### Joe Zhu

# Professor of Operations Analytics

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### **ACADEMIC APPOINTMENTS**

2010 - present, *Professor*, Business School, Worcester Polytechnic Institute

2003 – 2010, Associate Professor, Department of Management, Worcester Polytechnic Institute

1998 – 2003, Assistant Professor, Department of Management, Worcester Polytechnic Institute

### **VISITING POSITIONS**

2017-2018, Feng Tay Chair Professor, National Yunlin University of Science and Technology, Taiwan.

2015-2017, *Chang Jiang Scholar Chair Professor*, Ministry of Education of China, hosted by Hefei University of Technology, Hefei, China.

2014-present, Distinguished Professor, Nanjing Audit University, Nanjing, China.

June-July, 2010, William Evans Visiting Fellow, Department of Finance & Quantitative Analysis, University of Otago, Dunedin, New Zealand.

May-June, 2007, *Visiting Research Fellow*, Graduate School of Information Science and Technology, Osaka University, Japan.

2007, Visiting Associate Professor, Department of Industrial and Information Management, the National Cheng Kung University, Taiwan.

May-July, 2002, *Japan Society for Promotion of Science (JSPS) Fellow*, Graduate School of Information Science and Technology, Osaka University, Japan.

#### **EDUCATION**

Ph.D., Industrial Engineering & Operations Research University of Massachusetts at Amherst, 1998

M.S., Systems Engineering Southeast University, China, 1992

### PUBLICATIONS IN REFERRED JOURNALS

- 161. Khezrimotlagh, D., and Zhu, Joe, The role of unobserved units in two-stage network data envelopment analysis, *Journal of the Operational Research Society*,
- 160. Esteve, M., Aparicio, J., Rodriguez-Sala, J.J., and Zhu, Joe, Random forests and the measurement of super-efficiency in the context of free disposal hull, *European Journal of Operational Research*, Vol. 304 (2023), Issue 2, 729-744.
- 159. Khezrimotlagh, D., and Zhu, Joe, Multivariate returns to scale production frontiers, *Journal of the Operational Research Society*, Vol. 73 (2022), No. 6, 1411–1419.
- 158. Liu, J., Gong, Y., Zhu, Joe, and Titah, R., Information technology and performance: Integrating data envelopment analysis and configurational approach, *Journal of the Operational Research Society*, Vol. 73 (2022), No. 6, 1278–1293.
- 157. Khezrimotlagh, D., Kaffash, S., and Zhu, Joe, U.S. airlines mergers' performance and productivity change, *Journal of Air Transport Management*, Volume 102 (2022), July, 102226.
- 156. Zhu, Joe, DEA under big data: data enabled analytics and network data envelopment analysis, *Annals of Operations Research*, Vol. 309, (2022), Issue 2, 761-783.
- 155. Sahoo, B.K., Saleh, H., Shafiee, M., Kaoru Tone, T. and Zhu, Joe, An alternative approach to dealing with the composition approach for series network production processes, *Asia-Pacific Journal of Operational Research*, Vol. 33 (2021), Issue 1-2, 507-528.
- 154. Shi, Y., Yu, A., Higgins, H., and Zhu, Joe, Shared and unsplittable performance links in network DEA, *Annals of Operations Research*, Vol. 33 (2021), Issue 1-2, 507-528.
- 153. Khezrimotlagh, D., Cook, W.D., and Zhu, Joe, Number of performance measures versus number of decision making units in DEA, *Annals of Operations Research*, Vol. 33 (2021), Issue 1-2, 529-562.
- 152. Zhang, Q., Koutmos, D., Chen, K., and Zhu, Joe, Using operational and stock analytics to measure airline performance: network DEA approach, *Decision Sciences*, Vol. 52 (2021), No. 3, 720-748.

- 151. Chu, J. and Zhu, Joe, Production scale-based two-stage network data envelopment analysis, *European Journal of Operational Research*, Vol. 294, (2021), Issue 1, 283-294.
- 150. Shi, Y., Zhu, Joe, and Charles, V., Data science and productivity: A bibliometric review of data science applications and approaches in productivity evaluations, *Journal of the Operational Research Society*, Vol. 72 (2021), Issue 5, 975-988.
- 149. Yu, A., Shi, Y., You, J, and Zhu, Joe, Innovation performance evaluation for high-tech companies using a dynamic network data envelopment analysis approach, *European Journal of Operational Research*, Vol. 292, (2021), Issue 1, 199-212.
- 148. Kaffash, S., Nguyen, A.T., and Zhu, Joe, Big data algorithms and applications in intelligent transportation system: A review and bibliometric analysis, *International Journal of Production Economics*, Vol. 231 (2021), January, 107868.
- 147. Li, W., Cook, W.D., Li, Z, and Zhu, Joe, Efficiency measurement for hierarchical situations, *Journal of the Operational Research Society*, Vol. 72 (2020), Issue 3, 654-662.
- 146. Avilés-Sacoto, S., Cook, W.D., Güemes-Castorena, D., and Zhu, Joe, Measuring efficiency in DEA in the presence of common inputs, *Journal of the Operational Research Society*, Vol. 71 (2020), No. 11, 1710-1722.
- 145. Chen, C., Cook, W.D., Imanirad, R., and Zhu, Joe, Balancing fairness and efficiency in performance evaluation in non-homogeneous environments: The case of hybrid versus conventional vehicles, *European Journal of Operational Research*, Vol. 287 (2020), Issue 3, 1003-1013.
- 144. Avilés-Sacoto, S., Cook, W.D., Güemes-Castorena, D., and Zhu, Joe, Modelling efficiency in regional innovation systems: A two-stage data envelopment analysis problem with shared outputs within groups of decision-making units, *European Journal of Operational Research*, Vol. 287 (2020), Issue 2, 572-582.
- 143. Khezrimotlagh, D., Cook, W.D., and Zhu, Joe, A Nonparametric framework to detect outliers in estimating production frontiers, *European Journal of Operational Research*, Vol. 286 (2020), Issue 1, 375-388.
- 142. Kaffash, S., Azizi, R., Huang, Y. and Zhu, Joe, A survey of data envelopment analysis applications in the insurance industry 1993-2018, *European Journal of Operational Research*, Vol. 284 (2020), Issue 3, 801-813.
- 141. Cook, W.D., Li, W-H, Li, Z, Liang, L., and Zhu, Joe, Efficiency measurement with products and partially desirably co-products, *Journal of the Operational Research Society*, Vol. 71 (2020), Issue 2, 335-345.
- 140. Chen, K., and Zhu, Joe, Additive slacks-based measure: computational strategy and extension to network DEA, *OMEGA*, Vol. 91, March (2020), 102022.
- 139. Chen, K., Cook, W.D., and Zhu, Joe, A conic relaxation model for searching global optimum of network data envelopment analysis, *European Journal of Operational Research*, Vol. 280, Issue 1 (2020), 242-253.

- 138. Charles, V., Aparicio, J., and Zhu, Joe, The curse of dimensionality of decision-making units: A simple approach to increase the discriminatory power of data envelopment analysis, *European Journal of Operational Research*, Vol. 279, Issue 3 (2019), 929-940.
- 137. Chen, Y., Wang, J., Zhu, Joe, Sherman, H.D. and Chou, S-Y, How the great recession affects performance: A case of Pennsylvania hospitals using DEA, *Annals of Operations Research*, Vol. 278, Issue 1-2 (2019), 77-99.
- 136. Gong, Y., Liu, J., and Zhu, Joe, When to increase firms' sustainable operations for efficiency? A data envelopment analysis in the retailing industry, *European Journal of Operational Research*, Vol. 277, Issue 3 (2019), 1010-1026.
- 135. Chen, K, and Zhu, Joe, Scale efficiency in two-stage network DEA, *Journal of the Operational Research Society*, Vol. 70, Issue 1 (2019), 101-110.
- 134. Khezrimotlagh, D., Zhu, Joe, Cook, W.D., and Toloo, M., Data envelopment analysis and big data, *European Journal of Operational Research*, Vol. 274, Issue 3 (2019), 1047-1054.
- 133. Chen, K., and Zhu, Joe, Computational tractability of chance constrained data envelopment analysis, *European Journal of Operational Research*, Vol. 274, Issue 3 (2019), 1037-1046.
- 132. Cook, W.D., Ramón, N., Ruiz, J.L., Sirvent, I., and Zhu, Joe, Goal-adjusted benchmarking for performance evaluation in pay-for-performance incentive plans, OMEGA, Vol. 84 (2019), 45-54.
- 131. Lim, S., and Zhu, Joe, Primal-dual correspondence and frontier projections in two-stage network DEA models, *OMEGA*, Vol. 83 (2019), 236-248.
- 130. Avilés-Sacoto, S., Cook, W.D, Güemes-Castorena, Benita, D.F. Ceballos, H. and Zhu, Joe, Evaluating the efficiencies of academic research groups: A problem of shared outputs, *Asia-Pacific Journal of Operational Research*, Vol. 35, No. 6 (2018), 1850042 (22 pages).
- 129. Liu, J., Gong, Y., Zhu, Joe, and Zhang, J., A DEA-based approach for competitive environment analysis in global operations strategies, *International Journal of Production Economics*, Vol. 203 (2018), 110-123.
- 128. He, W., Yang, Y., Wang, Z., and Zhu, Joe, Estimation and allocation of cost savings from collaborative CO2 abatement in China, *Energy Economics*, Vol. 72 (2018), 62-74.
- 127. Gong, Y., Zhu, Joe, Chen, Y., and Cook, W.D., DEA as a tool for auditing: Application to Chinese manufacturing industry with parallel network structures, *Annals of Operations Research*, Vol. 263 (2018), Issue 1-2, 247–269.
- 126. Galagedera, D.U.A., Roshdi, I., Fukuyama, H. and Zhu, Joe, A new network DEA model for mutual fund performance appraisal: An application to U.S. equity mutual funds, *OMEGA*, Vol. 77 (2018), 168-179.
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- capable of dealing with negative data, *European Journal of Operational Research*, Vol. 265, Issue 2 (2018), 644-654.
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- 123. Zhou, H., Yang, Yi., Chen, Y., and Zhu, Joe, Data envelopment analysis application in sustainability: The origins, development and future directions, *European Journal of Operational Research*, Vol. 264, Issue 1 (2018), 1-16.
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- 121. Ding, J-J, Dong, W., Liang, L., and Zhu, Joe, Goal congruence analysis in multidivision organization with shared resources based on data envelopment analysis, *European Journal of Operational Research*, Vol. 263, Issue 3 (2017), 961-973.
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- 116. Miller, F., Wang, J., Zhu, Joe, Chen, Y., and Hockenberry, J., Investigation of the impact of the Massachusetts health care reform on hospital costs and quality of care, *Annals of Operations Research*, Vol. 250, Issue 1 (2017), 129-146.
- 115. Guo, C. and Zhu, Joe, Non-cooperative two-stage network DEA model: Linear vs. parametric linear, *European Journal of Operational Research*, Vol. 258, Issue 1 (2017), 398-400.
- 114. Guo, C., Abbasi Shureshjani, R., Foroughi, A. and Zhu, Joe, Decomposition weights and overall efficiency in two-stage additive network DEA, *European Journal of Operational Research*, Vol. 257, Issue 3 (2017), 896-906.
- 113. Cook, W.D., Ruiz, J.L., Sirvent, I. and Zhu, Joe, Within-group common benchmarking using DEA, *European Journal of Operational Research*, Vol. 256, Issue 3 (2017), 901-910.
- 112. Wu, J., Zhu, Q.Y., Cook, W.D., and Zhu, Joe, Best cooperative partner selection and input resource reallocation using DEA, *Journal of the Operational Research Society*, Vol. 67, Issue 9 (2016), 1221–1237

- 111. Du, J., Huo, J-Z, and Zhu, Joe, Data envelopment analysis with output-bounded data, *Asia-Pacific Journal of Operational Research*, Vol. 33, Number 6 (2016), 1650050 [17 pages].
- 110. Li, W, Liang, L., Cook, W.D., and Zhu, Joe, DEA models for non-homogeneous DMUs with different input configurations, *European Journal of Operational Research*, Vol. 254, Issue 3 (2016), 946-956.
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- 108. Lim, S., and Zhu, Joe, A note on two-stage network DEA model: frontier projection and duality, *European Journal of Operational Research*, Vol. 248. Issue 1 (2016), 342-346.
- 107. Aviles-Sacoto, S., Cook, W.D., Imanirad, R., and Zhu, Joe, Two-stage network DEA: When intermediate measures can be treated as outputs from the second stage, *Journal of the Operational Research Society*, Vol. 66, Issue 11 (2015), 1868-1877.
- 106. Imanirad, R., Aviles-Sacoto, S., Cook, W.D., and Zhu, Joe, Partial input to output impacts in DEA: The case of DMU-specific impacts, *European Journal of Operational Research*, Vol. 244, Issue 3 (2015), 837-844.
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- 104. Lim, S., and Zhu, Joe, DEA Cross-efficiency evaluation under variable returns to scale, *Journal of the Operational Research Society*, Vol. 66, Issue 3 (2015), 476-487.
- 103. Du, J., Wang, J., Chen, Y., Chou, S-Y, and Zhu, Joe, Incorporating health outcomes in Pennsylvania hospital efficiency: An additive super-efficiency DEA approach, *Annals of Operations Research*, Vol. 221, Issue 1 (2014), 161-172.
- 102. Park, J., Lee, D., and Zhu, Joe, An integrated approach for ship block manufacturing process performance evaluation: Case from a Korean shipbuilding company, International Journal of Production Economics, Vol. 156 (2014), 214-222.
- 101. Lim, S., Oh, K.W., and Zhu, Joe, Use of DEA cross-efficiency evaluation in portfolio selection: an application to Korean stock market, *European Journal of Operational Research*, Vol. 236 (2014), 361-368.
- 100. Du, J., Zhu, W.D., Liang, L., and Zhu, Joe, Fixed cost and resource allocation based on DEA cross-efficiency, *European Journal of Operational Research*, Vol. 235 (2014), 206-214.
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- 98. Cook, W.D., Tone, K., and Zhu, Joe, Data envelopment analysis: Prior to choosing a model, *OMEGA*, Vol. 44 (2014), 1-4.

- 97. Sahoo, Biresh K., Zhu, Joe, Tone, K., and Klemen, B.M., Decomposing technical efficiency and scale elasticity in two-stage network DEA, *European Journal of Operational Research*, Vol. 233, Issue 3 (2014), 584-594.
- 96. Cook, W.D., Harrison, J., Imanirad, R., Rouse, P., and Zhu, Joe, Data envelopment analysis with nonhomogeneous DMUs, *Operations Research*, Vol. 61, No. 3 (2013), 666-676.
- 95. Lim, S., and Zhu, Joe, Incorporating performance measures with target levels in data envelopment analysis, European Journal of Operational Research, Vol. 230, Issue 3 (2013), 634-642. [Corrigendum EJOR, Vol. 231, Issue 3 (2013), page 790]
- 94. Sherman, H.D., and Zhu, Joe, Analyzing performance in service organizations, Sloan Management Review, Vol. 54, No. 4 (Summer 2013), 36-42. [translated and published: Analizar el desempeño en organizaciones de servivio, Harvard Deusto business review, No. 228 (2013), 6-15.]
- 93. Imanirad, R., Cook, W.D., and Zhu, Joe, Partial input to output impacts in DEA: Production considerations and resource sharing among business subunits, *Naval Research Logistics*, Vol. 60, Issue 3 (2013), 190-207.
- 92. Lim, S., and Zhu, Joe, Integrated data envelopment analysis: Global vs local optimum, *European Journal of Operational Research*, Vol. 229, Issue 1 (2013), 276-278.
- 91. Chen, Y., Cook, W.D., Kao, C., and Zhu, Joe, Network DEA pitfalls: Divisional efficiency and frontier projection under general network structures, *European Journal of Operational Research*, Vol. 226 (2013), 507-515.
- 90. Premachandra, I.M., Zhu, Joe, Watson, J., and Galagedera, D.U.A., Best-performing US mutual fund families from 1993 to 2008: Evidence from a novel two-stage DEA model for efficiency decomposition, *Journal of Banking and Finance*, Vol. 36, Issue 12 (2012), 3302-3317.
- 89. Chen, C-M, Du, J. Huo, J., and Zhu, Joe, Undesirable factors in integer-valued DEA: Evaluating the operational efficiencies of city bus systems considering safety records, *Decision Support Systems*, Vol. 54 (2012), 330-335.
- 88. Chen, C-L, Zhu, Joe, Yu, J-Y, and Noori, H., A new methodology for evaluating sustainable product design performance with two-stage network data envelopment analysis, *European Journal of Operational Research*, Vol. 221, Issue 2 (2012), 348-259.
- 87. Cook, W.D., Harrison, J., Rouse, P., and Zhu, Joe, Relative efficiency measurement: The problem of a missing output in a subset of decision making units, *European Journal of Operational Research*, Vol. 220, Issue 1 (2012), 79-84.
- 86. Du, J., Chen, C-M, Chen, Y., Cook, W.D., and Zhu, Joe, Additive super-efficiency in integer-valued data envelopment analysis, *European Journal of Operational Research*, Vol. 218 (2012), 186-192.
- 85. Lee, H-S, and Zhu, Joe, Super-efficiency infeasibility and zero data in DEA, *European Journal of Operational Research*, Vol. 216 (2012), 429-433.
- 84. Cook, W.D., and Zhu, Joe, Multiple variable proportionality in data envelopment analysis, *Operations Research*, Vol. 59, No. 4 (2011), 1024-1032.

- 83. Cook, W.D., and Zhu, Joe, Output-specific input assurance-regions in DEA, *Journal of the Operational Research Society*, Vol. 62 (2011), 1881-1887.
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- 81. Chen, C-M, and Zhu, Joe, Efficient resource allocation via efficiency bootstraps: An application to R&D project budgeting, *Operations Research*, Vol. 59 (2011), May-June, pp. 729-741.
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- 79. Liang, L., Li, Z-Q, Cook, W.D., and Zhu, Joe, Data envelopment analysis efficiency in two-stage networks with feedback, *IIE Transactions*, Vol. 43 (2011), 309-322.
- 78. Du, J., Liang, L., Chen, Y., Cook, W.D., and Zhu, Joe, A bargaining game model for measuring performance of two-stage network structures, *European Journal of Operational Research*, Vol. 210, Issue 2 (2011), 390-397.
- 77. Cook, W.D., Zhu, Joe, Bi, G-B, and Yang, F., Network DEA: Additive efficiency decomposition, *European Journal of Operational Research*, Vol. 207, Issue 2 (2010), 1122-1129.
- 76. Chen, Y., Du, J., Sherman, H.D., and Zhu, Joe, DEA model with shared resources and efficiency decomposition, *European Journal of Operational Research*, Vol. 207 (2010), 339-349.
- 75. Cook, W.D., Liang, L., and Zhu, Joe, Measuring performance of two-stage network structures by DEA: A review and future perspective, *OMEGA*, Vol. 38 (2010), 423-430.
- 74. Cook, W.D., and Zhu, Joe, Context-dependent performance standards in DEA, *Annals of Operations Research*, Vol. 173, No. 1 (2010), 163-175.
- 73. Du, J., Liang, L., and Zhu, Joe, A slacks-based measure of super-efficiency in data envelopment analysis: A Comment, *European Journal of Operational Research*, Vol. 204 (2010), 694-697.
- 72. Chen, Y., Cook, W.D., and Zhu, Joe, Deriving the DEA frontier for two-stage processes, *European Journal of Operational Research*, Vol. 202 (2010), 138-142.
- 71. Cook, W.D., and Zhu, Joe, Piecewise linear output measures in DEA, *European Journal of Operational Research*, Vol. 197 (2009), 312-319.
- 70. Cook, W.D. Yang, F., and Zhu, Joe, Nonlinear inputs and diminishing marginal value in DEA, *Journal of the Operational Research Society*, Vol. 60, No. 11 (2009), 1567-1574.
- 69. Chen, Y., Cook, W.D., Li, N., and Zhu, Joe, Additive efficiency decomposition in two-stage DEA, *European Journal of Operational Research*, Vol. 196 (2009), 1170-1176.
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- 67. Chen, Y., Liang, L., and Zhu, Joe, Equivalence in two-stage DEA approaches, *European Journal of Operational Research*, Vol. 193 (2009), Issue 2, 600-604.
- 66. Liang, L., Wu, J., Cook, W.D., and Zhu, Joe, The DEA game cross-efficiency model and its Nash equilibrium, *Operations Research*, Vol. 56, No. 5 (2008), 1278-1288.
- 65. Liang, L., Cook, W.D., and Zhu, Joe, DEA Models for two-stage processes: Game approach and efficiency decomposition, *Naval Research Logistics*, Vol. 55 (2008), 643-653.
- 64. Liang, L., Wu, J., Cook, W.D., and Zhu, Joe, Alternative secondary goals in DEA cross-efficiency evaluation, *International Journal of Production Economics*, Vol. 113 (2008), 1025-1030.
- 63. Cook, W.D., and Zhu, Joe, CAR-DEA: Context-dependent assurance regions in DEA, *Operations Research*, Vol. 56, No. 1 (2008), 69-78.
- 62. Cooper, W.W., Huang, Z.M., Li, S., and Zhu, Joe, A response to the critiques of DEA by Dmitruk and Koshevoy, and Bol, *Journal of Productivity Analysis*, Vo. 29, No. 1 (2008), 15-21.
- 61. Cooper, W.W., Seiford, L.M., Tone, K., and Zhu, Joe, Some models and measures for evaluating performances with DEA: Past accomplishments and future prospects, *Journal of Productivity Analysis*, Vol. 28, No. 3 (2007), 151-163.
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- 59. Cook, W.D., and Zhu, Joe, Classifying inputs and outputs in data envelopment analysis, *European Journal of Operational Research*, Vol. 180, Issue 2 (2007), 692-699.
- 58. Cook, W.D., and Zhu, Joe, Within-group common weights in DEA: An analysis of power plant efficiency, *European Journal of Operational Research*, Vol. 178, Issue 1 (2007), 207-216.
- 57. Sherman, D.H., and Zhu, Joe, Benchmarking with quality-adjusted DEA (Q-DEA) to seek lower-cost high-quality service: Evidence from a U.S. bank application, *Annals of Operations Research*, Vol. 145, No. 1 (2006), 301-319.
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1. Sherman, D.H., and Zhu, Joe, Case study: Improving branch profitability and service with data envelopment analysis, Banking, Accounting and Finance, Vol. 22, No. 3 (2009), 15-24.

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- 4. Banker, R.D., Cooper, W.W., Seiford, L.M., and Zhu, Joe, Returns to scale in data envelopment analysis, in *Handbook on Data Envelopment Analysis*, Chapter 2, 41-73, Eds W.W. Cooper, L.M. Seiford, and J. Zhu, Kluwer Academic Publishers, Boston. 2004.
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### **INVITED TALKS**

- 45. Big Data Applications in Intelligent Transportation Systems, The 5th NYUAD Transportation Symposium, November 25, 2019, Abu Dhabi, UAE.
- 44. Data-oriented Analytics: Network DEA, 2019 International Conference on Intelligent Transportation and Logistics with Big Data, July 26-29, 2019, Windsor, Canada (**Keynote**)
- 43. Decomposition Weights and Overall Efficiency in Two-stage Additive Network DEA, 2016 Asian Pacific Productivity Conference, July 8, 2016, Tianjin, China. (**Keynote**)
- 42. Data Envelopment Analysis: New Perspectives, Beijing Institute of Technology, August 7, 2015, Beijing, China.
- 41. Data Envelopment Analysis: Future Directions, International Workshop on Data Envelopment Analysis, Chinese Academy of Sciences, August 4, 2015, Beijing, China. (**Keynote**)
- 40. Some New Developments in Data Envelopment Analysis, School of Management, Huazhong University of Science and Technology, July 31, 2015, Wuhan, China
- 39. Some Basic Issues in DEA, Advance Lecture Series, 2015 Taiwan Productivity and Efficiency Conference, School of Business, Soochow University, Taipei, Taiwan, July 8, 2015.
- 38. Data Envelopment Analysis: Data Mining and Analytics, 2015 Taiwan Productivity and Efficiency Conference, School of Business, Soochow University, Taipei, Taiwan, July 9, 2015. (**Plenary Session**)
- 37. Data Envelopment Analysis: New Perspectives, Osaka University, June 27, 2015, Osaka, Japan
- 36. Data Envelopment Analysis: New Perspectives, Hefei University of Technology, June 13, 2015, Hefei, China
- 35. VRS Cross Evaluation, 2014 Taiwan Productivity and Efficiency Conference, School of Business, Soochow University, Taipei, Taiwan, July 5, 2014. (**Plenary Session**)
- 34. An Integrated Approach for Ship Block Manufacturing Process Performance Evaluation: Case from a Korean Shipbuilding Company, Advance Lecture Series, 2014 Taiwan Productivity and Efficiency Conference, School of Business, Soochow University, Taipei, Taiwan, July 4, 2014.
- What are Inputs and Outputs in DEA? 2013 Taiwan Productivity and Efficiency Conference, School of Business, Soochow University, Taipei, Taiwan, July 20, 2013. (Plenary Session)
- 32. Cross Efficiency in DEA, Advance Lecture Series, 2013 Taiwan Productivity and Efficiency Conference, School of Business, Soochow University, Taipei, Taiwan, July 17, 2013.
- 32. Data Envelopment Analysis, Sheldon B. Lubar School of Business, University of Wisconsin-Milwaukee, Milwaukee, WI, November 2, 2012.
- 31. Data Envelopment Analysis as a Tool for Performance Evaluation, International Conference on Business Performance Measurement and Management, CENTRUM,

- Pontificia Universidad Católica del Perú, Lima, Peru, September 11-13, 2012. (**Keynote speech**)
- 30. Network DEA pitfalls, 2012 Taiwan Productivity and Efficiency Conference, School of Business, Soochow University, Taipei, Taiwan, July 20, 2012. (**Plenary Session**)
- Data Envelopment Analysis: Models and Applications, Advance Lecture Series, 2012
  Taiwan Productivity and Efficiency Conference, National Taiwan University, Taipei,
  Taiwan, July 19, 2012.
- 28. Data Envelopment Analysis: Models and Methods, Graduate Institute of Hospitality Management, National Taiwan Normal University, Taipei, Taiwan, July 16, 2012.
- 27. Research and Publish: Targeting High Quality International Journals, Institute of Business & Management, National Chiao Tung University, Taipei, Taiwan, July 16, 2012.
- 26. Data Envelopment Analysis: An Introduction, Institute of Business & Management, National Chiao Tung University, Taipei, Taiwan, July 16, 2012.
- 25. Efficiency and Productivity: Seaports and Marine Fleets Performance, National Taiwan Ocean University, December 28, 2011.
- 24. DEA Game Cross Efficiency and Modeling DEA in Excel, Soochow University, Taipei, Taiwan, December 16, 2011.
- 23. DEA Game Cross Efficiency and Applications, International Conference on Data Envelopment Analysis and Its Applications to Management, September 14-16, 2011, CENTRUM, Pontificia Universidad Católica del Perú, Lima, Peru. (**Keynote speech**)
- 22. DEA Methodology and Applications, Nanjing University of Posts and Telecommunications (NUPT), June 21, 2011, Nanjing, China.
- 21. How to Publish in Top Journals and Do High Quality PhD Research, School of Management, University of Science & Technology of China, Hefei, China, June 14, 2011.
- 20. DEA Methodology and Applications, Auhui University, June 13, 2011, Hefei, China.
- 19. DEA Game Cross Efficiency, International DEA Symposium, 27-29 September 2010, Brisbane, Australia. (**Keynote speech**)
- 18. Data Envelopment Analysis (DEA) –How and Where Do We Apply It? Department of Finance and Quantitative Analysis, University of Otago, Dunedin, New Zealand, June 28, 2010.
- 17. Data Envelopment Analysis (DEA): An Introduction, School of Commerce, University of Otago, Dunedin, New Zealand, June 29, 2010.
- 16. Additive Efficiency Decomposition in Two-Stage Network, 4th Symposium on Data Envelopment Analysis, Taiwan, Jan 19-21, 2010. (**Keynote speech**)
- 15. How to Publish in International Journals, Department of Industrial and Information Management, the National Cheng Kung University, Taiwan, December 31, 2009

- 14. DEA Models and Frontier for Two-Stage Processes, Taiwanese Productivity Conference (**Plenary Session**), National Taiwan University, Taipei, Taiwan, July 15, 2009.
- 13. Network and Multi-Stage Data Envelopment Analysis, Advanced Lecture Series on Productivity and Efficiency organized by Institute of Economics, Academia Sinica of Taiwan and National Taiwan University, July 14, 2009.
- 12. Data Envelopment Analysis: How, What, and Where, Erasmus Research Institute of Management (ERIM) Research Seminar, Netherlands, June 18, 2009.
- 11. Modeling Two-Stage Processes by DEA, DEA Symposium 2009, Osaka University Nakanoshima Center, Osaka, Japan, January 13, 2009.
- 10. Data Envelopment Analysis 30 Years: New Models, Institute of Policy and Management, Chinese Academy of Sciences, Beijing, China, July 3, 2008.
- 9. PhD Research: How to Achieve High-Quality, School of Management, University of Science & Technology of China, Hefei, China, June 14, 2008.
- 8. An Introduction to Data Envelopment Analysis (DEA), Department of Information and Physical Sciences, Osaka University, Osaka, Japan, June 15, 2007.
- 7. Context-dependent Assurance Region DEA (CAR-DEA), National Graduate Institute for Policy Studies, Tokyo, Japan, May 26, 2007
- 6. How to Publish in Top Journals, College of Management, Ming Chuan University, Taipei, Taiwan, Jan 10, 2007.
- 5. Performance Evaluation and Benchmarking Using DEA, Department of Industrial and Information Management, the National Cheng Kung University, Taiwan, Jan 4, 2007.
- 4. Data Envelopment Analysis: What DEA Can Do, Department of Mechanical & Industrial Engineering, Northeastern University, Boston, October 27, 2006.
- 3. New Benchmarking Approaches and Applications, MBA Seminar Series, School of Management, University of Science & Technology of China, Hefei, China, May 19, 2005.
- 2. Data Envelopment Analysis (DEA) and Its Applications, Research Seminar Series, School of Business and Economics, State University of New York, Plattsburgh, New York, November 21, 2003.
- 1. Context-dependent DEA: A new DEA Approach, Japanese DEA Seminar, National Graduate Institute for Policy Studies, Tokyo, Japan, June 15-18, 2002.

### **AWARDS**

• Ranked #3 in 'The most productive and influential authors in EJOR' by "Forty years of the European Journal of Operational Research: A bibliometric overview", 262 (2017) 803-816.

- Article selected as a winning paper in the prestigious Emerald Citations of Excellence for 2017
- Article included in EJOR's 40th Anniversary Article Selection Part 2: 20 trendsetting papers of the last 20 years
- Chang Jiang Scholar Chair Professor, Ministry of Education of China, 2014
- Best Reviewer Award, European Journal of Operational Research (2010; 2012, 2015, 2016, 2018)
- Department of Veterans Affairs & Veterans Health Administration Grant "Develop Composite Measures of Quality of Care," 2010-2011
- Taiwan National Science Council, 2012, 2013
- William Evans Visiting Fellow, University of Otago, New Zealand, June-July, 2010.
- Research Fellowship, Osaka University, June, 2007
- Visiting Professorship grant, Department of Industrial and Information Management, the National Cheng Kung University, Taiwan, 2007.
- National Institute of Health Grant "Comparative Evaluation of Nursing Homes", Phase II 2002-2005, sub-contracted as a consultant.
- KPMG Foundation Grant "Hospital Quality Measurement & Reporting," June September, 2003.
- Japan Society for Promotion of Science (JSPS) Invitation Fellowship for Research in Japan (Short-term), (May-July, 2002)
- Using Discovery-Based Learning to Explore the Lean Design of Global Supply Chains, Educational Development Council, Worcester Polytechnic Institute, 2001. (Co-PI)
- Managing the Information Technology (IT) Investment in E-business and E-Supply Chain Design, WPI Research Development Council 2001.

#### EDITORIAL EXPERIENCE

- Deputy Editor, *OMEGA*, (2019—present)
- Area Editor, *OMEGA*, (2008—present)
- Editorial Board Member, European Journal of Operational Research (2014—present)
- Associate Editor, Journal of the Operational Research Society, (2017—present)
- Associate Editor, *INFOR*, (2007—present)
- Associate Series Editor, Springer International Series on Operations Research and Management Sciences, (2014—present)

- Editorial Board Member, Computers & Operations Research (2005—present)
- Editor, Data Envelopment Analysis Journal, (2013—present)
- Associate Editor, *OMEGA*, (2004—2008)
- Associate Editor, Asia-Pacific Journal of Operational Research (2004—2008)
- Guest Editor, Annals of Operations Research, European Journal of Operational Research, Journal of the Operational Research Society, International Journal of Information Technology and Decision Making, OMEGA, Journal of CENTRUM Cathedra

#### PROFESSIONAL ACTIVITIES

- International Advisory Committee Member, International Conference on Competitiveness Evaluation and Conceptual Aspects, CENTRUM, Pontificia Universidad Católica del Perú, Lima, Peru, August 24-27, 2013.
- International Advisory Committee Member, International Conference on Business Performance Measurement and Management, CENTRUM, Pontificia Universidad Católica del Perú, Lima, Peru, September 11-13, 2012.
- International Advisory Committee Member, International Conference on Data Envelopment Analysis and Its Applications to Management, September 14-16, 2011, CENTRUM, Pontificia Universidad Católica del Perú, Lima, Peru.
- Invited as an expert in Data Envelopment Analysis to participate in a National Science Foundation Sponsored Workshop on Engineering Applications of DEA at Union College, Schenectady, NY, December 10-11, 1999.
- Advisory Board Member, North American Productivity Workshop, University of Toronto, Canada, June 23-25, 2004.
- Reviewer and panelist for Division of Design, Manufacture, and Industrial Innovation, National Science Foundation.
- Reviewer for Social Sciences and Humanities Research Council of Canada.
- Reviewer for Natural Sciences and Engineering Research Council of Canada.
- Reviewer for Research Grants Council (RGC) of Hong Kong.
- Reviewer for Czech Science Foundation.
- Book reviewer Kluwer Academic Publishers.
- General Chair, Data Envelopment Analysis International Conference, June 19-21, 2020, Seoul, Korea.

- Session Chair, Data-oriented Performance Evaluation, INFORMS Annual Meeting, October 20-23, 2019, Seattle, USA.
- General Chair, Data Envelopment Analysis International Conference, June 28-30, 2019, Canterbury, UK.
- General Chair, Data Envelopment Analysis International Conference, June 14-16, 2018, Taipei, Taiwan.
- General Chair, Data Envelopment Analysis International Conference, July 7-10, 2017, Hefei, China.
- General Chair, Data Envelopment Analysis International Conference, July 5-7, 2016, Nanjing, China.
- General Chair, International Workshop on Data Envelopment Analysis, Chinese Academy of Sciences, August 4-5, 2015, Beijing, China.
- Session Chairperson, "DEA Theory II", 26<sup>th</sup> European Conference on Operational Research, July 1-4, 2013, Rome, Italy.
- Cluster Co-Chairperson, "Data Envelopment Analysis Cluster", INFORMS Annual Meeting, November 4-7, 2006, Seattle.
- Cluster Co-Chairperson, "Data Envelopment Analysis Cluster", INFORMS Annual Meeting, November 5-8, 2006, Pittsburgh.
- Cluster Co-Chairperson, "Data Envelopment Analysis Cluster", INFORMS International Meeting, June 25-28, 2006, Hong Kong, China.
- Cluster Co-Chairperson, "Data Envelopment Analysis Cluster", INFORMS Annual Meeting, Nov. 13-16, 2005 San Francisco, CA.
- Cluster Co-Chairperson, "Data Envelopment Analysis Cluster", CORS/INFORMS Joint International Meeting-Banff, May 16-19, 2004, Alberta, Canada.
- Cluster Co-Chairperson, "Data Envelopment Analysis Cluster", INFORMS Annual Meeting, November 17-20, 2002, San Jose, CA.
- Stream Co-Chairperson, "Data Envelopment Analysis Cluster", International Federation of Operational Research Societies Meeting, July 8-12, 2002, Edinburgh.
- Cluster Co-Chairperson, "Data Envelopment Analysis Cluster", INFORMS National Meeting, November 4-7, 2001, Miami, FL.
- Cluster Co-Chairperson, "Data Envelopment Analysis Cluster", INFORMS International Meeting, June 17-20, 2001, Maui.
- Cluster Co-Chairperson, "Data Envelopment Analysis Cluster", INFORMS Annual Meeting, November 5-8, 2000, San Antonio, TX.
- Cluster Co-Chairperson, "Data Envelopment Analysis Cluster", INFORMS/KORMS International Meeting, June 18-21, 2000, Seoul, Korea.

- Cluster Co-Chairperson, "Data Envelopment Analysis Cluster", INFORMS Annual Meeting, May 7-10, 2000, Salt Lake City, UT.
- Panel Organizer and Panelist, Panel: "DEA Applications in E-commerce", INFORMS Annual Meeting, November 5-8, 2000, San Antonio, TX.
- Session Chairperson, "Applications of Management Science Techniques", 31st Annual Meeting of the Decision Sciences Institute, November 18-21, 2000, Orlando, FL.
- Session Chairperson, "New DEA Developments and Uses II", Invited Session for INFORMS/KORMS International Meeting, June 18-21, 2000, Seoul, Korea.
- Session Chairperson, "Applications of DEA", Invited Session for INFORMS Annual Meeting, May 7-10, 2000, Salt Lake City, UT.
- Session Chairperson, "Data Envelopment Analysis", Invited session for INFORMS Annual Meeting, November 7-10, 1999, Philadelphia, PA.
- Session Chairperson, "DEA & Application", Invited Session for INFORMS Annual Meeting, May 2-5, 1999, Cincinnati, OH.
- Session Chairperson, "DEA Refinements & Extensions" Invited session, INFORMS Annual Meeting, Oct. 25-28, 1998, Seattle, WA.

#### • Doctoral Committees

- o Business School, University of Technology Sydney, Australia (2012-2014)
- School of Business Administration Hebrew University of Jerusalem, Mount Scopus, Israel (2009)
- Plenary dissertation committee member for Rotterdam School of Management of Erasmus University, Netherlands (2010)