

Joe Zhu

Professor of Operations Analytics

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ACADEMIC APPOINTMENTS

2010 – present, *Professor*, Foisie School of Business, 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.

2015-2018, *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

133. Lim, S., and Zhu, Joe, Primal-dual correspondence and frontier projections in two-stage network DEA models, *OMEGA*,
132. Chen, K, and Zhu, Joe, Scale efficiency in two-stage network DEA, *Journal of the Operational Research Society*, in press.
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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.
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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.
125. Mehdiloozad, M., Zhu, Joe, and Sahoo, B., Identification of congestion in data envelopment analysis under the occurrence of multiple projections: A reliable method capable of dealing with negative data, *European Journal of Operational Research*, Vol. 265, Issue 2 (2018), 644-654.
124. Li, H., Chen, C-L, Cook, W.D., Zhang, J., and Zhu, Joe, Two-stage network DEA: Who is the leader? *OMEGA*, Vol. 74 (2018), 15-19.
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.
122. Cook, W.D., Guo, C., Zhu, Joe, Li, W-H, Li, Z., and Liang, L., Efficiency measurement of multistage processes: context dependent numbers of stages, *Asia-Pacific Journal of Operational Research*, Vol. 31, Issue 6 (2017), 1750032 [18 pages].
 121. Ding, J-J, Dong, W., Liang, L., and Zhu, Joe, Goal congruence analysis in multi-division organization with shared resources based on data envelopment analysis, *European Journal of Operational Research*, Vol. 263, Issue 3 (2017), 961-973.
 120. Chen, Y., Cook, W.D., Du, J., Hu, H. and Zhu, Joe, Bounded and discrete and data and Likert scales in data envelopment analysis: Application to regional energy efficiency in China, *Annals of Operations Research*, Vol. 255, Issue 1-2 (2017), 347-366.
 119. Cook, W.D., Du, J., and Zhu, Joe, Units invariant DEA when weight restrictions are present: Ecological performance of US electricity industry, *Annals of Operations Research*, Vol. 255, Issue 1-2 (2017), 323-346.
 118. Chen, K, and Zhu, Joe, Second order cone programming approach to two-stage network data envelopment analysis, *European Journal of Operational Research*, Vol. 262, Issue 1 (2017), 231-238.
 117. Li, W.H., Liang, L., Aviles-Sacoto, S., Imanirad, R., Cook, W.D., and Zhu, Joe, Modeling efficiency in the presence of multiple partial input to output processes, *Annals of Operations Research*, Vol. 250, Issue 1 (2017), 235-248.
 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.
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- 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.
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 105. Du, J., Zhu, Joe, Cook, W.D., and Huo, J-Z, DEA models for parallel systems: game-theoretic approaches, *Asia-Pacific Journal of Operational Research*, Vol. 32, No. 2 (2015), 1550008 (22 pages).
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 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.
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 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.
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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.
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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.
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82. Zhu, Joe, Airlines performance via two-stage network DEA approach, *Journal of CENTRUM Cathedra*, Vol. 4, Issue 2 (2011), 260-269.
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.
80. Lee, H-S, Chu, C-W, and Zhu, Joe, Super-efficiency DEA in the presence of infeasibility, *European Journal of Operational Research*, Vol. 212 (2011), 141-147.
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.
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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.
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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.
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- model for infeasibility, *Journal of the Operational Research Society*, Vol. 69 (2009), 276-281.
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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 Dmirtruk and Koshevoy, and Bol, *Journal of Productivity Analysis*, Vol. 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.
60. Gregorios, G.N., and Zhu, Joe, Data envelopment analysis – a way to assess the efficiency of funds of hedge funds, *Journal of Portfolio Management*, Vol. 33, No. 2 (2007), 120-132.
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.
56. Liang, L., Yang, F. Cook, W.D., and Zhu, Joe, DEA models for supply chain efficiency evaluation, *Annals of Operations Research*, Vol. 145, No. 1 (2006), 35-49.
55. Cook, W.D., and Zhu, Joe, Preface for the Special Issue on “Performance Evaluation and Beyond: Data Envelopment Analysis Research Frontiers” in Honor of William W. Cooper, *Annals of Operations Research*, Vol. 145, No. 1 (2006), 1-3.

54. Cook, W.D., and Zhu, Joe, Rank order data in DEA: A general framework, *European Journal of Operational Research*, Vol. 174, Issue 2 (2006), 1021-1038.
53. Cook, W.D., and Zhu, Joe, Incorporating multiprocess performance standards into the DEA framework, *Operations Research*, Vol. 54, No. 4 (2006), 656-665.
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51. Chen, Y., Liang, L., Yang, F., and Zhu, Joe, Evaluation of information technology investment: A data envelopment analysis approach, *Computers & Operations Research*, Vol. 33, Issue 5 (2006), 1368-1379.
50. Chen, Y., Morita, H., and Zhu, Joe, Context-dependent DEA with an application to Tokyo public libraries, *International Journal of Information Technology and Decision Making*, Vol. 4, No. 3 (2005), 385-394.
49. Huang, Z.M., Li, S.X., and Zhu, Joe, A Special Issue on "Data Envelopment Analysis: Theories and Applications" in honor of William W. Cooper, *International Journal of Information Technology and Decision Making*, Vol. 4, No. 3 (2005), 311-316.
48. Seiford, L.M., and Zhu, Joe, Notes on sensitivity and stability of the classifications of returns to scale in data envelopment analysis: A comment, *Journal of Productivity Analysis*, Vol. 23, No. 3 (2005), 315-316.
47. Morita, H., Hirokawa, K., and Zhu, Joe, A slack-based measure of efficiency in context-dependent data envelopment analysis, *OMEGA*, Vol. 33, Issue 4 (2005), 357-362.
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45. Cook, W.D., and Zhu, Joe, Building performance standards into data envelopment analysis structures, *IIE Transactions*, Vol 37, Issue 3 (2005), 267-275.
44. Gregoriou, G.N., Sedzro, K., and Zhu, Joe, Hedge fund performance appraisal using data envelopment analysis, *European Journal of Operational Research*, Vol. 164, Issue 2 (2005), 555-571.
43. Seiford, L.M., and Zhu, Joe, A response to comments on modeling undesirable factors in efficiency evaluation, *European Journal of Operational Research*, Vol. 161, Issue 2 (2005), 579-581.
42. Cook, W.D., Seiford, L.M., and Zhu, Joe, Models for performance benchmarking: Measuring the effect of e-business activities on banking performance, *OMEGA*, Vol. 32, Issue 4 (2004), 313-322.
41. Zhu, Joe, Imprecise DEA via standard linear DEA models with a revisit to a Korean mobile telecommunication company, *Operations Research*, Vol. 52, No. 2 (2004), 323-329.

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38. Zhu, Joe, A buyer-seller game model for selection and negotiation of purchasing bids: extensions and new models, *European Journal of Operational Research*, Vol. 154, Issue 1 (2004), 150-156.
37. Mistry, J.J., and Zhu, Joe, Strategic and transactional use of information technology in banking. *The Journal of Cost Analysis & Management*, Volume 5, Issue 2, (2003), 1-22.
36. Chen, Y., and Zhu, Joe, DEA Models for Identifying critical performance measures, *Annals of Operations Research*, Vol.124, No. 1-4 (2003), 225-244.
35. Morita, H., and Zhu, Joe, Models for characterizing and measuring supply chain efficiency and achieving best practice. *System, Control and Information*, Vol. 16, No. 8, (2003), 388-396. (in Japanese 森田浩, J ZHU, サプライチェーンの効率性の測定と最適化のためのモデル, システム制御情報学会論文誌.)
34. Chen, Y., Morita, H., and Zhu, Joe, Multiplier bounds in DEA via strong complementary slackness condition solution, *International Journal of Production Economics*, Vol. 86, No. 1, (2003), 11-19.
33. Seiford, L.M., and Zhu, Joe, Context-dependent data envelopment analysis--measuring attractiveness and progress. *OMEGA*, Vol. 31, Issue 5, (2003), 397-480.
32. Cook, W.D., and Zhu, Joe, Output deterioration with input reduction in data envelopment analysis, *IIE Transactions*, Vol. 35, No. 3, (2003), 309-320.
31. Johnson, S.A., and Zhu, Joe, Identifying "best" applicants in recruiting using data envelopment analysis, *Socio-Economic Planning Sciences*, Vol. 37, Issue 2 (2003), 125-139.
30. Zhu, Joe, Efficiency evaluation with strong ordinal input and output measures, *European Journal of Operational Research*, Vol. 146, Issue 3 (2003), 477-485.
29. Zhu, Joe, Imprecise data envelopment analysis (IDEA): A review and improvement with an application, *European Journal of Operational Research*, Vol. 144, Issue 3 (2003), 513-529.
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26. Seiford, L.M., and Zhu, Joe, Modeling undesirable factors in efficiency evaluation, *European Journal of Operational Research*, Vol. 142, Issue 1 (2002), 16-20.
25. Zhu, Joe, Multidimensional quality-of-life measure with an application to Fortune's best cities, *Socio-Economic Planning Sciences*, Vol. 35, Issue 4 (2001), 263-284.
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23. Wilkens, K., and Zhu, Joe, Portfolio evaluation and benchmark selection: A mathematical programming approach, *Journal of Alternative Investments*, Vol. 4, No. 1, Summer, (2001), 9-19.
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21. Zhu, Joe, Super-efficiency and DEA sensitivity analysis. *European Journal of Operational Research*, Vol. 129, Issue 2 (2001), 443-455. [Erratum, EJOR, Volume 179, Issue 1, (2007), Page277]
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19. Zhu, Joe, Setting scale efficient targets in DEA via returns to scale estimation method. *Journal of the Operational Research Society*, Vol. 51, No. 3 (2000), 376-378.
18. Zhu, Joe, Multi-factor performance measure model with an application to Fortune 500 companies. *European Journal of Operational Research*, Vol. 123, Issue 1, (2000), 105-124.
17. Cooper, W.W., Seiford, L.M., and Zhu, Joe, A unified additive model approach for evaluating inefficiency and congestion with associated measures in DEA. *Socio-Economic Planning Sciences*, Vol. 34, Issue 1 (2000), 1-25.
16. Seiford, L.M., and Zhu, Joe, Profitability and marketability of the top 55 US commercial banks. *Management Science*, Vol. 45, No. 9 (September 1999), 1270-1288.
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11. Zhu, Joe, Data envelopment analysis vs. principal component analysis: An illustrative study of economic performance of Chinese cities. *European Journal of Operational Research*, Vol. 111, Issue 1, (1998), 50-61.
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5. Zhu, Joe, *Data Envelopment Analysis - A Handbook of Models and Methods*, Springer, New York. 2015.
4. Cook, W.D., and Zhu, Joe, *Data Envelopment Analysis - A Handbook of Modeling Internal Structures and Networks*, Springer, New York. 2014.
3. Cooper, W.W., Seiford, L.M., and Zhu, Joe, *Handbook on Data Envelopment Analysis*, Springer, New York. 2011 (2nd edition)
2. Zhu, Joe, and Cook, W.D., *Modeling Data Irregularities and Structural Complexities in Data Envelopment Analysis*, Springer Science, 2007
1. Cooper, W.W., Seiford, L.M., and Zhu, Joe, *Handbook on Data Envelopment Analysis*. Kluwer Academic Publishers, Boston. 2004.

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3. Zhu, Joe, *Data Envelopment Analysis: Let the Data Speak for Themselves*, amazon.com, 2014. This book is translated into the following language:
Translated by Dr. Yande Gong and Dr. Xiang Li and published in Chinese: 数据包络分析: 让数据自己说话.
2. Cook, W.D., and Zhu, Joe, *Data Envelopment Analysis: Balanced Benchmarking*, amazon.com, 2013. This book is translated into the following languages:
Translated by Dr. Hiroshi Morita and published in Japanese: データ包絡分析法 DEA, 静岡学術出版 (2014/2/28), ISBN-10: 4864740305; Shizuoka Scholarly Publishing.
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1. Cook, W.D., and Zhu, Joe, Data Envelopment Analysis: Modeling Operational Processes and Measuring Productivity, amazon.com, 2008.

EDITED JOURNAL SPECIAL ISSUES

9. Gonzalez, E., Zhu, Joe, J., Zanoni, S., and & Maculan, N., Trends in Operational Research Approaches for Sustainability, *European Journal of Operational Research*,
8. Lim, S. and Zhu, Joe, DEA and Its Applications in Operations, *INFOR*,
7. Chen, C., Zhou, S., and Zhu, Joe, New Research Frontiers in Sustainability, *OMEGA, The International Journal of Management Science*,
6. Cook, W.D., Seiford, L.M., and Zhu, Joe, Data Envelopment Analysis: The Research Frontier - This Special Issue is dedicated to the memory of William W. Cooper 1914-2012, *OMEGA, The International Journal of Management Science*, Vol. 41, Issue 1, 2013.
5. Charles, V., Färe, R., and Zhu, Joe, Special Issue on Business Performance Management, *Journal of CENTRUM Cathedra: The Business and Economics Research Journal*, Vol. 5 (2012), Issue 2. Business school of the Pontificia Universidad Católica del Perú.
4. Charles, V., Cook, W.D., and Zhu, Joe, Special Issue on Data Envelopment Analysis and Its Applications to Management, *Journal of CENTRUM Cathedra: The Business and Economics Research Journal*, Vol. 4 (2011), Issue 2. Business school of the Pontificia Universidad Católica del Perú.
3. Zhu, Joe, Management Science Research in China: A Special Issue Dedicated to the 2008 Beijing Olympic Games, *OMEGA, The International Journal of Management Science*, Vol. 36, Issue 6, 2008.
2. Cook, W.D., and Zhu, Joe, Performance Evaluation and Beyond: Data Envelopment Analysis Research Frontiers, *Annals of Operations Research Special Issue*, Vol. 145, No. 1, 2006.
1. Huang, Z.M., Li, S.X., and Zhu, Joe, Data Envelopment Analysis: Theories and Applications, *International Journal of Information Technology and Decision Making Special Issue*, Vol. 4, No. 3, 2005.

EDITORIAL REVIEWED ARTICLES

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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29. Cook, W.D., and Zhu, Joe, DEA cross efficiency, in *Data Envelopment Analysis: A Handbook of Models and Methods*, Chapter 13, 23-43, ed. J. Zhu, Springer, New York, 2015.
28. Lim, S. and Zhu, Joe, DEA cross efficiency under variable returns to scale, in *Data Envelopment Analysis: A Handbook of Models and Methods*, Chapter 3, 45-66, ed. J. Zhu, Springer, New York, 2015.
27. Zhu, Joe, DEA based benchmarking models, in *Data Envelopment Analysis: A Handbook of Models and Methods*, Chapter 10, 291-308, ed. J. Zhu, Springer, New York, 2015.
26. Cook, W.D., Harrison, J., Imanirad, R., Rouse, P., and Zhu, Joe, Data envelopment analysis with non-homogeneous DMUs, in *Data Envelopment Analysis: A Handbook of Models and Methods*, Chapter 11, 309-340, ed. J. Zhu, Springer, New York, 2015.
25. Imanirad, R., Cook, W.D., and Zhu, Joe, Partial inputs to outputs impacts in DEA: production considerations and resource sharing among business sub-units, in *Data Envelopment Analysis: A Handbook of Models and Methods*, Chapter 13, 355-380, ed. J. Zhu, Springer, New York, 2015.
24. Chen, Y., Du, J., Sherman, D.H., and Zhu, Joe, Shared resources and efficiency decomposition in two-stage networks, in *Data Envelopment Analysis: A Handbook of Modeling Internal Structures and Networks*, Chapter 9, 189-208, eds W.D. Cook, and J. Zhu, Springer, New York, 2014.
23. Du, J., Chen, Y., Cook, W.D., Liang, L., and Zhu, Joe, Evaluating two-stage network structures: Bargaining game approach, in *Data Envelopment Analysis: A Handbook of Modeling Internal Structures and Networks*, Chapter 8, 165-187, eds W.D. Cook, and J. Zhu, Springer, New York, 2014.
22. Sahoo, B.K., Zhu, Joe, and Tone, K., Decomposing efficiency and returns to scale in two-stage network systems, in *Data Envelopment Analysis: A Handbook of Modeling Internal Structures and Networks*, Chapter 7, 137-164, eds W.D. Cook, and J. Zhu, Springer, New York, 2014.
21. Chen, Y., Cook, W.D., and Zhu, Joe, Additive efficiency decomposition in network DEA, in *Data Envelopment Analysis: A Handbook of Modeling Internal Structures and Networks*, Chapter 5, 91-118, eds W.D. Cook, and J. Zhu, Springer, New York, 2014.
20. Chen, Y., Cook, W.D. and Zhu, Joe, Two-stage network processes: DEA frontier identification, in *Data Envelopment Analysis: A Handbook of Modeling Internal Structures and Networks*, Chapter 4, 79-89, eds W.D. Cook, and J. Zhu, Springer, New York, 2014.

19. Chen, Y., Cook, W.D., Kao, C., and Zhu, Joe, Network DEA pitfalls: Divisional efficiency and frontier projection, in *Data Envelopment Analysis: A Handbook of Modeling Internal Structures and Networks*, Chapter 2, 31-54, eds W.D. Cook, and J. Zhu, Springer, New York, 2014.
18. Cook, W.D., and Zhu, Joe, DEA for two-stage networks: Efficiency decompositions and modeling techniques, in *Data Envelopment Analysis: A Handbook of Modeling Internal Structures and Networks*, Chapter 1, 1-29, eds W.D. Cook, and J. Zhu, Springer, New York, 2014.
17. Cook, W.D., Liang, L., and Zhu, Joe, Modeling DMU's internal structures: cooperative and noncooperative approaches, in *Handbook on Data Envelopment Analysis*, 2nd edition, Chapter 12, 297-313, eds W.W. Cooper, L.M. Seiford, and J. Zhu, Springer, New York. 2011.
16. Cooper, W.W., Deng, H. Seiford, L.M., and Zhu, Joe, Congestion: Its identification and management with DEA, in *Handbook on Data Envelopment Analysis*, 2nd edition, Chapter 7, 173-193, eds W.W. Cooper, L.M. Seiford, and J. Zhu, Springer, New York. 2011.
15. Cooper, W.W., Li, S., Seiford, L.M., and Zhu, Joe, Sensitivity analysis in data envelopment analysis, in *Handbook on Data Envelopment Analysis*, 2nd edition, Chapter 3, 71-91, eds W.W. Cooper, L.M. Seiford, and J. Zhu, Springer, New York. 2011.
14. 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*, 2nd edition, Chapter 2, 41-70, eds W.W. Cooper, L.M. Seiford, and J. Zhu, Springer, New York. 2011.
13. Cooper, W.W., Seiford, L.M., and Zhu, Joe, Data envelopment analysis: History, models and interpretations, in *Handbook on Data Envelopment Analysis*, 2nd edition, Chapter 1, 1-39, eds W.W. Cooper, L.M. Seiford, and J. Zhu, Springer, New York. 2011.
12. Morita, H., and Zhu, Joe, Context-dependent DEA and its use, in *Modeling Data Irregularities and Structural Complexities in Data Envelopment Analysis*, Chapter 13, 241-260, eds J. Zhu, and W.D. Cook, Springer, Boston, 2007.
11. Cook, W.D., Liang, L., Yang, F., and Zhu, Joe, DEA models for supply chain or multi-stage structure, in *Modeling Data Irregularities and Structural Complexities in Data Envelopment Analysis*, Chapter 11, 189-208, eds J. Zhu, and W.D. Cook, Springer, Boston, 2007.
10. Chen, Y., and Zhu, Joe, Interval and ordinal data, in *Modeling Data Irregularities and Structural Complexities in Data Envelopment Analysis*, Chapter 3, 35-62, eds J. Zhu, and W.D. Cook, Springer, Boston, 2007.
9. Cook, W.D., and Zhu, Joe, Rank order data in DEA, in *Modeling Data Irregularities and Structural Complexities in Data Envelopment Analysis*, Chapter 2, 13-34, eds J. Zhu, and W.D. Cook, Springer, Boston, 2007.
8. Cook, W.D., and Zhu, Joe, Data irregularities and structural complexities in DEA,

- in *Modeling Data Irregularities and Structural Complexities in Data Envelopment Analysis*, Chapter 1, 1-12, eds J. Zhu, and W.D. Cook, Springer, Boston, 2007.
7. Morita, H., and Zhu, Joe, Context-dependent DEA--public libraries, in *Productivity Analysis in the Service Sector with Data Envelopment Analysis*, Chapter 19, ed N. Avkiran, Australia, 2006.
 6. Cooper, W.W., Deng, H. Seiford, L.M., and Zhu, Joe, Congestion: Its identification and management with DEA, in *Handbook on Data Envelopment Analysis*, Chapter 7, 177-201, eds W.W. Cooper, L.M. Seiford, and J. Zhu, Kluwer Academic Publishers, Boston. 2004.
 5. Cooper, W.W., Li, S., Seiford, L.M., and Zhu, Joe, Sensitivity analysis in data envelopment analysis, in *Handbook on Data Envelopment Analysis*, Chapter 3, 75-97, eds W.W. Cooper, L.M. Seiford, and J. Zhu, Kluwer Academic Publishers, Boston. 2004.
 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.
 3. Cooper, W.W., Seiford, L.M., and Zhu, Joe, Data envelopment analysis: History, models and interpretations, in *Handbook on Data Envelopment Analysis*, Chapter 1, 1-39, eds W.W. Cooper, L.M. Seiford, and J. Zhu, Kluwer Academic Publishers, Boston. 2004.
 2. Wilkens, K., and Zhu, Joe, Classifying hedge funds using data envelopment analysis, in *Hedge Funds: Strategies, Risk Assessment, and Returns*, Chapter 10, 161-175, eds G.N. Gregoriou, V.N. Karavas, and F. Rouah, BeardBooks, Washington, D.C. 2003.
 1. Seiford, L.M., and Zhu, Joe, Classification invariance in data envelopment analysis, in *Uncertainty and Optimality: Probability, Statistics & Operations Research*, Chapter 10, 331-342, ed. J.C. Misra, World Scientific, Singapore, 2002.

INVITED TALKS

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.
 33. 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**)
 29. 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, Anhui 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

- 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, 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 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", 26th European Conference on Operational Research, July 1-4, 2013, Rome, Italy.
- Cluster Co-Chairperson, "Data Envelopment Analysis Cluster", INFORMS National Meeting, November 4-7, 2006, Seattle.
- Cluster Co-Chairperson, "Data Envelopment Analysis Cluster", INFORMS National 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 National 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 National 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 National 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 National Meeting, May 7-10, 2000, Salt Lake City, UT.
- Panel Organizer and Panelist, Panel: "DEA Applications in E-commerce", INFORMS National 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 National Meeting, May 7-10, 2000, Salt Lake City, UT.

- Session Chairperson, "Data Envelopment Analysis", Invited session for INFORMS National Meeting, November 7-10, 1999, Philadelphia, PA.
- Session Chairperson, "DEA & Application", Invited Session for INFORMS National Meeting, May 2-5, 1999, Cincinnati, OH.
- Session Chairperson, "DEA Refinements & Extensions" Invited session, INFORMS National Meeting, Oct. 25-28, 1998, Seattle, WA.

- Doctoral Committees
 - 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)