SURREY BUSINESS SCHOOL

UNIVERSITY OF SURREY

DEA WORKSHOP

DEA WORKSHOP:

PERFORMANCE ANALYTICS, AI, AND SUSTAINABILITY WORKSHOP

May 30-31, 2024

**Surrey Business School,
University of Surrey, Guildford, UK**

CENTRE FOR BUSINESS ANALYTICS IN PRACTICE

UNIVERSITY OF SURREY

WELCOME

Dear DEA Workshop Participants,

We are delighted to extend our warmest welcome to all participants of the DEA Workshop on Performance Analytics, AI, and Sustainability.

The vitality of Data Envelopment Analysis (DEA) is evident in the numerous academic papers, applications, chapters, books, and consultancy documents it has inspired. We have diligently strived to unite academics and practitioners, and we are particularly proud to showcase contributions highlighting the enhancement of DEA focusing on the intersection of DEA, Artificial Intelligence (AI), and Sustainability.

The host University of Surrey, situated on a picturesque green campus just beyond the outskirts of London, promises a serene and refreshing environment. The workshop is meticulously organised by the Centre for Business Analytics in Practice (CBAP), a multi-disciplinary research hub with a vision focused on leveraging analytics for informed decision-making. CBAP is dedicated to exploring how data, regardless of its volume, can drive organizational success through proactive, data-driven decisions. Our primary areas of focus encompass AI and big data, performance measurement and management, operations and supply chain analytics, as well as sustainability and net-zero analytics.

We are confident that the workshop will prove to be a source of inspiration and productivity for all participants. Together, let's explore the transformative potential of DEA methodologies in advancing sustainability goals through the integration of AI techniques. We welcome each and every one of you to this event and look forward to the exciting exchanges that lie ahead.

Ali Emrouznejad, Director, Centre for Business Analytics in Practice, Surrey Business School, University of Surrey, Guildford, UK

Organisers: Ali Emrouznejad, Dimitris Giraleas, Mehdi Toloo, Xun Zhou, and Emma Clear

MAY 2024

SURREY BUSINESS SCHOOL

University of Surrey

The University of Surrey is located on a landscaped campus in Guildford. London is only 35 minutes away by train and its major airports of Heathrow and Gatwick are both within easy reach, giving ready access from all over the world.

Surrey Business School (SBS)

Surrey Business School is in the top 20 business schools in the UK for world-leading research that is having a real-world impact. In the Research Excellence Framework 2021, the School achieved an overall ranking of 19th for research quality, 10th for research outputs and 16th for research impact. It is ranked Top 10 in the UK for business and economics in the Times Higher Education World Rankings 2023 and is accredited by both the Association to Advance Collegiate Schools of Business (AACSB) and the Association of MBAs (AMBA). The School is within University of Surrey, located in Guildford, Surrey.

Centre for Business Analytics in Practice (CBAP)

The Centre for Business Analytics in Practice (CBAP) is a multi-disciplinary research centre with the vision of using analytics for better decision-making. The focus of CBAP is to investigate how data of any size can help organizations succeed through fact-based, data-driven, proactive decision-making. We are focused on theoretically driven, empirically rigorous research in these fields, particularly around their applications outside academia. Our Centre brings together research into the methods and applications in key areas, including:

- Business analytics
- AI and big data
- Health analytics
- Operations and supply chain analytics
- Sustainability and net-zero analytics.

The need for data-driven, better and faster solutions is more critical now than ever before. Using analytics for better decision-making has grown exponentially over the past decade. Driven by business and societal needs, decision analytics has become one of the most active research areas in academics and in industry. The tools, techniques, and algorithms used for big data projects leverage the most current, state-of-the-art methods applied in a wide variety of fields that include business and management science, computer science, statistics, data science, engineering, and mathematics.

CONFERENCE COMMITTEE

WORKSHOP CHAIR:

Ali Emrouznejad, Director, Centre for Business Analytics in Practice, Surrey Business School, University of Surrey, Guildford, UK

INVITED SPEAKERS / PANELLISTS:

Charles, Vincent (Queen's University of Belfast, UK)

Papaioannou, Grammatoula (Loughborough University, UK)

Parthasarathy, Srini (Oxera Consulting LLP, UK)

Podinovski, Victor (Loughborough University, UK)

Thanassoulis, Emmanuel (Aston University, UK)

WORKSHOP ORGANIZING COMMITTEE

Surrey Business School, University of Surrey, UK

Emrouznejad, Ali

Giraleas, Dimitris

Toloo, Mehdi

Zhou, Xun

and

Clear, Emma

REGISTRATION

Registration desk

When		Where
Thursday (30 May)	10:30 – 11:00	**Treetops (Wates House Building)** University of Surrey **Please see the map**

All participants are required to register at the registration desk before attending the sessions.

Name badges

A name badge is provided at the registration desk and must be visible and worn at all sessions and social events throughout the workshop.

Gala dinner

When:	Where:
Thursday, 30 May 2024 18:00 – 21:00	Lakeside Restaurant, Surrey Business School Phone: 01483 68 9655

WALKING MAP TO TREETOPS

COMMUNICATIONS & EMERGENCY

Internet access

The login and password are available at the registration desk.

Emergency

Security: 01483 683333

Firefighters and ambulance: 999

In case of significant problems concerning the workshop (e.g., delay for presentations) please contact the registration desk or call to (Ali Emrouznejad 074991 867862).

Non-emergency (01483 682002)

Website

https://dataenvelopment.com/workshop/

Email

cbap@surrey.ac.uk

Social media:

To share your moments on LinkedIn, Facebook or Twitter please join to the following groups:

https://www.linkedin.com/in/dataenvelopment

https://www.facebook.com/DataEnvelopment

https://twitter.com/DataEnvelopment

https://chat.whatsapp.com/EzmrM9giTs84k9zynbQWcw

REMARKS FOR SPEAKERS & CHAIRS

- There are different numbers of speakers in sessions. Please split the session time equally between each speaker, while allowing 2–3 minutes allocated for speaker transitions.

- Speakers: please bring your paper presentations on a pre-loaded memory stick to your sessions.

- The last presenter in each session will also serve as the session chair.

- Session chairs are responsible for introducing the speakers at the beginning of the session.

- As a speaker, please arrive at least 15 minutes before your session starts. This will give you time to check-in with the session chair and set up your computer and projector.

- Attendees are kindly requested to switch off cell phones and mobile devices prior to the start of the presentations.

- If you are chairing a session, ensure that the presentations follow the order indicated in the program.

- In case a scheduled speaker is absent, please maintain the original time schedule instead of shifting every talk forward. This approach facilitates seamless session transitions.

- Should the designated session chair be absent, the final speaker should assume the role of chair for the session.

PROGRAMME

Thursday 30th May 2024 - Treetops (Wates House Building)		
10:30-11:00	**Registration and Welcome** **Treetops (Wates House Building)** **University of Surrey - Please see the map**	
11:00-12:30	**Session 1**	**Speakers: Victor Podinovski, Mehdi Toloo**
12:30-13:30	**Lunch break**	
13:30-15:00	**Session 2**	**Speakers: Emmanuel Thanassoulis, Vincent Charles**
15:00-15:30	**Coffee break**	
15:30-17:30	**Session 3**	**Speakers: Maria Michali, Hamidreza Eskandari, Bing Xu, Charles Turkson**
18:00-21:00	**Dinner and Networking** **Lakeside Restaurant, Surrey Business School**	
Friday 31st May 2024 - Treetops (Wates House Building)		
08:30-09:00	**Registration, tea and coffee** **Treetops (Wates House Building)** **University of Surrey - Please see the map**	
9:00-10:30	**Session 4**	**Speakers: Qian Long Kweh, Chixiao Lu, Aniekan Essien, Sebastián Lozano**
10:30-11:00	**Coffee break**	
11:00-12:30	**Session 5**	**Speakers: Jing Zhao, Marios Dominikos Kremantzis, Ane Elixabete Ripoll-Zarraga**
12:30-13:30	**Lunch break**	
13:30-15:00	**Session 6**	**Speakers: Srini Parthasarathy, Aliasghar Arabmaldar, Xun Zhou**
15:00-15:15	**Closing session**	
15:15-15:45	**Coffee break**	

Session 1 (Thursday 30th May 2024: 11:00 - 12:30)
Treetops (Wates House Building)

Paper 10	**Assessing the technical and mix inefficiency of decision making units by solving a single DEA program without a small epsilon** Grammatoula Papaioannou (Loughborough University); Victor Podinovski (Loughborough University)*
Paper 26	**DEA using Python** Mehdi Toloo (University of Surrey)*

Session 2 (Thursday 30th May 2024: 13:30-15:00)
Treetops (Wates House Building)

Paper 09	**A Data Envelopment Analysis Approach to Clustering Operating Units** Emmanuel Thanassoulis (Aston University)*
Paper 27	**Empowering Business Strategy: Leveraging Pre-Trained Transformers for Responsible AI-Powered Emotional Analytics** Vincent Charles (Queens University of Belfast)*

Session 3 (Thursday 30th May 2024: 15:30-17:30)
Treetops (Wates House Building)

Paper 17	**On the treatment of undesirable factors in DEA using inverse transformation approaches** Maria Michali (University of Bristol)*; Ali Emrouznejad (Surrey Business School); Gholam R. Amin (University of New Brunswick)
Paper 15	**Integrating Interpretable Machine Learning and Ensemble Feature Selection for Accurate Energy Consumption Forecasting: A UK Case Study** Hamidreza Eskandari (Swansea University)*
Paper 25	**Evaluating Circular Economy Performance Across European Countries: Introducing Two-Stage Network Data Envelopment Analysis Models** Bing Xu (Heriot-Watt University)*

Paper 07	**A Data Envelopment Analysis based evaluation of sustainable energy generation portfolio scenarios** Charles Turkson (University of Dundee)*; Wenbin (Steve) Liu (BNU-HKBU United International College); Adolf Acquaye (Khalifa University)

Session 4 (Friday 31st May 2024: 9:00 - 10:30)
Treetops (Wates House Building)

Paper 02	**Environmental, social, and governance (ESG), power distance, and chance-constrained efficiency before and after the COVID-19 Pandemic** Qian Long Kweh (Canadian University Dubai)*; Wen-Min Lu (Chinese Culture University); Oyunerdene Dashnyam (Chinese Culture University)
Paper 06	**Assessment of railway noise pollution in Europe: A non-parametric approach with semi-disposability undesirable outputs** Chixiao Lu (Surrey Business School)*; Ali Emrouznejad (Surrey Business School), Dimitris Giraleas (Surrey Business School)
Paper 04	**Insights into the dynamic interplay of sports, social and economic factors in the English Premier League using Dynamic Network DEA model** Aniekan Essien (University of Bristol)*; Marios Dominikos Kremantzis (University of Bristol)
Paper 05	**A meta-frontier network DEA approach for water usage efficiency assessment** Sebastián Lozano (University of Seville)*; Mª del Mar Borrego-Marín (University of Seville)

Session 5 (Friday 31st May 2024: 11:00 - 12:30)
Treetops (Wates House Building)

Paper 08	**DEA-based internal validity index for clustering** Jing Zhao (Surrey Business School)*, Qingxian An (Central South University)
Paper 03	**Performance Evaluation of the Global Airline Industry under the Impact of the COVID-19 Pandemic: A Dynamic Network Data Envelopment Analysis Approach** Marios Dominikos Kremantzis (University of Bristol)*

Paper 12	**Predictive analytics and forecasting in DEA applications** Ane Elixabete Ripoll-Zarraga (Universitat Autònoma de Barcelona)*; Ali Emrouznejad (Surrey Business School)

Session 6 (Friday 31st May 2024: 13:30 - 15:00)
Treetops (Wates House Building)

Paper 18	**A computationally efficient procedure for large-scale Data Envelopment Analysis with application in economic regulation** Srini Parthasarathy (Oxera Consulting LLP)*
Paper 20	**Recent advances in robust data envelopment analysis models** Aliasghar Arabmaldar (University of Hertfordshire)*
Paper 13	**Axiomatic modelling of fixed proportion technologies** Xun Zhou (Surrey Business School)*; Timo Kuosmanen (Turku School of Economics)

Closing session (Friday 31st May 2024: 15:00 - 15:30)
Treetops (Wates House Building)

* Speaker

All information is correct at time of printing and is subject to change without notice

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