment: Experiencing Real Operations, Alastair Nicholson, London Business School, Sussex Place, Regent's Park, London, England, United Kingdom NW1 4SA; Paul Coughlan, School of Business Studies, University of Dublin, Trinity College, Dublin 2, Ireland

The Sticklebrick Experiment is a classroom factory running a real time with a defined product, job, drawings, a layout, customers and suppliers. It engages up to 40 students simultaneously in making a mini-factory work for a profit. The students get a specification of the main subsystems, have a predefined job, and a budget target to meet. The system is driven by a real time electronic control system which prepares the accounts and monitors performance for analysis. Every shift lasts ten minutes with a twenty-minute period for assessing appropriate improvements. It is the most successful introduction to POM ever experienced from which all the topics and issues in Business Operations Management can emerge.

SUNDAY, 10:30am-12:00pm  Room: 208

SB9  Title:  POM Scheduling  
Chair:  V. Daniel R. Guide, Jr., Air Force Institute of Technology

SB9.1 Scheduling Policies for a Mix of Remanufactured and Repaired Products, V. Daniel R. Guide, Jr., Air Force Institute of Technology, Dept: LAL, 2950 P Street, Bldg 641, WPAB, OH 45433-7765; Rajesh Srivastava, Air Force Institute of Technology, Dept: LAL, 2950 P Street, Bldg 641, WPAB, OH 45433-7765; Mark E. Kraus, Air Force Institute of Technology, Dept: LAL, 2950 P Street, Bldg 641, WPAB, OH 45433-7765

This study examines the effect of disassembly release mechanisms in conjunction with priority dispatch rules in a shop which remanufactures and repairs units. The study is accomplished via simulation of a remanufacturing and repair shop. Three types of product structures are used in the model and units may require repair or remanufacture. All parts for remanufactured and repaired units are serial number specific and must be re-assembled to the end item unit they came from.

B9.2 On the Implementation of One-Dimensional Cutting Stock Problem in Industry, Mani Agrawal, Box 7913, Graduate Program in Operations Research, North Carolina State University, Raleigh, NC 27695; Madan G. Natu, Box 7913, Graduate Program in Operations Research, North Carolina State University, Raleigh, NC 27695

This paper discusses the practical issues of implementing the cutting stock problem in industry. The one-dimensional cutting stock problem frequently arises in metal, paper, and many other industries. We propose a methodology to incorporate issues such as tolerance, saw blade thickness, leftover inventory, and multiple raw sizes. A column generation method with heuristics was developed for computationally efficient implementation. The methodology presented here was implemented in a manufacturing setting for a firm in Australia.

SB9.3 Designing an Optimal Maintenance Float System with Multiple Repair Servers, Amy Zeng, Department of Management Science and Information Systems, 303 Beam BA Building, Penn State University, University Park, PA 16802; Tianming Zhang, Department of Physics, 104 Davey Laboratory, Penn State University, University Park, PA 16802
We study a manufacturing system that consists of a single workstation, a repair station of several parallel and identical servers, and an inventory buffer of some standby components. We model the system by means of queuing theory. The capacity of the buffer, the size of the repair crew, and the mean repair rate are considered as decision variables and determined by minimizing the total operations cost. The cost function is established in terms of the idle rate of the workstation and the three variables. We develop an optimization algorithm and provide a numerical example to illustrate its implementation.

SUNDAY, 10:30am-12:00pm Room: 222

SB11 Title: POM Manufacturing Strategy
Chair: Jaime Fensterseifer, PPGA/UFRGS


The formulation of a manufacturing strategy, as in business strategy, can be considered an episodic process, varying according to the specificities of each organization, its environment, and its products. Three types of process are studied: formal planning, systematic analysis, and an intuitive one. A case study is presented for each of the three types. They allow us to identify the iterative nature of the formulation process and show that the three types can alternate with one another as well as coexist.

SB11.2 International Manufacturing Configuration: An Empirical Analysis, Norm Schein, University of Western Ontario, Western Business School, London, Ontario, Canada N6A 3K7; John Kamauff, University of Western Ontario, Western Business School, London, Ontario, Canada N6A 3K7; Fraser Johnson, University of Western Ontario, Western Business School, London, Ontario, Canada N6A 3K7

This paper investigates the international manufacturing configuration (IMC) of multinational firms. A framework and model are developed which lead to five hypotheses concerning the configuration of multinational firms. The hypotheses are tested using the IMSS (1993) database to determine their applicability in this international context.

SB11.3 Illustrating Marketing-Manufacturing Non-alignment: Product Profiling versus Product-Process Matrix, Rafael Menda, 890 Woodlawn Road, West, Guelph, Ontario, Canada N1K 1A5; Terry Hill, London Business School, Sussex Place, Regent's Park, London, England, United Kingdom NW1 4SA; David Dilts, Department of Management Sciences, University of Waterloo, Waterloo, Ontario, Canada N2L 3G1

Companies need to have a comprehensive understanding of how well manufacturing can support their business. Assessing how well existing processes fit an organization's current market requirements and making appropriate choices of process to meet future needs are critical manufacturing responsibilities and core themes in corporate strategy debate. We use two approaches (product profiling and product-process matrix) to examine the degree of alignment between manufacturing and their agreed markets using the same company case. The study facilitated not only the explanation of the matrix and profiling approaches, but also allowed comparisons to be drawn and conclusions to be reached in terms of the insights provided and usefulness of the outputs generated by each approach.

SUNDAY, 10:30am-12:00pm Room: 223

SB14 Title: Inventory Management I
Chair: Leonora Fuxman, St. John’s University

SB14.1 Optimal Buffer Allocation in Asynchronous Cyclic Mixed-Model Assembly Lines, Leonora Fuxman, Management Department, 8000 Utopia Parkway, St. John’s University, College of Business Administration, Jamaica, NY 11439

In this paper we consider a problem of optimal buffer allocation in cyclic asynchronous mixed-model assembly lines. We argue that one does not need to have unlimited capacity work-in-process buffers on such assembly lines to achieve all the productivity benefits associated with having unlimited buffer space. We use an analytical model to identify buffer allocations with limited number of buffers that allow operating the assembly line at the maximum possible throughput rate. We characterize buffer allocations that maintain the maximum throughput rate on the assembly line while using minimum number of buffers.

SB14.2 Service Level Approach to Inventory Problem, Youhua (Frank) Chen, University of Toronto, Faculty of Management, 105 St. George Street, Toronto, Ontario, Canada M5S 3E6; Dmitry Krass, University of Toronto, Faculty of Management, 105 St. George Street, Toronto, Ontario, Canada M5S 3E6
This paper concerns inventory models in which shortage cost is replaced by a service level constraint. We classify service level constraints (SLCs) according to two sub-groups: marginal and mean SLCs. Theoretical results and exact algorithms will be reported on those models with either type of SLC. The service level approach holds several advantages over the "standard" (i.e., shortage cost) approach, and the algorithms are computationally simpler than or compatible to those with shortage cost.

SB14.3 A Two-Location Continuous Review (Q,R) Inventory Model with Emergency Transshipments, Kefeng Xu, College of Business and Management, University of Maryland, Van Munching Hall, College Park, MD 20742; Philip Evers, College of Business & Management, Van Munching Hall, University of Maryland, College Park, MD 20742

Previous studies on multi-location inventory systems with transshipments have been dominated by periodic review models. Since a continuous review type of inventory model is also frequently used in practice, this research tries to fill this gap with the popular reorder-quantity, reorder-point (Q,R) model. The new multi-location inventory model with transshipments will be formulated and critically evaluated, and an optimal solution algorithm suggested. Numerical studies will be used to demonstrate the algorithm. It will also be shown in the study that transshipments improve both the Type I (no-stockout probability) and Type II (fill-rate) customer service levels for locations to different degrees. Managerial implications of all the above results will be assessed.

SB14.4 Inventory Control with Returning Items: Lot Sizing-Discrete Deterministic Version, Jose Luis Beltran, University of Toronto, Faculty of Management, 105 St. George Street, Toronto, Ontario, Canada M5S 3E6; Dmitry Krass, University of Toronto, Faculty of Management, 105 St. George Street, Toronto, Ontario, Canada M5S 3E6

We present an inventory control model with returning items. Returns are defined as the items previously sold that are returned to the point of sales or shipment. The formulation for the lot size problem of inventory with returns is presented with general concave cost functions. Costs are assumed to be time dependent, and all the parameters of the system deterministic. The returns are assumed to be in saleable condition, and a linear function of previous demand. The model allows for disposal of inventory with either positive or negative cost (revenue). Dynamic Programming approach is used to characterize an optimal policy. Computational results of an efficient algorithm is presented, and some results on the backlog, and discounted model.

SUNDAY, 10:30am-12:00pm Room: 226

SB16 Title: Total Quality Management Topics Chair: Marc J. Schniederjans, University of Nebraska-Lincoln

SB16.1 A Theoretical Basis for the "Quality Culture", Scott Dellana, 3410 General Classroom Building, East Carolina University, 204 Louis Street, Decision Sciences Department, Greenville, NC 27858; Richard Hauser, Decision Science Department, 3410 General Classroom Bldg, East Carolina University, 203 Louis Street, Greenville, NC 27858

Many writers in the quality literature believe the successful infusion of TQM (Total Quality Management) depends on a company's organizational culture. The expression "quality culture" has been applied liberally in the literature, but lacks a sound basis in theory. This paper studies the relationship of an organization's culture, as defined by the competing values model, with the organization's quality management context, as defined by the Malcolm Baldrige criteria. This study suggests that a quality culture does exist within the framework of a theoretical culture model, and that understanding the organization's culture helps define the path to successful TQM infusion.

SB16.2 Quality Management in Small Manufacturing, William Davig, 215 Combs Classroom Building, Department of Management and Marketing, Eastern Kentucky University, Richmond, KY 40475; Steve Brown, 215 Combs Classroom Building, Department of Management and Marketing, Eastern Kentucky University, Richmond, KY 40475; Terri Friel, 215 Combs Classroom Building, Department of Management and Marketing, Eastern Kentucky University, Richmond, KY 40475; Kambiz Tabibzadeh, 215 Combs Classroom Building, Department of Management and Marketing, Eastern Kentucky University, Richmond, KY 40475

A survey of small businesses in Kentucky was conducted in the area of Total Quality Management techniques. The objective of the research was to determine the level of effort of small manufacturing firms in quality management and the degree to which their managers are currently guided by the TQM model as opposed to the economic conformance model. Preliminary results indicate the degree of penetration of the TQM philosophy and concepts among managers in small manufacturing firms. Also studied were the important elements in the operation and management of these firms that promote or discourage the successful implementation of TQM.

SB16.3 How HMO's Violate TQM Principles: Concepts and Research Hypotheses, Marc J. Schniederjans, University of Nebraska-Lincoln, College of Business Administration, Department of Management, Lincoln, NE 68588-0491; John D. Deck, M.D., 7111 A Street, Suite 201, Lincoln, NE 68510

Moving the U.S. health care systems toward socialized collectives (i.e., HMO's) is motivated more by cost efficiency than concern for quality of service. POMS scholars need to examine the quality downside of HMO's as governmental reforms are being explored. The purpose of this paper is to present a conceptual basis for the violation of TQM principles that can be caused by the forced movement of the health care industry toward HMO's. The presentation will offer a number of testable hypotheses to stimulate further research.
SB16.4 Teaching POM from an SPC Perspective, Tsong-How Chang, Department of Industrial and Manufacturing Engineering, University of Wisconsin-Milwaukee, PO Box 784, Milwaukee, WI 53201

Contemporary statistical process control is not only important as another tool in the big POM toolbox, but also conceptually fundamental as a methodology to the process of managing in a production or operation environment. Examples will be presented to help illustrate and support the assertions stated above and the use of SPC in teaching POM topics that are involved particularly with quantitative methods. Some change/improvement directions are suggested both in classroom teaching as well as in textbook writing on POM.

SUNDAY, 10:30am-12:00pm
Room: 232

SB18 Title: Workshop on “Visual Basic” for POM
Chair: John Paxton, Wayne State College

SB18.1 Multimedia, Visual Basic, and the POM Classroom, John Paxton, Division of Business, Wayne State College, Wayne, NE 68787

Use of Visual Basic as a multimedia authoring language for POM classroom material will be presented. I have developed several programs for use in introductory POM classes, and have used them with some success. These programs include a “practice tester” and a vocabulary development game which are run through the campus network. The session will include demonstrations of both programming and programs, run through a laptop and production pad. The advantages and disadvantages of multimedia, object-oriented, event-driven programming and Visual Basic will be discussed.

SUNDAY, 1:30pm-3:00pm
Room: 102

SC1 Title: Redesigning the POM Core Course
Chair: Susan E. Pariseau, Merrimack College

SC1.1 Active Learning in the POM Core Course, Susan E. Pariseau, Department of Management, Merrimack College, North Andover, MA 01845; J.R. McDaniel, Barney School of Business, University of Hartford, Hartford, CT 06117

Active learning, not passive listening, is the format of a course structured around the use of Denton's Production Game, a classroom exercise designed to simulate real world production situations. The authors describe how students, working in teams, organize companies to manufacture a variety of products. To compete effectively, team member apply concepts and techniques learned in POM and other core business courses. They establish a production process and define and track performance measures to maximize profitability, minimize inventory investment and eliminate waste while focusing on the customer. TQM, time-based competition, flexibility, problem solving and decision-making skills are emphasized. The authors discuss how to integrate actual team examples to illustrate key concepts throughout the course.

SC1.2 Ensuring the Core Isn’t Hollow: Teaching the POM Core Course Using Mastery Learning, Diane H. Parente, SUNY-University of Buffalo, 3251 Jacobs Management Center, Buffalo, NY 14260-4000

Courses reside in the management core in order to ensure that all students obtain a minimum set of knowledge from each core course. However, traditional methods of instruction in POM do not guarantee competency in any individual concept or set of concepts. This paper discusses the use of mastery learning supplemented with student reaction paper sin the teaching of POM. Comparison is drawn with the traditional method and student response is highlighted.

SC1.3 Teaching POM in an Integrated Undergraduate Curriculum, John S. Morris, Department of Business, University of Idaho, Moscow, ID 83844-3178

The University of Idaho is in its second year of a fully integrated common core for undergraduate business majors. The paper discusses the planning, design, and implementation of this curriculum. This 18 credit hour curriculum is taught by faculty members from each functional area and makes use of a comprehensive case. A series of course modules have been developed which are cross functional in nature and focus on major business decision areas.

SUNDAY, 1:30pm-3:00pm
Room: 134

SC2 Title: International POM Education
Chair: Ronald Ebert, University of Missouri-Columbia

SC2.1 Manufacturing Perspectives on the POM Curriculum in a Privatizing Economy, Ronald Ebert, 322 Middlebush Hall, Department of Management, College of Business & Public Administration, University of Missouri-Columbia, Columbia, MO 65211; George Tanner, 215 Middlebush Hall, College of Business & Public Administration, University of Missouri-Columbia, Columbia, MO 65211; Moise Tuare, Universitetea de Sibiu, Facultatea de Inginerie, Sibiu, Romania

Manufacturing in Eastern European countries is in a turbulent transition to open-market business competition. One transitional issue is the role of university education for operations managers, from the perspective of business practitioners. Survey responses by 203 manufacturing professionals from 83 companies provide practitioners’ recommendations for POM education in Romania. The recommendations substantially re-orient curricula that traditionally prepared students for centrally-controlled economies rather than for open-market competition. Results indicate an educational advantage with integrated production, manufacturing strategy, and engineering design, under one college of engineering. Also, the data imply a management perspective that, paradoxically, excludes quality management elements from JIT.

10
SC2.2 Teaching POM in a Transient Economy, Tamás Koltai, Technical University of Budapest, Department of Industrial Management, Műegyetem rkp. 9., Budapest, Hungary 1111; András Parkas, International Management Center, Anna u. 1-3, Budapest, Hungary 1221; Tamás Kelemen, Technical University of Budapest, Department of Industrial Management, Műegyetem rkp. 9., Budapest, Hungary 1111.

Hungary has a long tradition in research and training in the production and operations management area. The economic and social changes of the last decade, however, has considerably changed the industrial and academic environment. It became especially important to emphasize the difference of POM teaching in industrial engineering and MBA programs. Due to the existence of international programs for students from central-eastern Europe, an international focus is also required. The paper reviews the consequences of the changing environment and with some sample course outlines illustrates the current difficulties.

SC2.3 Creating the Hungarian Basis of the TQM Education with the Help of SUNY at Buffalo, István Zselli, Department of Industrial Management, Technical University of Budapest, Műegyetem rkp. 9., Budapest, Hungary 1111; János Kövesi, Technical University of Budapest, Department of Industrial Management, Műegyetem rkp. 9., Budapest, Hungary 1111; József Tothár, Technical University of Budapest, Department of Industrial Management, Műegyetem rkp. 9., Budapest, Hungary 1111.

The program establishes the conditions of the TQM education in the graduate and postgraduate level in Hungary. It also provides opportunity for the managers to get knowledge from different TQM fields during workshops which are organized for them. The new MBA education is also going to start in TQM basis. The company implementation of the TQM is a big help and experience for this work. This implementation is done by colleagues of TQM Center at the Technical University of Budapest. The experiences of this implementation work show the TQM would be a good follow-up of the ISO system. This TQMC is established with the aid of SUNY at Buffalo. On this basis, we could build up the TQM network of this region.

SUNDAY, 1:30pm-3:00pm            Room: 138
SC4 Title: Case Usage in POM Teaching
    Chair: Sharon Johnson, Worcester Polytechnic Institute

SC4.1 Case Study Development: Interval Reduction at AT&T Merrimack Valley, Sharon Johnson, Department of Management, Worcester Polytechnic Institute, 100 Institute Road, Worcester, MA 01609; Michael Elms, Department of Management, Worcester Polytechnic Institute, Worcester, MA 01609.

From 1991-1993, a team at the AT&T Merrimack Valley manufacturing facility successfully reduced the lead time, or interval, required to manufacture circuit packs for transmission equipment by 80 percent. A series of three case studies was developed to involve students in understanding and partially recreating this effort. In the (A) case, students explore the overriding informational and organizational issues critical for getting the project off the ground. Students tackle specific reduction projects in the (B) case, working in teams and presenting solutions to the class. The (C) case raises the issue of what the organization learned from this effort.


Most students are introduced to the lead time demand curves in beginning inventory courses. A series of case studies were developed to help students develop criteria for individual firms to use when selecting an inventory model suitable for determining demand during lead time that keeps their inventory status at some prescribed low level and maintains a preset level of consumer satisfaction. The variables important to the distribution as well as seasonality will be discussed. A computer program dealing with the best fit lead time demand curves developed from demand data collected from k periods of time will also be utilized in the case studies.

SC4.3 Service Operations: Short Cases that Contradict Intuition, Samuel Wathen, Coastal Carolina University, PO Box 1594, Conway, SC 29526

Teaching with cases presents an exciting forum for discovery and discussion. In this paper, I present my teaching strategy for two cases that I use in an operations management course. In each of these cases, the class discussion and analysis leads to a higher level of understanding by reaching a conclusion that contradicts an initial, cursory conclusion. I believe that this type of presentation of cases can enhance the learning process.

SUNDAY, 1:30pm-3:00pm            Room: 206
SC6 Title: New Visions of POM Education
    Chair: Jacob V. Simons, Jr.

SC6.1 The Need for POM Doctrine, Jacob V. Simons, Jr., 3585 Woodgreen Drive, Beavercreek, OH 45434.

POM survey courses are too often a smorgasbord of minimally linked topics. Specialized courses are too often a regurgitation of traditional frameworks for the topic, followed by an overview of research results the instructor finds interesting. In each of these cases, the focus is on communicating an existing body of knowledge with an implied presumption that this knowledge is relevant and useful to the typical student. By contrast, this presentation will argue that the primary need of most students is the assimilation of fundamental, generalizable doctrine which
can be directly applied to achieve the student's objectives in unspecified future situations.

SC6.2 Operations Management as the Origin of Business Value, Alastair Nicholson, London Business School, Sussex Place, Regent's Park, London, England, United Kingdom NW1 4SA; Paul Coughlan, School of Business Studies, University of Dublin, Trinity College, Dublin 2, Ireland

A major obstacle in attracting students to POM is the lack of vision on how students as new managers can contribute to the inside of a business. POM courses should teach students about how they can address the set of systems which run real companies: quality assurance (for reputation and customers), estimating costs, supervisory control, the art of specification, the cost of variety, the value of reduced lead times, etc. Each of these themes has a business value, has a practice difficult to handle by managers inside the business because it lies at interfaces between functions and is likely to be a weakness in moving the business forward. The vision of POM should be based on how to compete through understanding their systems which stop the other business objectives being met.

SC6.3 What the Customer Wants: Reengineering the POM Program, Nancy Levenburg, Director of Continuing Education, Grand Valley State University, L.V. Eberhard Center, 301 W. Fulton Street, Grand Rapids, MI 49504-6495

Today's academic leaders are reassessing how production/operations management (POM) programs can be improved. In this 1995 study, perceptions of academic faculty and POM practitioners were empirically assessed regarding the competencies desired in graduates. Overall, the results indicate that general management skills are vitally important; in particular, oral communication, problem analysis, teamwork, computer literacy, and written communication abilities. POM curricula should focus on concepts over techniques and application of concepts to real-world scenarios. Recommended courses to include in programs are: Production/Operations Management, Materials Management, Quality Control: Policies and Procedures, Productivity Management, elective courses, and a capstone Analysis and Applications course.

SUNDAY, 1:30pm-3:00pm Room: 208

SC9 Title: Planning and Scheduling Chair: John C. Goodale, Ball State University

SC9.1 Detailed Tour Scheduling with Individual Productivity Levels, John C. Goodale, Ball State University, Department of Management, Muncie, IN 47306; Jatinder N.D. Gupta, Ball State University, Department of Management, Muncie, IN 47306

An important new formulation of the labor scheduling problem has addressed the limitation of required or target staffing levels being specified prior to generating schedules. Thompson's (1995) model captures the nonlinear relationship between NPV and adding workers to a schedule beyond a minimum level. A ramification of this framework is that individual workers with individual productivity levels can be considered because this model can also capture the nonlinear effect of using workers with productivity level differences. This study presents a polynomial approximation technique for dynamically optimizing the assignment of individual workers to tours scheduled with Thompson's model.

SC9.2 Customer Order Scheduling Problem on Dedicated Machines, Dilip Chihajed, University of Illinois at Urbana-Champaign, Department of Business Administration, College of Commerce, 1206 South Sixth Street, Champaign, IL, 61820; Sanjeev Sinha, University of Illinois at Urbana-Champaign, Department of Business Administration, College of Commerce, 1206 South Sixth Street, Champaign, IL 61820

We consider the customer order scheduling problem in a "focused factory" environment where the manufacturer has a dedicated production line (machine) for producing each product type. Each order consists of a subset of jobs. We seek to sequence the orders to minimize the average completion time. We present the problem as a mixed integer program. A lower bound is developed based on Lagrangean relaxation. Computational results comparing our lower bound with other known bounds are presented. Solution procedures are discussed.

SC9.3 An Investigation of Group Scheduling Heuristics Employing Bottleneck Support, Jerry D. Allison, Department of Decision Sciences, University of Central Oklahoma, Edmond, OK, 73034; Saba Bahouth, Department of Decision Sciences, University of Central Oklahoma, Edmond, OK 73034

In this paper, we explore the effect of explicitly considering the status of the bottleneck machine in scheduling part families through a jobshop cell. Three group scheduling heuristics from the literature are modified to take the bottleneck status into account. The effect of this approach on average flow time, average tardiness, and average percent tardy are reported. Computer simulations are used in the analysis. The experimental design includes different levels of cell load, setup-to-runtime ratio, and due-date tightness. A statistical analysis of the results is included.

SUNDAY, 1:30pm-3:00pm Room: 222

SC12 Title: Integrating the Computer in POM Chair: Kenneth E. Kendall, Rutgers University

SC12.1 MIS and Operations Management: Are These Disciplines Converging or Diverging?, Kenneth E. Kendall, Rutgers University, School of Business-Camden, Camden, NJ 08102; Julie E. Kendall, Rutgers University, School of Business-Camden, Camden, NJ 08102
There was a time when management information systems (MIS) researchers wanted to break away from the reference disciplines that had once helped them form their new identity. This also applied to any research topics that resembled those common to management science or operations. Now the MIS discipline is coming to a crossroads. Some researchers feel strongly that MIS should represent the development of an infrastructure for the organization. This paper questions whether MIS and operations management are converging or diverging. What are the synergies that can be used to the benefit of both MIS and operations?

SC12.2 The Use of Internet Conversational Information for the Improvement of Product Quality, Byron Finch, Department of Management, Miami University, 307 Laws Hall, School of Business, Oxford, OH 45056; Richard Luebbe, Department of Management, 313-D Laws Hall, School of Business, Miami University, Oxford, OH 45056

As use of the Internet has increased, its use for managerial decision making has not. This paper presents preliminary findings on an ongoing study to determine the feasibility of using listserv and newsgroup postings to improve existing products and aid in the design of new products. Information gathered (over 500 product-related messages) are evaluated for inclusion in the Quality Function Deployment (QFD) process and the QI story. Currently available tools for identifying, collecting, and analyzing such data will also be discussed.

SC12.3 Using Hyper Text Markup Language (HTML) to Simulate Dynamic Interactions in the Teaching of POM, Joseph Sessum, Kennesaw State College, PO Box 444, Department of Decision Sciences, Marietta, GA 30061; James Putt, Decision Sciences Department, Coles School of Business, Kennesaw State College, PO Box 444, Marietta, GA 30144

Computer programs are effective teaching aids for showing dynamic interactions in various POM teaching scenarios. A real shortcoming of this methodology is the requirement for some type of additional instruction in the actual use of the computer programs. The advent of newer communications approaches associated with Internet and World Wide Web concepts, especially the reliance on Hyper Text Markup Language (HTML) browsers offers a distinct opportunity to develop teaching aids which incorporate dynamic models which can incorporate simulated animation presentations. The distinctive advantage of this approach is that it is more than a slide show since it uses logical paths with forward/backward searches and jumps.

SUNDAY, 1:30pm-3:00pm Room: 223

SC14 Title: Inventory Management (II)
Chair: Norman Ware, AFIT/LAS

SC14.1 A Survey of Hybrid MRP/JIT Systems, Norman Ware, Department of the Air Force, AFIT/LAS, 2950 P Street, WPAFB, OH 45433-7765; Archie Lockamy, School of Business and Industry, Florida A&M University, Tallahassee, FL 32307; Scott Koehler, Normal Ware, Department of the Air Force, AFIT/LAS, 2950 P Street, WPAFB, OH 45433-7765

The authors surveyed manufacturing companies that employ a manufacturing planning and control system which embodies elements of both material requirements planning and the JIT philosophy to find out how well hybrid systems of that type perform in practice. The authors hypothesized that such a system would prove more successful in eliminating planning and control problems than would a system which employs one or the other approach alone. The survey revealed that many of the problems which led to the installation of the hybrid system had been improved, but still existed.

SC14.2 An Inventory Management Framework for Large Discount Retailers, Prashanth Nagendra, Indiana University of Pennsylvania, Department of Management, Eberly College of Business, Indiana, PA 15701

Several huge discount retailers use the simple P and Q systems of inventory or their variations in practice. Distribution Requirements Planning and JIT techniques are also used in some companies. None of these methods is generic or optimal. Even giant retail franchisees, with several distribution centers and retail outlets, use a less-than-ideal combination of these techniques in their quest to minimize inventory while eliminating shortages. The paper presents a framework of the application and scope of several inventory control techniques in these businesses. Proper use of this framework can translate into inventory savings while increasing customer satisfaction.


This study examines the location of delay buffers in a recoverable manufacturing system. Recoverable manufacturing systems span the spectrum of disassembling used products (called cores), remanufacturing usable parts as necessary, and finally, assembling the remanufacturing product from new and remanufactured parts. Two distinct delay buffer areas exist, either disassemblery, and prior to final assembly. The major issue is where to locate the delay buffer(s). The advantages and disadvantages of each are examined, using a generalized remanufacturing simulator. Based on commonly used performance criteria, recommendations are made.

SUNDAY, 1:30pm-3:00pm Room: 226

SC16 Title: Topics in Quality Management
Chair: Behnam Nakhai, Millersville University
SC16.1 The State of States: The Case of Pennsylvania's Quality Award, Behnam Nakhai, Department of Business Administration, Millersville University, Professor of Management, PO Box 1002, Millersville, PA 17551-0302

Since 1990, nearly all the fifty states have utilized the Malcolm Baldrige National Quality Award criteria framework and have developed a quality award campaign as part of their own statewide TQM initiatives. This paper examines Pennsylvania's Quality Leadership Award program and through a survey attempts to assess the program's success in fulfilling its mandated goal as outlined in the Pennsylvania Quality Improvement Act 111. The key implications of the findings are outlined and several recommendations for enhancing the effectiveness of the state-level quality award programs are presented.

SC16.2 Teaching Practical Issues in Quality Management, Mark Hanna, Department of Management, Miami University, Oxford, OH 45056

The importance of improving value chain linkages has been particularly highlighted in the quality literature and is a key element of the Just-in-Time (JIT) and Total Quality Management (TQM) philosophies. Operations Management (OM) students are exposed to this literature and may even have opportunities to tour specific business facilities, but have probably never seen a real value chain. They typically wonder what linkages really are, and among all linkages which ones are worthy of managerial attention. This presentation describes a structured field study experiment for OM students which provides students with exceptional exposure to practical issues in quality management from multiple hierarchical perspectives at multiple stages of the value chain in a variety of organizational settings.

SUNDAY, 1:30pm-3:00pm Room: 232

SC18 Title: Workshop on Process Potential and Capability Assessments
Chair: Tsong-How Chang, University of Wisconsin-Milwaukee

SC18.1 Process Potential and Capability Assessments, Tsong-How Chang, Department of Industrial and Manufacturing Engineering, University of Wisconsin-Milwaukee, PO Box 784, Milwaukee, WI 53201

Designed for managers and engineers responsible for the assessment of process capabilities and process potentials. Emphasis are in sample size determination and evaluation methods for both parametric and non-parametric applications. A two-step analysis is introduced for new process evaluations. Using specially prepared tables and graphs, a hands-on workshop will be conducted to practice the methods.

SUNDAY, 3:30pm-5:00pm Room: 102

SD1 Title: Changing the POM Core Course
Chair: Francois M. Julien, University of Ottawa

SD1.1 Teaching POM: Integrating Logistics Planning Activities with SIMLOG, Francois M. Julien, Faculty of Administration, University of Ottawa, PO Box 450 Stn. A, Ottawa, Ontario, Canada K1N 6N5; Jerome Doutriaux, Faculty of Administration, University of Ottawa, Ottawa, Ontario, Canada K1N 6N5; Jean Couillard, Faculty of Administration, University of Ottawa, Ottawa, Ontario, Canada K1N 6N5

The core course in POM offered at the University of Ottawa has been reorganized to better illustrate the integration of the various planning activities along the logistics chain of a manufacturing company. Students must manage the operations of a small manufacturer which is simulated by a logistics simulation software, SIMLOG. We report on the capabilities of SIMLOG, on the structure of the course which is designed to provide the students with the models they need just-in-time for their planning activities, and on the feedback of the students regarding this pedagogical approach.

SD1.2 Inspector, Coach, Conductor, Performer: Will the Real Educator Please Stand Up?, James R. Gross, College of Business Administration, University of Wisconsin-Oshkosh, Oshkosh, WI 54901

Successfully teaching the POM core course, or any university course, demands planning, creativity, and an investment of energy. Success also requires involvement on the part of students and a mutually held set of learning objectives. This paper describes alternative ways in which the instructor's role can be defined and some options to consider with regard to the design of the classroom experience. By expanding the traditional definition of the instructor's task, the POM core course can become a more satisfying and rich learning experience for both students and faculty.

SD1.3 A POM Survey: Practitioner's Perspectives and the Core Course, Christopher L. Frazer, Anderson Schools of Management, University of New Mexico, Albuquerque, NM 87131; Richard A. Reid, Anderson Schools of Management, University of New Mexico, Albuquerque, NM 87131

An important customer of every academically-based, management educational program is the set of potential employers of graduates. Therefore, it is critical to ascertain practitioner opinions about the relative importance of student skills/capabilities and incorporate them into our curriculum. This paper summarizes the results of questionnaire responses from POM practitioners in 52 regional firms. The survey was designed to elicit information on (1) personal skills necessary to be successful and (2) the importance of performing selected POM functions/activities. Survey findings were analyzed and used to redesign the POM core course so that it provided students with the capabilities needed to effectively contribute to practitioner's perceptions of success.
SUNDAY, 3:30pm-5:00pm Room: 134

SD2 Title: Teaching Global POM
Chair: Germaine H. Saad, Widener University

SD2.1 Globalization of Operations Management: A Dual Track Approach, Germaine H. Saad, Widener University, School of Management, One University Place, Chester, PA 19013

This paper discusses how inductive and deductive reasoning can be used in globalization of Operations Management. The policy implications of these approaches are examined, as well as their impact on advancing current concepts, and theories. Opportunities and challenges of global markets and operations are addressed. Emphasis is placed on production strategy and its integration with other functional policy of the firm.

SD2.2 A Model for Operations Strategy Toward the 21st Century, Choong Y. Lee, Department of Management & Marketing, Pittsburg State University, 1701 S. Broadway, Pittsburg, KS 66762

The purpose of this study is to propose a model for global operations strategy for the 21st century, which should incorporate both the old and new environment facing business operations in the global economy, the components of a global operations strategy model for the next century are discussed. Finally, an integrated model of quality management, reengineering, benchmarking, empowerment, and Kaizen is proposed to achieve a global competitiveness in the 21st century.

SD2.3 Integrating International Topics into the POM Core Course, Britt Shirlely, University of Tampa, College of Business, Box 152F, 401 W. Kennedy Blvd, Tampa, FL 33606

The impact of global competition on manufacturing companies has changed the way their managers make decisions. The need for business organizations to be globally competitive has also forced business schools to increase their coverage of international topics. This paper addresses how international topics can be integrated into the production and operations management core course through the use of textbooks, outside readings, and other resources.

SUNDAY, 3:30pm-5:00pm Room: 138

SD5 Title: Changing the POM Teaching Paradigm
Chair: Mark A. Turnquist, Cornell University

SD5.1 Educating Engineering and Production Managers: A Project Approach, Mark A. Turnquist, 309 Hollister Hall, School of CEE, Cornell University, Ithaca, NY 14853-3501; Frank J. Wayne, 106 F.H.T. Rhodes Hall, School of ILR, Cornell University, Ithaca, NY 14853; Linda K. Nozick, 315 Hollister Hall, School of CEE, Cornell University, Ithaca, NY 14853-3501

Engineering Management studies at Cornell are designed to build leadership expertise for complex project environments. A key program component is an interdisciplinary project management course, jointly taught by faculty from engineering and industrial and labor relations. The course addresses technical elements of project management, while placing primary emphasis on projects as complex social systems requiring sophisticated behavioral skills from those who lead them. Using case studies, interactive exercises, and self-report inventories, students are taken into the world of the project manager and are asked to test themselves against course concepts. Lessons from this course are then integrated into a year-long group project, requiring students to produce a useful product for an external company.

SD5.2 Managing Operations in the Information Age, James A. Fitzsimmons, Department of Management, University of Texas, Austin, TX 78712

The traditional focus of operations management was limited to the "productive" process of a factory where inputs of labor and materials were converted to outputs of finished goods. Historically this focus on the efficient management of this conversion process was appropriate because demand for goods far exceeded supply. But, in today's global market the economics of supply and demand have reversed and consumers are able to demand more from their purchases (e.g., quality, customization, service). Thus in order for the field of operations management to remain relevant and avoid being marginalized, we must look beyond the factory walls and encompass the management of the entire value chain and in the process remove the distinction between services and manufacturing. Manufacturing, in fact, is becoming more like an information based service -- it is close to the customer, the product is co-designed with customer input and made in small lots, and delivery is fast.

SD5.3 A Good Coat of Paint on a Good Surface, But Do They Bond?, Gary Rosdman, School of Management, Binghamton University, Binghamton, NY 13902

In this day of greater customer focus in higher education, many business schools begin new course planning with a systematic assessment of student needs; but there is one dimension of student needs that is frequently not addressed, although it should be, at least in POM courses. Most business programs (and textbooks) continue to assume tacitly that the needs of graduate and undergraduate students are very similar to one another. There may be small differences in number of topics or pace of the courses, but typically a given topic -- say, JIT -- is presented the same way for graduates and undergraduates alike. This paper will argue that, for developmental reasons, student needs may be quite different. In general, we do a better job for graduate students than for undergraduates.

SD5.4 Designing a New Course in Systems Decision Theory and Applications in Operations Management, Paul H. Pittman, Indiana University Southeast, Division of Business & Economics, 4201 Grant Line Road, New Albany, IN 47150
This paper discusses a course designed to introduce students to the body of knowledge, tools and techniques known as systems thinking. Contrary to what many students have been previously exposed to, this course is an attempt to eliminate the illusion that the world is created on separate, unrelated forces. Systems thinking is a conceptual framework to make the full patterns clearer and to help us see how to make better decisions and to create change more effectively. Students learn systems thinking concepts to more effectively plan and control organizations through textbook readings, classroom discussions, organization simulations, group projects, and case studies.

SUNDAY, 3:30pm-5:00pm  Room: 206

SD7  Title:  Cross-Functional POM Teaching Linkages
Chair: Satya S. Chakravorty, Kennesaw State College

SD7.1 Using Simulation Games to Teach Theory of Constraint, Satya S. Chakravorty, Department of Decision Sciences, Kennesaw State College, PO Box 444, Marietta, GA 30061

This paper describes a user-friendly simulation game to teach theory of constraints (TOC), an approach for continuous improvement by focusing on factors which limit a system's performance. The game has been played by practitioners and academics at TOC conferences sponsored by the Avraham Goldratt Institute, and has served as an excellent learning tool for students in graduate and undergraduate Production and Operations Management classes.

SD7.2 Using Product Prototypes to Demonstrate Abstract Production Concepts, Cathleen Spalding Burns, New Mexico State University, PO Box 30001, Department 3DH, Accounting and Business Computer Systems, Las Cruces, NM 88003-8001; Sherry Mills, New Mexico State University, PO Box 30001, Department 3DH, Accounting and Business Computer Systems, Las Cruces, NM 88003-8001

A future-oriented business scenario, Extraterrestrial Transport, Inc. (ETI), has been created to connect production operations concepts with the activities of other business functions (e.g., accounting, engineering, marketing). Acting as assembly workers and managers, students learn as they plan, control and make decisions for a fictional 21st century manufacturer of lunar transportation vehicles. Throughout the semester, students build product prototypes constructed from Lego® bricks to (1) better understand the acquisition, transfer and processing of materials, (2) visualize how costs attach when prototype parts are attached while simultaneously preparing a job cost sheet, and (3) demonstrate differences between traditional and just-in-time production processes.

SD7.3 Company Simulation Lab/Integrated Model for Management Simulation, João Lisboa, Faculdade de Economia, da Univ. Coimbra, Av. Dias da Silva 165, 3000 Coimbra, Portugal; Carlos Gomes, Faculdade de Economia, da Univ Coimbra, Av. Dias da Silva 165, 3000 Coimbra, Portugal

Traditionally the planning process in a company is done without taking into consideration the interaction that exists between the sales, production and financial areas. Decisions that directly affect the production process are taken many times without knowing its implication in the financial sector. This lack of interaction might cause waste of resources that could be saved and used in a better way. We are developing an integrated simulation model to be used as an auxiliary instrument in the management of companies and a teaching tool in the classroom. The functional areas of sales forecasting, production and finance are integrated such that the effect of any division taken in one of these areas can be evaluated in the others. The model has the advantage of making possible the simulation of the decision process in real time, difficult to make in a company due to the costs and risks that the firm would have to support.

SUNDAY, 3:30pm-5:00pm  Room: 208

SD10  Title:  Service Operations Planning
Chair: L. Drew Rosen, University of North Carolina

SD10.1 A Methodology for the Determination of the 'Voice of the Customer' in Services: A SERVQUAL Application, L. Drew Rosen, University of North Carolina, Department of Production & Decision Sciences, Cameron School of Business, Wilmington, NC 28403

The intent of this paper is to suggest an approach to providing the requisite information for managers to develop strategies to maintain and improve the multiple service levels associated with a 'quality service'. To achieve this an investigation of four services is made using SERVQUAL as a methodology for delineating the importance of various attributes of the service. Services must be tailored to accommodate key operational considerations. All service providers are faced with the questions of which operational aspects to concentrate on and which to reduce control over. The 'Voice of the Customer' importance weights derived in this empirical study give some guidance as to the setting of service operations strategies.

SD10.2 Training Your Customer, Serge Carrière, 4983 Dresden, Pierrefonds, Quebec, Canada H8Z 2C4; Jean Harvey, Université du Quebec à Montreal, Sciences de la gestion, C.P. 8888 Succ. Centre-Ville, Montreal, Quebec, Canada

Customer participation in the production process can simultaneously contribute (when it is not the only way) to a reduction in production cost and to improvement in the customer's satisfaction with a service. Yet whereas no manager would consider asking an employee to perform a task without providing a minimum or prior training, examples abound where customers are expected to contribute to the production process with hardly any training at all. This paper addresses three issues of particular interest: (1) what are service organizations currently
doing in terms of customer training, (2) when is it in both party's interest to engage in a training activity, and (3) should training activities take place before or after the customer's commitment?

SD10.3 Operations Analysis at the Auto Title Bureau: A Case Study, Jay Ghosh, University of Dayton, PO Box 292439, Dayton, OH 45429-0439; Hassan Hosseini, American Graduate School of International Management, Glendale, AZ 85306

Queuing techniques were applied to analyze the operational performance of an auto title bureau with respect to servicing casual walk-ups, dealer waiters, dealer drop-offs and mail-ins. Due to staffing reallocation, the task was to recommend required human resources in the dealer and casual sections to provide adequate service with 85% utilization rate. The case would provide an opportunity to recommend staffing levels which restrict the average waiting time by walk-ups and waiters to less than 5 minutes and less than 48 hours for drop-offs and mail-ins.

SUNDAY, 3:30pm-5:00pm Room: 222

SD13 Title: Physical Systems Management
Chair: David Rogers, University of Cincinnati

SD13.1 Design and Management of Logistic Chains, Ron van Duin, Transport Policy and Logistics Organization, Delft University of Technology, School of Systems Engineering, PO Box 5015, Jaffalaan 5, 2000 G-A Delft, Netherlands; Marc Mourtis, Transport Policy and Logistic Organization, Delft University of Technology, School of Systems Engineering, PO Box 5015, Jaffalaan 5, 2000 G-A Delft, Netherlands

For the development of a new logistic course "Design and Management of Logistic Chains" the educational focus is based on the integration of the use of OR models into a real-world decision problem.

SD13.2 Boundary Conditions in Aggregate Planning, Kwang Soo Lee, Department of Systems & Decision Science, School of Business, Indiana State University, Terre Haute, IN 47809-5402

Aggregate planning is to deal with selection of a short-term arrangement of common in put resources for the purpose of accommodating short-term fluctuations in demand. When we compare alternatives with respect to their associated costs, the comparison should be made based on an equal footing. However, in many cases, this important concept is ignored. Especially when we use the trial and error method for manufacturing operations, often we ignore the initial and ending conditions on workforce level and inventory level. This paper reviews aggregate planning problems in OM textbooks that have been published since 1990, and discusses the importance of the boundary conditions.

SD13.3 G.E. European Challenge, Richard C. Scamehorn, Executive-in-Residence, College of Business, Ohio University, 304 Copeland Hall, Athens, OH 45701

This case deals with the aspects of G.E.'s acquisition of Tungsram, in Budapest, Central/East Europe's largest manufacturer of light sources.

SUNDAY, 3:30pm-5:00pm Room: 223

SD15 Title: International Operations Management (I)
Chair: Robert T. Amsden, University of Dayton

SD15.1 POM in Europe: Business as Usual?, Robert T. Amsden, MIS & Decision Science Department, Anderson Information Sciences Center, Room 112, University of Dayton, Dayton, OH 45469-2130; Davida M. Amsden, 5216 Tilbury Road, Huber Heights, OH 45424

The results of four summers of field research in Europe reveal a wide range of POM practices: from plants in chaos, to skillfully managed factories using very innovative practices. This paper describes several of these: a matrix organization within a division; a semi-matrix concept applied to suppliers who are required to oversee production of competing products worldwide; a long-term, detailed feedback mechanism for assuring continuous improvement; a people-based philosophy at the focal point of a company; and, business "as usual".

SD15.2 An Investigation of the Cultural Aspects of Global Supply Chain Alliances, Ajay Das, N460 Department of Management, Eli Broad College of Business, Michigan State University, N475 North Business Complex, East Lansing, MI 48824

The globalization of supply chains is a current reality. Unfortunately, comparative research shows that the globalization of managerial minds remains encumbered by cultural ethnocentricity. This study seeks to provide insights into the cultural aspects of international supply chain management by developing a framework for the consideration of cultural factors in relationship building. This study will examine (1) the limits and (opportunities) for inter-firm coordination established by cultural factors in global supply chain relationships and (2) the extent to which successful management of international supply chain relationships contributes to corporate competitive advantage relative to more traditional methods of buyer-supplier governance.

SD15.3 International Ethical Effects on POM Systems, Gerhard Plentner, Brigham Young University, IBM - 660 TNRB, Productivity and Quality Research Group, Provo, UT 84602

International technology transfer business transactions have, for a long time, been the subject of confused ethics. In the West, we believe that what is ethical for us, should, reasonably, be ethical for everyone. However, much to our surprise, this is not true. For example, we in the United States believe in an individualism
philosophy, where the rights of the individual are superior to the rights of the majority. However, in the world, we are in the minority with this philosophy. Most societies believe that the individual only has value if he or she contributes to society as a whole. This paper will discuss a number of ethical differences that exist internationally.

SUNDAY, 3:30pm-5:00pm Room: 226

SD17(1) Title: Interesting Topics in POM
Chair: Diane H. Parente, SUNY-University of Buffalo

SD17(1.1) Manufacturing-Marketing Interface: A Taxonomy of Significant Research Literature, Diane H. Parente, SUNY-University at Buffalo, 325J Jacobs Management Center, Buffalo, NY 14260-4000

Much ado is made about the interface between manufacturing and marketing beginning with Lawrence and Lorsch (1969) and continuing to Shapiro (1977). This paper classifies the significant and recent research in the area in a three-dimensional framework. The level of the interface or transaction (strategic, tactical, or operational) is identified. The object of the research is characterized as either outcome or process. Finally, the presence or absence of situational dimensions framing the work completes the taxonomy. Areas for further research are noted.

SD17(1.2) Misunderstanding of the Operations Task, Thomas Johnson, Information Systems/Decision Sciences, College of Business Administration, University of South Florida, 4202 E. Fowler Avenue, CIS 1040, Tampa, FL 33620-7800; Harold C. Allen, Information Systems/Decision Sciences, College of Business Administration, University of South Florida, 4202 E. Fowler Avenue, CIS 1040, Tampa, FL 33620-7800

Two areas under discussion here are production engineering POM Management. Different responsibilities result in different reporting structures. Operations is not a technical/engineering related function but a business related function. Most businesses make standard products using known processes with specialist engineering/technical function as part of the support provision. It is the task of the operations manager to provide critical business orientation while the function itself should provide it. In the 1960s and 1970s scholars and business people were optimistic about the future role of OR techniques. Early 1980s challenged the usefulness of their application in companies and their reliance in teaching research under operations/management.

SD17(1.3) The Cost of Environmental Management Framework, Sime Cunkovic, Michigan State University, N475, Eli Broad Graduate School of Management, Department of Management, East Lansing, MI 48824; Steven A. Melnyk, Michigan State University, N475, Eli Broad Graduate School of Management, Department of Management, East Lansing, MI 48824; Robert Handfield, Michigan State University, N475, Eli Broad Graduate School of Management, Department of Management, East Lansing, MI 48824

The major objective of this paper is to develop a Cost of Environmental Management Framework, which parallels Juran's framework for quality. This type of framework will help managers understand the costs associated with poor environmental management (i.e., prevention, appraisal, internal failure, external failure, and "purely" compliance driven costs). When environmental costs and savings are introduced into project analysis, certain limitations in traditional methods immediately surface. The source of these limitations lies to a large degree in the uncertainties of environmental costs themselves, namely: What are they? A comprehensive and well-developed framework will facilitate the decision-making process of capital investments within organizations by identifying the economic consequences associated with poor environmental management. Therefore, the major objective of the research becomes establishing a Cost of Environmental Management Framework.

SUNDAY, 3:30pm-5:00pm Room: 222

SD17(2) Title: New Topics in POM
Chair: Michael H. Way, Indiana University

SD17(2.1) Critical Factors in the Spread of World Class Manufacturing, Michael H. Way, Operations and Decision Technologies, Room 670, School of Business, Indiana University, Bloomington, IN 47405

Over the last 15 years, we have heard of many world-class manufacturing (WCM) success stories: companies which have lowered operating costs while simultaneously increasing productivity, flexibility, quality, and other competitive factors. While some of these WCM initiatives have continued to flourish, spreading to other plants or divisions within the company, others have stalled, failing to spread, or even died out. This study aims, through on-site visits and a mail survey, to determine what are the critical factors in the maintenance and eventual intraorganizational spread of WCM initiatives.

SD17(2.2) Independent Demand Inventory Models, Brad C. Meyer, College of Business and Public Administration, Drake University, 2507 University Avenue, Aliber Hall, Des Moines, IA 50311

A study of Independent Demand Inventory Models should impress the student with the concepts of holding cost, batch costs (order and setup), backorder costs, and the tradeoffs between them. The student should understand the management control points in periodic and continuous review systems and the advantages and disadvantages of the two approaches. Story problems are useful for conveying this understanding as long as the number crunching effort does not overshadow the reflection on the higher level concepts. Innovative software has been developed to minimize algebraic and arithmetic tasks and
maximize conceptual understanding of the functional relationships in inventory models.

SD17(2).3  A Perspective on Production & Operations Management: Its History and Development, James M. Wilson, Management Studies Department, Glasgow University, 59 Southpark Avenue, Glasgow, Scotland, United Kingdom G12 8LF

The discipline of production and operations management has been greatly influenced by past developments that are not widely known. The discipline's History constitutes a "new" topic of real significance because so little attention has been paid to it in the past. This paper presents a broad perspective on the discipline's development and advocates a systematic and comprehensive approach to further analysis of historical topics. Examples of systems thinking, enlightened management and other "modern" concepts can be found throughout the past 200 years, and this paper presents a number of examples.
<table>
<thead>
<tr>
<th>Name</th>
<th>Code</th>
<th>Name</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agrawal, Mani</td>
<td>SB9.2</td>
<td>Davis, Edward</td>
<td>A-21</td>
</tr>
<tr>
<td>Agrawal, Naren</td>
<td>A-28</td>
<td>Deck, M.D., John D.</td>
<td>SB16.3</td>
</tr>
<tr>
<td>Allen, Harold C.</td>
<td>SD17(1.2)</td>
<td>Dellana, Scott</td>
<td>SB16.1</td>
</tr>
<tr>
<td>Allison, Jerry D.</td>
<td>SC9.3</td>
<td>Dilts, David</td>
<td>SB11.3</td>
</tr>
<tr>
<td>Amoako-Gyampah, Kwasi</td>
<td>SB1.2</td>
<td>Donohue, Karen</td>
<td>A-22</td>
</tr>
<tr>
<td>Amsden, David M.</td>
<td>SD15.1</td>
<td>Doutriaux, Jerome</td>
<td>SD1.1</td>
</tr>
<tr>
<td>Amsden, Robert T.</td>
<td>SD15</td>
<td>Dreyfus, Paul</td>
<td>SA3</td>
</tr>
<tr>
<td>Amsden, Robert T.</td>
<td>SD15.1</td>
<td>Dreyfus, Paul</td>
<td>SA3.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Droz, Dan</td>
<td>A-23</td>
</tr>
<tr>
<td>Badinelli, Ralph D</td>
<td>A-29</td>
<td>Eaves, B. Curtis</td>
<td>SA5(2.3)</td>
</tr>
<tr>
<td>Bahouth, Saba</td>
<td>SC9.3</td>
<td>Ebert, Ronald</td>
<td>SC2</td>
</tr>
<tr>
<td>Baker, Ken</td>
<td>A-22</td>
<td>Ebert, Ronald</td>
<td>SC2.1</td>
</tr>
<tr>
<td>Baker, Ken, Chair</td>
<td>A-22</td>
<td>Elmes, Michael</td>
<td>SC4.1</td>
</tr>
<tr>
<td>Beltran, Jose Luis</td>
<td>SB14.4</td>
<td>Eppen, Gary</td>
<td>A-19</td>
</tr>
<tr>
<td>Bernett, Carole</td>
<td>SC4.2</td>
<td>Evans, Jim</td>
<td>SB3</td>
</tr>
<tr>
<td>Bernett Will, Larry</td>
<td>SC4.2</td>
<td>Evers, Philip</td>
<td>SB14.3</td>
</tr>
<tr>
<td>Blackburn, Joseph</td>
<td>A-22</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blocher, James D.</td>
<td>A-29</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bourland, Karla</td>
<td>A-26</td>
<td>Farkas, András</td>
<td>SC2.2</td>
</tr>
<tr>
<td>Bowen, Kent</td>
<td>A-22</td>
<td>Fensterseifer, Jaime</td>
<td>SB11</td>
</tr>
<tr>
<td>Brandt, Craig M.</td>
<td>SB8.2</td>
<td>Fensterseifer, Jaime</td>
<td>SB11.1</td>
</tr>
<tr>
<td>Brown, Steve</td>
<td>SB16.2</td>
<td>Ferguson, Loretta</td>
<td>SB1.3</td>
</tr>
<tr>
<td>Burns, Cathleen Spalding</td>
<td>SD7.2</td>
<td>Finch, Byron</td>
<td>SA1(1.3)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Finch, Bryon</td>
<td>SC12.2</td>
</tr>
<tr>
<td>Carrier, Serge</td>
<td>SD10.2</td>
<td>Fitzsimmons, James A., Chair</td>
<td>A-28</td>
</tr>
<tr>
<td>Chakravorty, Satya S.</td>
<td>SD7</td>
<td>Fitzsimmons, James A.</td>
<td>SD5.2</td>
</tr>
<tr>
<td>Chakravorty, Satya S.</td>
<td>SD7.1</td>
<td>Flaherty, M. Therese</td>
<td>A-17</td>
</tr>
<tr>
<td>Chand, Suresh</td>
<td>A-22</td>
<td>Fleury, Afonso</td>
<td>SA15</td>
</tr>
<tr>
<td>Chand, Suresh, Chair</td>
<td>A-22</td>
<td>Fleury, Afonso</td>
<td>SA15.1</td>
</tr>
<tr>
<td>Chang, Tsong-How</td>
<td>SB16.4</td>
<td>Frazer, Christopher L.</td>
<td>SD1.3</td>
</tr>
<tr>
<td>Chang, Tsong-How</td>
<td>SC18</td>
<td>Freeland, James</td>
<td>A-20</td>
</tr>
<tr>
<td>Chang, Tsong-How</td>
<td>SC18.1</td>
<td>Friel, Terri</td>
<td>SB16.2</td>
</tr>
<tr>
<td>Chase, Richard</td>
<td>A-23</td>
<td>Fuxman, Leonora</td>
<td>SB14</td>
</tr>
<tr>
<td>Chen, Youhua (Frank)</td>
<td>SB14.2</td>
<td>Fuxman, Leonora</td>
<td>SB14.1</td>
</tr>
<tr>
<td>Chhajed, Dilip</td>
<td>A-29</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chhajed, Dilip</td>
<td>SC9.2</td>
<td>Gardner, L. Leslie</td>
<td>SA5(1)</td>
</tr>
<tr>
<td>Christy, Dave</td>
<td>SA1(2.3)</td>
<td>Gardner, L. Leslie</td>
<td>SA5(1.1)</td>
</tr>
<tr>
<td>Collier, David A.</td>
<td>A-28</td>
<td>Gargeya, Vidya</td>
<td>SB1.2</td>
</tr>
<tr>
<td>Coughlan, Paul</td>
<td>SA3.3</td>
<td>Ghahramani, Bahador</td>
<td>SA10.3</td>
</tr>
<tr>
<td>Coughlan, Paul</td>
<td>SB8.3</td>
<td>Ghosh, Jay</td>
<td>SD10.3</td>
</tr>
<tr>
<td>Coughlan, Paul</td>
<td>SC6.2</td>
<td>Gilbreath, Glenn H.</td>
<td>SA5(1.3)</td>
</tr>
<tr>
<td>Couillard, Jean</td>
<td>SD1.1</td>
<td>Gomes, Carlos</td>
<td>SD7.3</td>
</tr>
<tr>
<td>Craighead, Chris</td>
<td>SB1.3</td>
<td>Goodale, John C.</td>
<td>SC9</td>
</tr>
<tr>
<td>Curkovic, Sime</td>
<td>SD17(1.3)</td>
<td>Goodale, John C.</td>
<td>SC9.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Gordon, John</td>
<td>SB3.1</td>
</tr>
<tr>
<td>Das, Ajay</td>
<td>SD15.2</td>
<td>Graves, Stephen</td>
<td>A-26</td>
</tr>
<tr>
<td>Davies, How</td>
<td>SA3.2</td>
<td>Graves, Stephen, Chair</td>
<td>A-26</td>
</tr>
<tr>
<td>Davig, William</td>
<td>SB16.2</td>
<td>Grimmett, David R.</td>
<td>SA1(2)</td>
</tr>
<tr>
<td>Name</td>
<td>Session</td>
<td>Chair</td>
<td>Session</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>---------</td>
<td>----------------</td>
<td>---------</td>
</tr>
<tr>
<td>Grimmett, David R.</td>
<td>SA1(2).1</td>
<td>Kleindorfer, Paul</td>
<td>A-23</td>
</tr>
<tr>
<td>Guide, Jr., V. Daniel R.</td>
<td>SB9</td>
<td>Koltai, Tamás</td>
<td>SC2.2</td>
</tr>
<tr>
<td>Gupta, Jatinder N.D.</td>
<td>A-30</td>
<td>Krass, Dmitry</td>
<td>SB14.4</td>
</tr>
<tr>
<td>Handfield, Robert</td>
<td>SD17(1).3</td>
<td>Kumar, Ravi</td>
<td>SC3.3</td>
</tr>
<tr>
<td>Hanna, Mark</td>
<td>SC16.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Harvey, Jean</td>
<td>SA10.2</td>
<td>Lee, Choong Y.</td>
<td>SD2.2</td>
</tr>
<tr>
<td>Harvey, Jean</td>
<td>SD10.2</td>
<td>Levenburg, Nancy</td>
<td>SC6.3</td>
</tr>
<tr>
<td>Haugen, Dyan L.</td>
<td>SA10.1</td>
<td>Lisboa, João</td>
<td>SD7.3</td>
</tr>
<tr>
<td>Haugen, Dyan L.</td>
<td>SB1</td>
<td>Lockamy, Archie</td>
<td>SC14.1</td>
</tr>
<tr>
<td>Hausman, Warren, Chair</td>
<td>A-20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Haynes, Robert</td>
<td>A-27</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hill, Arthur</td>
<td>A-23</td>
<td>Machua, Miguel</td>
<td>A-27</td>
</tr>
<tr>
<td>Holmes, Judy D.</td>
<td>SB3.2</td>
<td>McDaniel, J.R.</td>
<td>SC1.1</td>
</tr>
<tr>
<td>Hosseini, Hassan</td>
<td>SD10.3</td>
<td>Melnyk, Steven A.</td>
<td>SD17(1).3</td>
</tr>
<tr>
<td>Iansiti, Marco</td>
<td>A-22</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jacobs, F. Robert</td>
<td>SA13.3</td>
<td>Meyer, Brad C.</td>
<td>SA1(1)</td>
</tr>
<tr>
<td>Johnson, Eric</td>
<td>A-22</td>
<td>Meyer, Brad C.</td>
<td>SD17(2.2)</td>
</tr>
<tr>
<td>Johnson, Fraser</td>
<td>SB11.2</td>
<td>Mills, Sherry</td>
<td>SD7.2</td>
</tr>
<tr>
<td>Johnson, Sharon</td>
<td>SC4.1</td>
<td>Moskowitz, Herbert</td>
<td>A-20, A-27</td>
</tr>
<tr>
<td>Johnson, Thomas</td>
<td>SD17(1).2</td>
<td>Muckstadt, Jack</td>
<td>A-27</td>
</tr>
<tr>
<td>Julien, Francois M.</td>
<td>SD1.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kamauff, John</td>
<td>SB11.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kelemen, Tamás</td>
<td>SC2.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kendall, Julie E.</td>
<td>SC12.1</td>
<td>Nakhai, Behnam</td>
<td>SC16.1</td>
</tr>
<tr>
<td>Kendall, Kenneth E.</td>
<td>SC12.1</td>
<td>Natu, Madan G.</td>
<td>SB9.2</td>
</tr>
</tbody>
</table>

21
<table>
<thead>
<tr>
<th>Name</th>
<th>Affiliation</th>
<th>Author</th>
<th>Volume</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nicholson, Alastair</td>
<td>SA3.3</td>
<td>Schneveldt, Shane J.</td>
<td>A-29, A-30</td>
<td></td>
</tr>
<tr>
<td>Nicholson, Alastair</td>
<td>SB8.3</td>
<td>Schwarz, Leroy</td>
<td>A-19</td>
<td></td>
</tr>
<tr>
<td>Nicholson, Alastair</td>
<td>SC6.2</td>
<td>Scudder, Gary D.</td>
<td>SA5(2).1</td>
<td></td>
</tr>
<tr>
<td>Nozick, Linda K.</td>
<td>SD5.1</td>
<td>Sengupta, Kaushik</td>
<td>SA13.3</td>
<td></td>
</tr>
<tr>
<td>Özatalay, Savas</td>
<td>SA15.3</td>
<td>Sessum, Joseph</td>
<td>SC12.3</td>
<td></td>
</tr>
<tr>
<td>Paiva, Ely</td>
<td>SB11.1</td>
<td>Shirley, Britt</td>
<td>SD2.3</td>
<td></td>
</tr>
<tr>
<td>Pan, Shin-chun</td>
<td>SA15.2</td>
<td>Simons, Jr., Jacob V.</td>
<td>SA5(1).2</td>
<td></td>
</tr>
<tr>
<td>Parente, Diane H.</td>
<td>SC1.2</td>
<td>Simons, Jr., Jacob V.</td>
<td>SB8.2</td>
<td></td>
</tr>
<tr>
<td>Parente, Diane H.</td>
<td>SD17</td>
<td>Simons, Jr., Jacob V.</td>
<td>SC6</td>
<td></td>
</tr>
<tr>
<td>Parente, Diane H.</td>
<td>SD17(1).1</td>
<td>Sinha, Sanjeev</td>
<td>SC9.2</td>
<td></td>
</tr>
<tr>
<td>Pariseau, Susan E.</td>
<td>SC1</td>
<td>Solis, Luis</td>
<td>SA15.2</td>
<td></td>
</tr>
<tr>
<td>Pariseau, Susan E.</td>
<td>SC1.1</td>
<td>Srivastava, Rajesh</td>
<td>SB9.1</td>
<td></td>
</tr>
<tr>
<td>Patterson, J. Wayne</td>
<td>SB1.3</td>
<td>Srivastava, Rajesh</td>
<td>SC14.3</td>
<td></td>
</tr>
<tr>
<td>Paxton, John</td>
<td>SB18</td>
<td>Steaughton, Roy</td>
<td>SA3.2</td>
<td></td>
</tr>
<tr>
<td>Paxton, John</td>
<td>SB18.1</td>
<td>Stecke, Kathryn</td>
<td>A-29</td>
<td></td>
</tr>
<tr>
<td>Perron, Isabelle</td>
<td>SA10.2</td>
<td>Tabibzadeh, Kambiz</td>
<td>SB16.2</td>
<td></td>
</tr>
<tr>
<td>Pittman, Paul H.</td>
<td>SD5.4</td>
<td>Talbot, Brian, Chair</td>
<td>A-21</td>
<td></td>
</tr>
<tr>
<td>Plenert, Gerhard</td>
<td>SD15.3</td>
<td>Tanner, George</td>
<td>SC2.1</td>
<td></td>
</tr>
<tr>
<td>Price, Will</td>
<td>SA13</td>
<td>Taube, Larry</td>
<td>SB1.2</td>
<td></td>
</tr>
<tr>
<td>Price, Will</td>
<td>SA13.1</td>
<td>Taylor, Bernard W.</td>
<td>SB8.1</td>
<td></td>
</tr>
<tr>
<td>Putt, James</td>
<td>SC12.3</td>
<td>Tayur, Sridhar</td>
<td>A-29</td>
<td></td>
</tr>
<tr>
<td>Rao, Subba S.</td>
<td>SA15.2</td>
<td>Thomas, Joseph</td>
<td>A-29</td>
<td></td>
</tr>
<tr>
<td>Raturi, Amitabh</td>
<td>SA5(2)</td>
<td>Thorell, Hans</td>
<td>A-20</td>
<td></td>
</tr>
<tr>
<td>Razi, Muhammad</td>
<td>SA5(1).3</td>
<td>Topár, József</td>
<td>SC2.3</td>
<td></td>
</tr>
<tr>
<td>Reid, Richard A.</td>
<td>SD1.3</td>
<td>Tunc, Enar A.</td>
<td>A-30</td>
<td></td>
</tr>
<tr>
<td>Render, Barry</td>
<td>A-19</td>
<td>Turnquist, Mark A.</td>
<td>SD5</td>
<td></td>
</tr>
<tr>
<td>Rogers, David</td>
<td>SD13</td>
<td>Turnquist, Mark A.</td>
<td>SD5.1</td>
<td></td>
</tr>
<tr>
<td>Roodman, Gary</td>
<td>SD5.3</td>
<td>Tutuereau, Moise</td>
<td>SC2.1</td>
<td></td>
</tr>
<tr>
<td>Rosen, L. Drew</td>
<td>SD10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rosen, L. Drew</td>
<td>SD10.1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Roth, Aleda</td>
<td>A-28</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ruiz, A</td>
<td>A-27</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Russell, Roberta</td>
<td>SB8</td>
<td>van Duin, Ron</td>
<td>SD13.1</td>
<td></td>
</tr>
<tr>
<td>Russell, Roberta</td>
<td>SB8.1</td>
<td>Vargas, Vincent A.</td>
<td>SB2.3</td>
<td></td>
</tr>
<tr>
<td>Russell, Randolph M.</td>
<td>SB2</td>
<td>Vineyard, Michael</td>
<td>SA3.1</td>
<td></td>
</tr>
<tr>
<td>Russell, Randolph M.</td>
<td>SB2.1</td>
<td>Vlahovich, Vladimir</td>
<td>SA15.3</td>
<td></td>
</tr>
<tr>
<td>Saad, Germaine H.</td>
<td>SD2</td>
<td>Ward, James</td>
<td>A-20, A-27</td>
<td></td>
</tr>
<tr>
<td>Saad, Germaine H.</td>
<td>SD2.1</td>
<td>Ward, James, Chair</td>
<td>A-20</td>
<td></td>
</tr>
<tr>
<td>Sayir, Ahmet</td>
<td>SA5(2).2</td>
<td>Ware, Norman</td>
<td>SC14</td>
<td></td>
</tr>
<tr>
<td>Scamehorn, Richard C.</td>
<td>SD13.3</td>
<td>Ware, Norman</td>
<td>SC14.1</td>
<td></td>
</tr>
<tr>
<td>Schein, Norm</td>
<td>SB11.2</td>
<td>Wathen, Samuel</td>
<td>SC4.3</td>
<td></td>
</tr>
<tr>
<td>Schmenner, Robert</td>
<td>A-21</td>
<td>Way, Michael H.</td>
<td>SD17(2)</td>
<td></td>
</tr>
<tr>
<td>Schmenner, Roger, Chair</td>
<td>A-21</td>
<td>Way, Michael H.</td>
<td>SD17(2).1</td>
<td></td>
</tr>
<tr>
<td>Schniedler, Marc J.</td>
<td>SA1(2).2</td>
<td>Wayno, Frank J.</td>
<td>SD5.1</td>
<td></td>
</tr>
<tr>
<td>Schniedler, Marc J.</td>
<td>SB16</td>
<td>Wemmerlov, Urban</td>
<td>A-29</td>
<td></td>
</tr>
<tr>
<td>Schniedler, Marc J.</td>
<td>SB16.3</td>
<td>Wilson, James M.</td>
<td>SD17(2).3</td>
<td></td>
</tr>
</tbody>
</table>
Xu, Kefeng  SB14.3
Zelei, István  SC2.3
Zemel, Eitan  A-22
Zeng, Amy  SB9.3
Zhang, Tianming  SB9.3
Zipkin, Paul  A-19
INFORMATION FOR CONTRIBUTORS

*Production and Operations Management* is the official journal of the Production and Operations Management Society. The journal publishes high-quality papers on all topics in production and operations management. For a detailed statement of the scope of the journal and the editorial policy, please see the editor's introduction in the inaugural issue of the journal or write to the editor for a copy. Send five copies of your manuscript typed double-spaced on one side of the paper only to the editor, Kalvan Singhal, Department of Management, University of Baltimore, 1420 N. Charles Street, Baltimore, Maryland, 21201, USA, phone (410) 837-4976 or (410) 837-5032.

A removable cover page should give the title of the paper, the author(s') names, addresses, institutional affiliations, telephone numbers, and fax numbers. The first page of the manuscript should include the title of the paper and an abstract of 100–400 words. The abstract should not contain formulas, references, or abbreviations. Please note up to four key words at the end of the abstract.

*Production and Operations Management* does not use footnotes. The important material should be incorporated in the main text. Acknowledge presentations, support, and assistance in an acknowledgement section preceding the references.

Cite references in the text by enclosing the authors' names and the year of publication in parentheses. List references alphabetically in a reference section at the end of the paper. Like the text of the paper, references should be double-spaced and in the following form:


Submission of a manuscript to the journal implies that the paper has neither been copyrighted nor published or submitted for publication elsewhere. Once manuscripts have been accepted for publication, authors are asked to sign a copyright transfer agreement and to supply good quality artwork for any figures.

Manuscripts are reviewed double-blind by two or more reviewers. The criteria for acceptance of a manuscript include originality, significant contribution, readability, and organization. The area editors and referees are committed to ensuring fair, thorough, and rapid review of manuscripts.

---

Reproduction of Journal Articles

Permission is hereby granted for unlimited reproduction for noncommercial classroom purposes. This permission applies only to the material copyrighted by the Production and Operations Management Society.
AN INVITATION TO JOIN POMS
(membership benefits include the journal)

Name ________________________________________________
Address ________________________________________________
________________________________________________________________________
Phone Number ____________________________________________
FAX Number ________________________________________________

Annual dues $55 for 1996 ($15 for students and retired members)

☐ Regular Member ☐ Student ☐ Retired Member
☐ I would also like to become a charter subscriber to the journal. Send me a complete set of back issues (Volume 1 through 4 for 1992, 1993, 1994 and 1995) for $100.
☐ Bill me ☐ Check payable to POMS enclosed.
☐ Please charge my: ☐ VISA ☐ MasterCard

Account # ___________________________ Expiration Date ________________
Signature __________________________________________________________

Mail or FAX to: Production and Operations Management Society, PC543, Florida International, Miami, Florida 33199, USA. Phone 305-348-1413. Fax 305-348-1908

ASK YOUR LIBRARY TO BECOME A CHARTER SUBSCRIBER TO THE JOURNAL
LIBRARY RECOMMENDATION FORM

TO ____________________________

From _____________________________________________________________
Department ________________________________________________________
Extension ________________

I recommend that our library subscribe to Production and Operations Management, an international journal published by the Production and Operations Management Society.

Signed ___________________________________________________________

Date ____________________________

Orders should be sent to:
Production and Operations Management Society
PC543, Florida International University
Miami, Florida 33199, USA.
Phone 305-348-1413
Fax 305-348-1908

1996: Volume 5 in 4 issues Subscription Price: $85

Production and Operations Management Society
Florida International University
University Park, PC 543
Miami, Florida 33199
USA