

Shrikant S. Panwalkar

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Education

Ph.D.	Industrial Engineering	University of Oklahoma	1970
M.E.	Industrial Engineering	University of Oklahoma	1968
B.E.	Electrical Engineering	University of Bombay	1965
B.E.	Mechanical Engineering	University of Bombay	1964

Professional experience**

2014 Jan	present	Associate Professor, Carey Business School, Johns Hopkins University
2011 Jan	2013 Dec	Assistant Professor, Carey Business School, Johns Hopkins University
2002 Aug	0210 Dec	Continuous Term Lecturer, School of Management, Purdue University
2000 Aug	2002 Jul	Visiting Professor of Management, School of Management, Purdue University
1999 Aug	2000 Jul	Visiting Professor, Industrial and Operations Engineering, (and Visiting Scholar, School of Business) University of Michigan
1998 Aug	1999 Jul	Professor, Industrial Engineering, South Dakota School of Mining and Technology
1998 Jan	1998 May	Visiting Professor, Industrial Engineering, Texas Tech University
1988 Aug	1989 Jul	In-charge of an MBA Program in Pune, India
1985 Jan	1997 Dec	Independent Consultant (M.I.S., Quality Systems, Operations Management)
1982 Jan	1985 Jan	Senior Faculty, Tata Management Training Center, Pune, India
1976 Aug	1982 Dec	Associate Professor, Industrial Engineering, Texas Tech University
1971 Jan	1976 Jul	Assistant Professor, Industrial Engineering, Texas Tech University
1970 Aug	1970 Dec	Visiting Assistant Professor, Industrial Engineering, University of Oklahoma
1965 Jul	1967 Aug	Trainee Engineer, Auto Accessories India Ltd., Bombay, India
**		Held visiting assignments at Texas Tech University and Wichita State University periodically between 1983 and 1991.

Consulting and training

- Consulting activities (1985-98, based in Pune, India). Implementation of Quality Management Systems (ISO 9001 / 9002, API SPEC Q1, QS 9000), software development, general industrial engineering (quality improvement, manufacturing planning). Training programs in Quality Systems / management, Statistical methods, Quantitative methods, operations management, computer applications, Decision making, Project Planning. Training programs conducted at all levels of executives.
 - ⇒ Types of organizations in which consulting work was spread over one or more years: steel alloys producer, maker of cable connectors, maker of engine valves, manufacturer of auto-electric switches, manufacturer of mini-telephone exchanges, manufacturer of molded plastic containers, auto component manufacturer (pressed parts, fabrication), a construction company (bridges, dams, apartment complexes).
 - ⇒ Types of organizations in which consulting assignment was for six months to one year : a pharmaceutical company, manufacturer of PCB assemblies, manufacturer of glass items (thermos), R&D Lab designing electronic items, manufacturer of automatic sliding doors, a cooperative bank
- Worked on several consulting / training assignments with Tata Group of companies (1982-85) involved in truck manufacturing, steel making, chemicals, electric power generation and leather goods manufacturing.
- Co-conducted a three-day program for the U.S. Army on Scheduling.
- Conducted a one-day program on ISO-9000 implementation in Bangkok.

Courses Taught

At Johns Hopkins – Decision Models, Operations Management, Statistical Analysis

At Purdue: Operations Management (undergraduate course), Project management, Management of Operations Systems (MBA student projects)

Production Planning and Control, Operations Management, Inventory Systems, Activity Scheduling, Facilities Planning, Project Planning, Engineering Economics, **Engineering Statistics, Design of Experiments, Statistical Quality Control, Quality management**, Operations Research, Network Flows, Linear and Integer Programming, Simulation (GPSS/H, ProModel), Optimization, Queuing Systems, Manufacturing Engineering.

Taught in the Texas Tech Summer program for engineers from Lucent Technologies (then called Western Electric Co.) during 8 summer sessions. Taught courses on Project Planning and Quality Management to distance learning students in Technology Management program at South Dakota School of Mines.

Current Activities:

Continuing revision of the Decision Models exercise.

Lead instructor: Decision Models, Co- lead instructor: Statistical Analysis

Mentor to a faculty member.

Reviewer for Journal of Scheduling.

Publications

Recent publications (2012 - 2019):

"The evolution of schematic representations of flow shop scheduling problems." Journal of Scheduling, (December 2018), 1-13 (SS Panwalkar and Christos Koulamas)

"The two-stage no-wait/blocking proportionate super shop scheduling problem." International Journal of Production Research, (2018), 1-10.

"New index priority rules for no-wait flow shops." Computers & Industrial Engineering, 115 (2018): 647-652 (Koulamas, Christos, and S. S. Panwalkar)

"On the dominance/optimality of permutation/non-permutation schedules for the ordered flow shop and the proportionate flow shop." Computers & Industrial Engineering, 107.C (2017): 105-108 (SS Panwalkar and Christos Koulamas)

"The proportionate two-machine no-wait job shop scheduling problem", European Journal of Operations Research, 252, 131-135, 2016 (Christos Koulamas and SS Panwalkar).

"On equivalence between the proportionate flow shop and single-machine scheduling problems", Naval Research Logistics, **62**, 595-603, 2015 (SS Panwalkar and Christos Koulamas)

"Job selection in two-stage shops with ordered machines." Computers & Industrial Engineering, **88**, 350-353, 2015 (Christos Koulamas and SS Panwalkar).

"Scheduling Research and the First Decade of NRLQ – A Historical Perspective", Naval Research Logistics, accepted **62**, 335-344, 2015 (SS Panwalkar and Christos Koulamas)

"A note on the complexity of scheduling problems with linear job deterioration." Journal of Global Optimization, **62**, 409-410, 2015 (Christos Koulamas and SS Panwalkar).

"On the equivalence of single machine earliness/tardiness problems with job rejection", Computers & Industrial Engineering, **87**, 1-3, 2015 (Christos Koulamas and SS Panwalkar).

"Proportionate Flow Shop: New Complexity results and Models with Due Date assignment" Naval Research Logistics, **62**, 98-106, 2015 (SS Panwalkar and Christos Koulamas)

"The two-machine no-wait general and proportionate open shop makespan problem." European Journal of Operational Research, 238, 471-475, 2014 (SS Panwalkar and Christos Koulamas)

"A note on combined job selection and sequencing problems," Naval Research Logistics, **64**, 449-453, 2013 (Christos Koulamas and SS Panwalkar).

"Single Machine Scheduling to Minimize Number of Expedited Jobs," International Journal of Planning and Scheduling, **1**, 235-241, 2013 (Shrikant Panwalkar)

"Review of the ordered and proportionate flow shop scheduling research," Naval Research Logistics, **60**, 46-55, 2013 (SS Panwalkar, Milton L Smith and Christos Koulamas)

"The three-stage ordered flow shop problem with flexible stage ordering," Computers & Industrial Engineering, **64**, 1093-1095, 2013 (SS Panwalkar and Christos Koulamas)

"An $O(n^2)$ algorithm for the variable common due date, minimal tardy jobs bi-criteria two-machine flow shop problem with ordered machines," European Journal of Operational Research. **221**, 7-13, 2012 (SS Panwalkar and Christos Koulamas)

Past publications:

- "Single operation earliness-tardiness scheduling with machine activation costs," IIE Transactions, **34**, 509-513, 2002, (SS Panwalkar and SD Liman)
- "Common Due Window Size and Location Determination in a Single Machine Scheduling Problem," Journal of Operational Research Society, **49**, 1007-1010, 1998, (SD Liman, SS Panwalkar and S. Thongmee)
- "Scheduling Common Due Window Problems with Controllable Processing Times", Annals of Operations Research, **70**, 145-154, 1997, (SD Liman, SS Panwalkar and S. Thongmee)
- "Determination of Common Due-date Window Location in a Single Machine Scheduling Problem", European Journal of Operational Research, **93**, 68-74, 1996 (SD Liman, SS Panwalkar and S. Thongmee)
- "A Heuristic for Single Machine Tardiness Problem", European Journal of Operational Research, **70**, 304-310, 1993 (SS Panwalkar, ML Smith and CP Koulamas)
- "Single Stage Minimum Absolute Lateness Problem with a Common Due Date on Non-identical Machines", Journal of Operational Research Society, **44**, 29- 36, 1993 (B. Alidaee and SS Panwalkar)
- "Single-machine Sequencing with Controllable Processing Times", European Journal of Operational Research, **59**, 298-302, 1992 (SS Panwalkar and R. Rajagopalan)
- "The Lessons of Flow Shop Scheduling Research", Operations Research, **40**, 7-13, 1992 (RA Dudek , ML Smith and SS Panwalkar)
- "A Note on Generation of V-Shape Sequences", Computers in Industrial Engineering, **20**, 421-423, 1991 (SS Panwalkar)
- "Scheduling of a Flow Shop with Travel Time Between Machines", Journal of Operational Research Society, **42**, 609-613, 1991 (SS Panwalkar)
- "A Thought on Appropriate OR/MS Education in India," OPSEARCH **24**, 25-28, 1987 (SS Panwalkar)
- "Scheduling in a Two-stage Manufacturing Process," International Journal of Production Research, **22**, 555-564, 1984 (SL Narasimhan and SS Panwalkar)
- "Common Due-Date Assignment to Minimize Total Penalty for the One Machine Scheduling Problem," Operations Research, **30**, 391-399, 1982 (SS Panwalkar, ML Smith and A. Seidmann).
- "Analysis of the Left Tail for the Makespan Distribution in Flow Shop Problem," OPSEARCH, **18**, 215-220, 1981 (SS Panwalkar and O. Charles).
- "Counterexamples to Optimal Permutation Schedules for Certain Flow Shop Problems," Naval Research Logistics Quarterly, **28**, 339-340, 1981 (SS Panwalkar, ML Smith, and CR Woollam).
- "Optimal Assignments of Due-Dates for a Single Processor Scheduling Problem", International Journal of Production, **19**, 393-399, 1981 (A. Seidmann, SS Panwalkar and ML Smith).
- "Ordered Flow Shop Problems with no In-Process Waiting: Further Results," Journal of Operational Research Society, **31**, 1039-1043, 1980, (SS Panwalkar and CR Woollam).

- "Flow Shop Sequencing Problems with No In-Process Waiting: A Special; Case Journal of Operational Research Society, **30**, 661-664, 1979 (SS Panwalkar and CR Woollam).
- "A predictive Equation for Average Output of K Stage Series Systems with Finite Inter-stage Queues", AIIE Transactions, **11**, 136-139, 1979 (SS Panwalkar and ML Smith).
- "An Ordered Flow Shop Sequencing Problem with TWK Type Due dates and Total Tardiness Criterion," Journal of Institute of Mathematics and Its Applications, **23**, 367-372, 1979 (SS Panwalkar and AW Khan).
- "A Single Facility Problem Involving Multiple Criteria", Production and Inventory Management, **20**, 3, 33-41, 1979 (SS Panwalkar and AG Tilak).
- "A Survey of Scheduling Rules," Operations Research, **25**, 45-61, 1977. (SS Panwalkar and W. Iskander).
- "A Convex Property of the Ordered Flow Shop Sequencing Problem," Naval Research Logistics Quarterly, **24**, 159-162, 1977. (SS Panwalkar and AW Khan).
- "An Ordered Flow Shop Sequencing Problem with Mean Completion Time Criterion", International Journal of Production, **14**, 631-635, 1976. (SS Panwalkar and AW Khan).
- "Flow Shop Sequencing with Ordered Processing Time Matrices - A General Case," Naval Research Logistics Quarterly, **23**, 481-486, 1976 (ML Smith, SS Panwalkar and RA Dudek).
- "Method rapide de calcul de l'exposant pondere de l'equation d'allometrie et estimation de sa variance," Biometrie Humaine, **XI**, 81-85, 1976. (SS Panwalkar and S. Parot).
- "Flow Shop Sequencing with Ordered Processing Time Matrices", Management Science, **21**, 544-549, 1975 (ML Smith, SS Panwalkar and RA Dudek).
- "An Improved Branch and Bound Procedure for $n \times M$ Flow Shop Problems Naval Research Logistics Quarterly, **22**, 787-790, 1975 (SS Panwalkar and AW Khan).
- "Use of a Case study in Sequencing/Scheduling Research", OMEGA, **2**, 252-261, 1974 (RA Dudek, ML Smith and SS Panwalkar).
- "Queleques remarques a propos de l'application des equation d'allometrie en physiologie", Biometrie Humaine, **IX**, 113-124, 1974. (S. Parot and SS Panwalkar).
- "Parametric Analysis of Linear programs with Upper Bounded Variables", Naval Research Logistics Quarterly, **20**, 83-93, 1973. (SS Panwalkar).
- "Job Sequencing Problem on Two Machines with Time Lag Constraints", Management Science, **19**, 1063-1066, 1973. (S. S. Panwalkar).
- "Sequencing Research and Industrial Scheduling Problem", in the Proceedings of Symposium on Theory of Scheduling and its Application, S. Elmaghraby (Ed.), Springer-Verlag Co., New York, NY, 1973. (SS Panwalkar, RA Dudek and ML Smith).
- "The use of Audio-Visual Response Teaching Machine in an Integrated Teaching Method", ERM, **3**, 17-30, December 1970. (SS Panwalkar and BL Foote).

Past Research Projects

Worked as a co-principal investigator on projects funded by the Air Force Office of Scientific Research and the Department. Of Interior

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Worked as a research associate on projects funded by the National Science Foundation, Cotton Inc., and Department of Health Education and Welfare.

Worked on five grants from State of Texas.

Presentations

Over 30 papers presented, mainly in INFORMS (ORSA/TIMS) conferences (other meetings include Institution of Industrial Engineers, Operational Research Society of India, two Symposiums on Scheduling).

Seminars presented in Ohio State University, University of Toronto, University of Southern California, University of Rochester, North Carolina State University, University of Cincinnati, University of Rhode Island, Chulalongkorn University (Thailand), Incheon University (South Korea), Indian Institute of Management, Indian Statistical Institute, Wroclaw Technical University (Poland)

Review

Associate Editor of OPSEARCH (1983-1998).

Reviewed papers for Journal of Flexible Manufacturing, Operations. Research, Management Science, Naval Research Logistics Quarterly, International Journal of Production Research, Computers and Industrial Engineering, AIIE Transactions, Journal of Statistical Computation and Simulation, Journal. of Operational. Research Society, European Journal. of Operational Research, International Journal of Industrial Engineering.

Reviewed proposals for the National Science Foundation.

Past Activities (at Texas Tech)

Advisor to 8 Masters and 4 Ph.D. students,

Member of about 30 other Masters and Ph.D. committees.

Departmental Graduate Student Advisor for 3 years.

Faculty Sponsor to student chapter of IIE, Alpha Pi Mu and India Students Association

Member of University wide committees: Student Publication Committee and International Student Education Committee.

(Purdue)

Faculty advisor for Alpha Kappa Psi.

Member of the Information Access Committee in the School of management.

(Johns Hopkins)

Revised syllabi of Decision Models and Statistical Analysis courses. Developed Excel Based group exercise for the Decision Models class.

Course lead for Decision Models and co-course lead for Statistical Analysis

Worked on United Way campaign, 2014.

