SABAH U. RANDHAWA
Provost and Executive Vice President
Oregon State University

Curriculum Vitae

EDUCATION

Ph.D., Industrial Engineering, Arizona State University, 1983
M.S., Industrial Engineering, Oregon State University, 1980
B.S., Chemical Engineering, University of Engineering & Technology, Pakistan, 1976

ADMINISTRATIVE POSITIONS

Provost and Executive Vice President, Oregon State University, June 2005-Present
Interim Provost and Executive Vice President, Oregon State University, Jan-Aug 2003, Jul 2004-May 2005
Vice Provost for Academic Affairs and International Programs, Oregon State University, Sep 2003-Jun 2004
Vice Provost for Academic Affairs, Oregon State University, Jan 2001-Dec 2002
Interim Dean, College of Business, Oregon State University, Jul 2001-Dec 2002
Associate Dean for Operations, College of Engineering, Oregon State University, Jul 1999-Dec 2000
Department Head, Department of Industrial & Manufacturing Engineering, Oregon State University, Jan 1993-Jul 1999
Shift Engineer, Imperial Chemical Industries, Pakistan, Aug 1976-Aug 1978

ACADEMIC EMPLOYMENT

Professor, Oregon State University, 1995-Present
Associate Professor, Oregon State University, 1989-1995
Assistant Professor, Oregon State University, 1987-1989
Assistant Professor, Arizona State University, January 1987-May 1987
Assistant Professor, Oregon State University, 1983-1986

PROFESSIONAL ACTIVITIES

Vice Chair, Northwest Commission on Colleges and Universities, 2009-2014
Co-Chair, Oregon University System Provosts' Council (System's academic affairs entity), 2006-2008
Engineering Accreditation Commission, 1999-2003
Program Evaluator (Manufacturing Engineering), ABET, 1996-1999
Member: American Society of Engineering Education, Institute of Industrial Engineers, and Society of Manufacturing Engineers

PROFESSIONAL RECOGNITION

Fellow, Institute of Industrial Engineers
Austin-Paul Engineering Faculty Award for Teaching Excellence, 2000
IIE Outstanding Faculty Award, Oregon State University, 1983-84; 1985-86; 1987-88; 1988-89; 1991-92
IIE Outstanding Graduate Student Award, Arizona State University, 1982-1983
First in graduating class, B.S. program, 1976
Alpha Phi Mu
Phi Kappa Phi

ADMINISTRATIVE EXPERIENCE

Provost and Executive Vice President, Oregon State University (2005-Present)
Oregon State University (OSU) is the state's land grant university and is one of only two universities in the U.S. to have land-, sea-, space-, and sun-grant designations. OSU is also the only university in Oregon to have earned the Carnegie Foundation Advancement of Teaching top designation, awarded to institutions with "very high research activity" and Carnegie's Foundation's "community engagement classification." With annual research revenue of about $309 million, Oregon State's impact reaches across the state and beyond and has a statewide economic footprint of over $2.3 billion. In addition to the main campus in Corvallis, OSU operates 13 Agricultural Experiment Stations, county Extension operations in each of Oregon's 36 counties, the Hatfield Marine Science Center in Newport, Oregon, a branch campus, OSU Cascades Campus, in Bend, Oregon, two teaching/research forests, and several experimental farms. OSU is the largest university in the state, with just over 30,000 students from across Oregon, all 50 states and more than 100 countries. Students can choose from more than 200 undergraduate and more than 80 graduate degree programs, including 38 degrees and certificates offered online.

Reporting Units and Budget: The Provost and Executive Vice President serves as university's Chief Academic Officer and Chief Operating Officer. Reporting to the provost are 11 Academic Colleges—Agricultural Sciences; Business; Earth, Ocean and Atmospheric Sciences; Education; Engineering; Forestry; Liberal Arts; Pharmacy; Public Health and Human Sciences; Science; and Veterinary Medicine. Direct reports also include Agricultural Experiment Station; Forest Research Laboratory; OSU-Cascades Branch Campus; Graduate School; University Honors College; Academic Affairs; Student Affairs; Undergraduate Studies; International Programs; Enrollment Management; Extended Campus; Information Services; and Outreach and Engagement, including the OSU Extension Service. The university's annual operating budget, including tuition, state support, research and development, capital outlay and auxiliary enterprises is approximately $1.1 billion; the Provost directly oversees the distribution and management of approximately 50% of the total annual budget.

The Provost serves as the Chief Executive Officer of OSU in the absence of the President. The Provost works closely with the Vice President for Finance and Administration, and is ultimately responsible for budget planning, fiscal accountability, and general policy development. The Provost is responsible for maintaining relationships with academic officers of other public universities, Oregon community colleges, and independent higher education institutions in Oregon and throughout the nation.

Major Accomplishments:

During my tenure as Provost and Executive Vice President, OSU has made significant and transformational progress and is well positioned for sustained future growth.

Strategic and Academic Leadership

- Led development of an aspirational strategic plan that has guided OSU's transformation, institutionalized strategic planning process and a culture of metrics-driven implementation.
- Hired and established an aligned, performance-based academic leadership team of academic deans and vice provosts who have driven the execution of the strategic plan and are responsible and accountable for the university's education, research, and outreach agenda and private fundraising activities.
- Developed and nurtured a strong culture of shared governance with faculty and students.
- Since 2010, OSU has made significant investments to hire about 300 new tenure track faculty positions and to ensure competitive faculty salaries and address salary equity and compression issues. Implemented a number of programs for faculty retention and development, including the Provost's Dual Career Hiring Initiative; the Center for Teaching, Learning, and Assessment; Tenured Diversity Faculty Initiative to hire senior faculty to advance diversity; a Leadership Academy to further the development of current chairs/heads and foster next generation of academic leaders; and the LifeBalance OSU to promote balance between professional, academic and family life.
- Facilitated development and implementation of university's Diversity Action Plan, and helped establish the Office of Equity and Inclusion to oversee implementation of an integrated community and diversity agenda. Currently, designing a new framework for diversity, equity, inclusion and compliance at OSU.
- Established a university-wide division of Outreach and Engagement.
- OSU implemented virtual alignment of its 11 academic colleges into four academic divisions—Arts and Sciences, Earth Systems Science, Health Sciences, and Business and Engineering—to enhance interdisciplinary collaborations
- Over a three year period, 2008-2011, the university realigned its departments and units within colleges from 62 to 42, an almost 30% reduction of administrative units to redirect resources to its core teaching and research mission.
- OSU established an accredited College of Public Health in 2015, the first such accredited program in Oregon, and doctorate programs in Business and targeted areas within the College of Liberal Arts. Since 2008, the University established a number of new interdisciplinary graduate programs, including Comparative Health Sciences; Robotics; Public Policy; Women, Gender, and Sexuality Studies; and Environmental Arts and Humanities, while at the same time eliminating 26 low enrollment academic majors.
- OSU recognized as one of the top environmentally responsible colleges in the nation.
- Worked collaboratively to advance joint priorities and issues facing higher education in Oregon while OSU was part of the seven universities Oregon University System. Over the past two years, we have successfully transitioned OSU to an independent institutional governing board.

Student Access and Success

- Student enrollment on the Corvallis campus has increased by about 54% to just over 30,000, with about 42% of first year students in fall 2015 being high achieving students from Oregon high schools.
- Students from underrepresented minority groups make up 22% of student population in fall 2015, an increase of almost 150% from 2005.
- International student enrollment increased significantly by 268% since 2005, making up 11.3% of

total students in fall 2015. This was enabled by an innovative public-private partnership with INTO University Partnerships, the first such collaboration in the U.S.

- OSU's Extended Campus (online programs) is now recognized as one of top 5 programs in public institutions in the U.S., with over a 400% increase in student enrollment since 2005, currently enrolling about 5,100 students in 38 degree and certificate programs.
- Capacity of University Honors College increased from 300 to approximately 1,200 students.
- Degree partnership programs were established with all 17 Oregon community colleges.
- The University established in 2008 the Bridge to Success Program that combines federal Pell grant funds, Oregon Opportunity Grants and private scholarships to fund some 3,000 Oregon undergraduates to attend OSU without paying tuition or fees.
- Since 2005, the total degrees awarded annually increased by almost 50% to 6,367 and degrees offered in engineering and computer science, designated shortage area in the state, increased by 67% to 1,214. The first-year persistence rate in 2014 was 84%, 4% higher than in 2005.
- Oregon State University's branch campus, OSU-Cascades, transitioned from a 2+2 (first two years at a community college) to a 4-year operation effective fall 2015 and current enrollment of 1,016, with its own campus facility scheduled to open in fall 2016.

<u>Research and Innovation</u>

- The total R&D revenue increased by about $100 million to $309 million over a 10-year period, with increase in industry-sponsored research of 60% to $40 million annually.
- The annual licensing revenue has increased to about $10 million, a 300% increase over past 5 years, and invention disclosures by 38% to about 75 per year over the same time period.
- OSU obtained seed funding from the state to establish business accelerator during the 2013-15 legislative session to assist development of new businesses and creation of local and regional jobs.
- In partnership with industry and other universities, and with support from the legislature, OSU established three statewide signature research centers in nanoscience and microtechnologies, built environment and sustainable technologies, translational research and drug discovery.
- Created targeted interdisciplinary centers to advance strategic research and outreach priorities, including the Center for STEM Education and Center for Latin@ Studies and Engagement.

<u>Financial Stability and Fundraising</u>

- The revenue base was stabilized and significantly increased, positioning OSU on a growth trajectory for the foreseeable future through a variety of strategies, including change in student mix, pricing targeted programs to market, expansion of online programs, growth in research revenue, and growth in private fundraising.
- OSU successfully completed its first $1 billion campaign in December 2014 raising a total of $1.14 billion and more than doubled its annual fundraising to $110 million. The campaign raised $189 million for scholarships and fellowships and over the course of the campaign, 28 major new or renovation construction projects with a net worth approaching $750 million were completed or are in the process of being completed. Implementation of the Provost Faculty Match program led to leveraging $1.5 million in university funds with over $33 million in endowed funding and 39 new endowed faculty positions over a 2-year period, and total endowed positions increased from 47 to 126 during the campaign.
- Led establishment of the campaign priorities, engaged in development of case statements and donor cultivation and asks, and served as an *ex officio* member of Campaign Steering Committee.
- OSU reengineered its business services by creating regional business centers, which resulted in savings of 35 FTE as the university budget grew by $108 million and enrollment by more than 4,000 students.

Vice Provost for Academic Affairs and International Programs, Oregon State University (2001-2004)
The Office of the Vice Provost provided leadership for academic personnel management, academic programs, international programs, accreditation and assessment, institutional research, and library.

Reporting Units: Academic Success and Engagement (included Academic Success Center, Center for teaching and Learning, Center for Writing and Learning, Difference, Power, and Discrimination Program, Writing Intensive Curriculum Program), Academic Planning and Assessment, International Programs, University Libraries (including OSU Press), ROTC Units, and Enrollment Management (now a direct report to the Provost). The office had oversight of budget of about $9 million budget.

Major Accomplishments:

- Established the Academic Success Center for student mentoring and the Center for Teaching and Learning for faculty development.
- In collaboration with Student Affairs, initiated Transitional Learning Communities for students.
- Restructured international programs organization and streamlined services for international students and faculty.
- Facilitated development of post-tenure review guidelines for academic faculty and new performance evaluation instrument for professional faculty.
- Expanded Summer Session course offerings that led to a 20% increase in student headcount.
- Developed web-based catalog and schedule of classes, and on-line submission/approval of academic program proposals.
- Responsible for a wide range of academic and personnel policies and worked closely with the Faculty Senate and its committee structure in this regard.
- Served as liaison to the NWCCU for regional accreditation and to the Oregon University System for academic program coordination.

Interim Dean, College of Business, Oregon State University (2001-2002)
The College of Business is one of 11 academic colleges at OSU. It is one of the largest colleges in terms of undergraduate student enrollment and in addition to Business majors, it is responsible for providing Business minors and business courses to other academic programs.

Responsibilities: Served as the Interim Dean of Business for a period of 18 months, while concurrently serving as the vice provost for academic affairs. Management and administration of the College with about 2,500 students and 60 faculty and staff, and a budget of about $6 million. Other responsibilities included alumni development and fund raising.

Major Accomplishments:

- Transformed college culture from centrally controlled, internally focused to one of decentralization of responsibilities and accountabilities with focus on three themes, enterprise development, business and campus alliances, and resource development.
- With the College of Engineering, initiated the Austin Entrepreneurship Program through a $4.3 million private gift.
- Started OSU Business Roundtable, a quarterly forum for OSU alumni in Portland, helped initiate CFO Associates for alumni serving as chief financial officers, and expanded outreach program in business information technology.
- Developed annual awards program to recognize alumni, donors, and industry leaders.

Associate Dean for Operations, College of Engineering (1999-2000)
The College of engineering has the largest student enrollment in the university and has an annual research portfolio of about $30 million.

Responsibilities: Responsible for College's fiscal, physical, and information infrastructure, and personnel management. Other responsibilities included responsibility for professional accreditation process and management of industry internship programs with over 60 industries.

Major Accomplishments:

- Provided oversight to College of Engineering's Top-25 Strategic Plan implementation and facilitated development of business plan to support college's strategic plan.
- Facilitated development of infrastructure proposals that led to $3.5 million funding for enhancing IT operations from the Hewlett-Packard Company and Intel Corporation.
- Provided regular oversight to college's budget and personnel processes.

Department Head, Industrial and Manufacturing Engineering (1993-1999)
The Department of Industrial and Manufacturing offered B.S. programs in Industrial Engineering and Manufacturing Engineering, and M.S., and Ph.D. programs in Industrial Engineering. The Department annually graduated about 45 undergraduate and 15 graduate students, and had a budget of approximately $1.5 million.

Responsibilities: Establishing department-level goals, creating and managing budgets, developing curriculum programs, recruiting students, and developing alumni and industry relations.

Major Accomplishments:

- Over the 5-year period the department increased undergraduate enrollments by 16%, graduate enrollments by 24%, and sponsored research by 53%.
- Developed one of the best computing facilities in the College and one of the best computer-integrated manufacturing facility among manufacturing programs nationally.
- Initiated college-level interdisciplinary program in micro-energy and chemical systems that has now evolved into a very successful multi-institutional Oregon Nanoscience and Microtechnologies Institute.
- The department led the college in developing and implementing outcome-based assessment of programs required by Engineering Accreditation Commission.
- Established department's first Industry Advisory Board, as well as department's student advisory board and student ambassador program for recruiting high school students.
- In collaboration with Portland State University, the department implemented a distance education, masters-level program in Manufacturing Engineering for working professionals.
- During my tenure as department head, I continued an active teaching, research and publication program, including publication of a text in engineering economics.
- As a faculty member in Industrial and Manufacturing Engineering, I am proud to have received numerous teaching awards from the department and the college. I have had a collaborative, interdisciplinary research agenda, published over 50 articles in technical referred journals, and mentored 35 Masters and Ph.D. students.

PROFESIONAL PUBLICATIONS

Recent Presentations

Strategic Business Partnerships in Higher Education, Panel presentation, American Council on Education, 97th Annual Meeting, Washington, D.C., March 14-17, 2015

Cultural Diversity and Excellence in Engineering Education, World Congress on Engineering Leaders, Doha, Qatar, January 7-9, 2013

Reimagining the Role of Industrial Engineers, Keynote Address, Institute of Industrial Engineers Conference and Expo, Reno, Nevada, May 22, 2011

Books

Riggs, J.L., D.D. Bedworth and S.U. Randhawa, Ingenieria Economica, Alfaomega Grupo Editor, Mexico, 2002.

Riggs, J.L., D.D. Bedworth, S.U. Randhawa, and A.M. Khan, *Engineering Economics*, Canadian Edition, McGraw-Hill Book Co., 1997.

Riggs, J.L., D.D. Bedworth and S.U. Randhawa, *Engineering Economics*, McGraw-Hill Book Co., 1996.

Book Chapters

Randhawa, S.U. and S. Burhanuddin, "Concurrent product/process development," in *Integrated Product, Process and Enterprise Design*, B. Wang, Ed., Chapman and Hall, New York, NY, 1998.

West, T.M. and S.U. Randhawa, "Capacity planning in a flexible manufacturing environment," in *Justification Methods for Computer Integrated Manufacturing Systems*, H.R. Parsaei, T.L. Ward, and W. Karwowski, Eds., Elsevier Science Publishers, 1990.

Technical Journals

Refereed

Neammanee, P. and S.U. Randhawa, "An integrated methodology for board assignment and component allocation in printed circuit board industry," *International Journal of Production Research*, 41, 5, 919-937, 2003.

Li, Y.-A. and S. Randhawa, "Component to multi-track feeder assignment and board sequencing in printed circuit board assembly," *Journal of Electronics Manufacturing*, 11, 1, 51-68, 2002.

Jeong, B.H. and S.U. Randhawa, "A multi-attribute dispatching rule for automated guided vehicle systems," *International Journal of Production Research*, 39, 13, 2817-2832, 2001.

Randhawa, S., T. Beaumariage and J. Funck, "Using simulation to create manufacturing control expert knowledge in sawmills," *Journal of Design and Manufacturing*, 1, 3, 193-206, 2001.

Saleh, B., M. Hacker, and S. Randhawa, "Factors in capital decisions involving advanced manufacturing technologies," *International Journal of Operations & Production Management*, 21, 10, 1265-1288, 2001.

Kuo, C.-H., K. Douglas, and S.U. Randhawa, "Evaluation of performance measurements in distribution centers," *Journal of Engineering Valuation and Cost Analysis*, 3, 6, 389-401, 2000.

Xu, Z., K. Carlson, R. Kurschner, Y.-A. Li, and S.U. Randhawa, "An integrated methodology for surface mount PCB configuration," *Journal of Electronics Manufacturing*, 8, 3/4, 225-234, 1999.

Saleh, B., S.U. Randhawa, and M. Hacker, "A decision support framework for evaluating manufacturing alternatives," *International Journal of Flexible Automation and Integrated Manufacturing*, 6, 3/4, 311-327, 1998.

Wu, C.-S., S.U. Randhawa, and S. Burhanuddin, "An integration architecture for flexible manufacturing cells," *International Journal of Advanced Manufacturing Technology*, 14, 4, 286-297, 1998.

Xu, Z. and S.U. Randhawa, "Evaluation of scheduling strategies for a dynamic job-shop in a tool-shared, flexible manufacturing environment," *Production Planning and Control*, 9, 1, 74-86, 1998.

Randhawa, S.U., S.G. Miller, C.A. Bell, and P.E. Montagne, "A Study of commercial vehicle safety alliance's out-of-service criteria," *Accident Analysis and Prevention*, 30, 1, 61-67, 1998.

Randhawa, S.U. and C.-H. Kuo, "Evaluating scheduling heuristics for non-identical parallel processors," *International Journal of Production Research*, 35, 4, 969-981, 1997.

Nudtasomboon, N. and S.U. Randhawa, "Resource-constrained project scheduling with renewable and non-renewable resources and time-resource tradeoffs," *Computers & Industrial Engineering*, 32, 1, 227-242, 1997.

Randhawa, S.U. and K.D. Douglas, "A comparison of multi-attribute decision techniques," *The Journal of Engineering Valuation and Cost Analysis*, 1, 2, 125-138, 1997.

Anderson, J.D., C.C. Brunner, and S.U. Randhawa, "Design and implementation of a fuzzy logic controller for woods part recovery in rough mills," *International Journal of Flexible Automation and Integrated Manufacturing*, 4, 3-4, 255-271, 1996.

Bell, C.A., S.U. Randhawa, and Z.K. Xu, "Impact of high-pressure tires and single-tired axles in Oregon," *Transportation Research Record*, No. 1540, 132-141, 1996.

Randhawa, S.U., E.D. Olsen, and D.H. Lysne, "A decision analysis approach to forest resource management," *International Journal of Industrial Engineering*, 3, 2, 95-101, 1996.

Randhawa, S.U. and Y. Zeng, "Job Shop Scheduling: An experimental investigation of the performance of alternative scheduling rules," *Production Planning and Control*, 7, 1, 47-56, 1996.

Randhawa, S.U. and T.M. Scott, "Model generation for simulation analysis: An application to timber harvesting," *Computers & Industrial Engineering*, 30, 1, 51-60, 1996.

Burhanuddin, S., S.U. Randhawa, and C. Wu, "Design and implementation of a concurrent engineering modeling environment," *Engineering Design and Automation*, 1, 2, 93-104, 1995.

Randhawa, S.U. and T.A. Smith, "An experimental investigation of scheduling non-identical parallel processors with sequence dependent setup times," *International Journal of Production Research*, 33, 1, 59-69, 1995.

Randhawa, S.U. and R.N. Shroff, "Simulation-based design evaluation of unit load automated storage/retrieval systems," *Computers & Industrial Engineering*, 28, 1, 71-79, 1995.

Randhawa, S.U. and E.T. Bjarnason, "A decision aid for coordinating fishing and fish processing," *European Journal of Operational Research*, 81, 1, 1995.

Randhawa, S.U. and B. Saleh, "An application of Schriber's truncation rule to simulation output of queuing systems," *Transactions of the SCS*, 11, 4, 273-288, 1994.

Randhawa, S.U. and N. Rai, "A decision support system for production scheduling in glass fiber manufacturing," *International Journal of Industrial Engineering*, 1, 4, 295-304, 1994.

Randhawa, S.U., C.C. Brunner, J.W. Funck, and G. Zhang, "A discrete-event object-oriented modeling environment for sawmill simulation," *Simulation*, 62, 2, 119-130, 1994.

Randhawa, S.U. and T.M. West, "A simulation-based approach to evaluating design-manufacturing process," *European Journal of Engineering Education*, 19, 1, 31-40, 1994.

McGregor, D.R. and S.U. Randhawa, "Ents: An interactive object-oriented system for discrete simulation modeling," *Journal of Object-Oriented Programming*, 5, 8, 21-29, 1994.

Randhawa, S.U. and D. Sitompul, "A heuristic-based computerized nurse scheduling system," *Computers & Operations Research*, 20, 8, 837-844, 1993.

Randhawa, S.U. and L.K. Baxter, "A study in the application of Schriber's truncation rule to simulation output," *Transactions of the SCS*, 9, 3, 175-192, 1992.

Randhawa, S.U., S. Burhanuddin, and H. Chen, "An integrated simulation and database system for manufacturing process design analysis," *Journal of Design and Manufacturing*, 2, 1, 49-58, 1992.

Randhawa, S.U., T.M. Scott, and E.D. Olsen, "TIMBER HARVESTOR: A microcomputer-based system for automatic selection of timber harvesting equipment," *Applied Engineering in Agriculture*, 8, 1, 121-127, 1992.

Randhawa, S.U. and T.M. West, "Evaluating automated engineering technologies: Part I – Concepts and literature review," *Computer Integrated Manufacturing Systems*, 5, 3, 208-218, 1992.

Randhawa, S.U. and T.M. West, "Evaluating automated engineering technologies: Part II – A methodology for evaluation," *Computer Integrated Manufacturing Systems*, 5, 4, 276-282, 1992.

Randhawa, S.U., W. Wang, and E.D. McDowell, "Evaluation of scheduling rules for single- and dual-dock automated storage/retrieval systems," *Computers and Industrial Engineering*, 20, 4, 401-410, 1991.

Sitompul, D. and S.U. Randhawa, "Nurse scheduling models: A state-of-the-art review," *Journal of the Society for Health Systems*, 2, 1, 62-72, 1990.

Randhawa, S.U. and E.D. Olsen, "LOGSIM: A tool for mechanized harvesting systems design and analysis," *Applied Engineering in Agriculture*, 6, 2, 231-237, 1990.

Randhawa, S.U. and R. Pendakur, "A microcomputer-based data management and capacity planning system," *International Journal of Operations and Production Management*, 10, 5, 52-61, 1990.

Randhawa, S.U. and E.D. McDowell, "An investigation of the applicability of expert systems to job shop scheduling," *International Journal of Man-Machine Studies*, 32, 2, 203-213, 1990.

Randhawa, S.U., A.M. Mechling, and R.A. Joerger, "A simulation-based resource planning system for Oregon Motor Vehicles Division," *Interfaces*, 19, 6, 40-51, 1989.

McDowell, E.D. and S.U. Randhawa, "A simulation-based production planning support system for printed circuit board fabrication," *Journal of Manufacturing Systems*, 8, 3, 225-234, 1989.

Nantawong, C., S.U. Randhawa, and E.D. McDowell, "An economic comparison of X-bar, cumulative sum and geometric moving average control charts," *International Journal of Production Research*, 27, 1, 133-151, 1989.

Randhawa, S.U., T.M. West, and J.N. Kim, "A search space algorithm for site selection of biomass-fueled power plants," *AI Applications in Natural Resources Management*, 2, 443-446, 1988.

Wiese, C., E.D. Olsen, and S.U. Randhawa, "A simulation model for mechanized log harvesting systems," *Simulation*, 51, 3, 120-126, 1988.

Martin, G.L., S.U. Randhawa, and E.D. McDowell, "Computerized containership load planning: A methodology and evaluation," *Computers and Industrial Engineering*, 14, 4, 429-440, 1988.

Chung, Y.G., S.U. Randhawa, and E.D. McDowell, "A simulation analysis for a transtainer-based container handling facility," *Computers and Industrial Engineering*, 14, 2, 113-125, 1988.

McDowell, E.D., S.U. Randhawa, and R.B. Grinde, "ANSI/ASQC Z1.4 performance without limit numbers," *Journal of Quality Technology*, 19, 4, 204-215, 1987.

Randhawa, S.U., E.D. McDowell, and R.B. Grinde, "Analysis of the use of limit numbers in ANSI Z1.4 using a simulation model," *International Journal of Production Research*, 25, 2, 301-313, 1987.

Randhawa, S.U., B.J. Barton, and S. Faruqui, "WAVESOLDER ASSISTANT: An expert system to aid troubleshooting of the wave soldering process," *Computers and Industrial Engineering*, 10, 4, 325-334, 1986.

Jonatansson, E. and S.U. Randhawa, "A network simulation model of a fish processing facility," *Simulation*, 47, 1, 5-12, 1986.

Randhawa, S.U., E.D. McDowell, and S. Faruqui, "An integer programming application to solve sequencer mix problems in printed circuit board production," *International Journal of Production Research*, 23, 3, 543-552, 1985.

Other Journal Publications

Kuo, C.-H., K.D. Dunn, and S.U. Randhawa, "A case study assessment of performance measurement in distribution centers," *Industrial Management and Data Systems*, 99, 2, 54-63, 1999.

Randhawa, S.U., C. Juwono, and S. Burhanuddin, "Scheduling in multistage flow shop systems: An application in food processing industry," *Industrial Management and Data Systems*, 94, 5, 19-24, 1994.

Randhawa, S.U., E.D. McDowell, P.J. Tabaka, and N.L. Howard, "Total Quality Management (TQM) practices: A survey of Northwest companies," *Industrial Engineering*, 26, 10, 28-30, 1994.

Randhawa, S.U. and J.A. Douglas, "Financial risk analysis using simulation," *Industrial Management*, 35, 5, 24-25, 1993.

Randhawa, S.U. and E.D. Olsen, "Timber harvesting analysis and design using simulation," *The Pakistan Journal of Forestry*, 40, 3, 210-214, 1990.

Randhawa, S.U. and T.M. West, "Uncertainty modeling in CIM investment analysis," *CIM Review*, 6, 1, 32-36, 1989.

Randhawa, S.U., E.D. McDowell, R. Pendakur, C.N. Cook, T.A. Welch, and C. Gaibler, "Dental equipment maker uses microcomputer-based data management and production planning system," *Industrial Engineering*, 21, 1, 24-27, 1989.

Nantawong, C. and S.U. Randhawa, "Comparing the effectiveness of variables control charts," *Thailand Engineering Journal*, 42, 2, 55-57, 1989.

Randhawa, S.U. and R.H. Rucker, "Managing information through expert systems," *Engineering Management International*, 5, 2, 137-142, 1988.

Randhawa, S.U. and B.J. Barton, "An expert system helps troubleshoot the wave solder process," *Technology Report*, 8-10, August/September 1985.

Randhawa, S.U. and D.D. Bedworth, "Factors identified for use in comparing conventional and flexible manufacturing systems," *Industrial Engineering*, 17, 6, 40-44, 1985.

Conference Proceedings

Neammanee, P. and S. Randhawa, "An approach for balancing workload in printed circuit board industry," *7th Asia-Pacific Decision Sciences Institute Conferences*, July 24-27, 2002.

Xu, Z., K. Carlson, Y. Li, and S.U. Randhawa, "A methodology for double-feeder assignment in surface-mount PCB replacement," *Second International Conference on Engineering Design and Automation*, August 9-12, 1998, Maui, HI.

Xu, Z., K. Carlson, R. Kurschner, S.U. Randhawa, and C. Xu, "A cost-benefit analysis for fixed feeder bay determination on surface mount machines," *Second International Conference on Engineering Design and Automation*, August 9-12, 1998, Maui, HI.

Xu, Z., K. Carlson, R. Kurschner, and S.U. Randhawa, "An integrated methodology for surface mount PCB configuration," *23rd International Conference on Computers & Industrial Engineering*, March 29-April 1, 1998, Chicago, IL, 53-56.

Saleh, B., S.U. Randhawa, and T.M. West, "Multi-criteria evaluation of automated manufacturing technologies," *7th International Conference on Flexible Automation and Intelligent Manufacturing*, June 25-27, 1997, Middlesborough, UK, 859-866.

Randhawa, S.U. and C.-H. Kuo, "Generating knowledge and decision expertise using simulation," *21st International Conference on Computers and Industrial Engineering*, March 9-12, 1997, San Juan, PR, 77-81.

Smith, T.A. and S.U. Randhawa, "Manufacturing facility design: World quality at global prices," *Industrial Engineering Solutions '97 Conference and Expo*, May 18-21, 1997, Miami, FL, 60-64.

Kuo, C.-H. and S.U. Randhawa, "A simulation-based experimental investigation of scheduling heuristics for parallel processor systems," *1996 Summer Computer Simulation Conference*, July 21-25, 1996, Portland, OR, 64-69.

Xu, Z. and S.U. Randhawa, "Dynamic job shop scheduling in a tool shared environment," *19th International Conference on Computers and Industrial Engineering*, March 4-6, 1996, Miami, FL.

Zeng, Y., S.U. Randhawa, and J.W. Funck, "An expert system for softwood lumber grading," *19th International Conference on Computers and Industrial Engineering*, March 4-6, 1996, Miami, FL.

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