



**UPM**  
UNIVERSITI PUTRA MALAYSIA  
BERILMU BERBAKTI

**SEKOLAH  
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*School of Business and Economics*

# EDUCATION TRAINING PROGRAMME (ETP)

**25 MARCH 2021**

## **Data Envelopment Analysis: Efficiency & Productivity in Decision Making Units**

### **Focus and Features:**

Participants will learn how to operate the Data Envelopment Analysis Program (DEAP Version 2.1), the frontier efficiency analysis software to generate the indices of all efficiency and productivity components. Furthermore, they will learn to define Constant Return to Scale (CRS), Variable Return to Scale (VRS), Increase Return to Scale (IRS), Decrease Return to Scale (DRS), Technical Efficiency (TE), Pure Technical Efficiency (PTE), Scale Efficiency (SE), Cost Efficiency (CE), Malmquist Productivity Index (MPI), Total Factor Productivity Change (TFPCH), Technology Change (TECHCH), Efficiency Change (EFFCH), Pure Technical Efficiency Change (PTECH) and Scale Efficiency Change (SECH).

**Fee:** RM 150.00/person

**Requirement:** SPSS and Stata Softwares (Windows OS is preferred)

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**For any enquiries:** Executive Development and Industry Linkages Unit,  
School of Business and Economics

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## ABOUT THE SPEAKER

Dr. Fakarudin Bin Kamarudin is a senior lecturer at the School of Business and Economics, UPM. He has published research papers using Data Envelopment Analysis (DEA) method in several journals throughout his career. He has achieved SCOPUS H-Index of H-16 with citations index of more than 500. Throughout his career, he has reviewed more than 80 local and international papers from WoS-JCR, CIJ and NCJI journals.



Chapter 5 Batch



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## GUIDELINE

All participants are required to complete the Zoom Registration and Pre-Workshop Survey form by 21 March 2021 (Sunday). At the end of the workshop, participants are required to complete the Post-Workshop Evaluation form.

The School of Business and Economics strives to deliver the best online learning experience to all of our participants. Your cooperation in completing the survey forms is highly appreciated.



Zoom Registration  
*Deadline : 19 March 2021*



Pre-workshop Survey Form  
*To be filled by 24 March 2021*



Post-workshop Evaluation Form  
*To be filled at the end of the workshop*

# Data Envelopment Analysis: Efficiency & Productivity in Decision Making Units

25 March 2021

## Schedule:

- 9.30 am – 11.30 am
- Introduction on Data Envelopment Analysis
  - Efficiency-DEA
    - Technical Efficiency
    - Pure Technical Efficiency
    - Scale Efficiency
    - Cost Efficiency
    - Allocative Efficiency

11.30 am – 12:00 pm **Break**

- 12.00 pm – 2:00 pm
- Malmquist Productivity Index-DEA
    - Total Factor Productivity
    - Technological Change
    - Technical Efficiency Change
    - Pure Technical Efficiency Change
    - Scale Efficiency Change

2.00pm – 3.00 pm **Lunch Break**

- 3.00 pm – 5.00 pm
- DEA Test (SPSS)
    - Non-parametric
    - Parametric
  - Discussions: Question & Answer Session