

**MENILAI KECEKAPAN DAN KEBERKESANAN PERKHIDMATAN  
BEKALAN AIR DI MALAYSIA: SATU PENDEKATAN ANALISIS  
PENYAMPULAN DATA**

(Assessing Efficiency and Effectiveness of Malaysian Water Supply Services:  
A Data Envelopment Analysis Approach)

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*ABSTRAK*

Kajian tentang prestasi industri perkhidmatan air telah dijalankan secara meluas dan kebanyakan kajian telah menggunakan model Analisis Penyampulan Data (APD) yang hanya mengukur skor kecekapan. Namun begitu, kajian untuk mengukur keberkesanan dalam industri perkhidmatan air amat jarang dilakukan. Kajian tentang kecekapan dan keberkesanan adalah penting untuk mengukur prestasi keseluruhan bagi sesebuah organisasi. Oleh sebab proses pengeluaran perkhidmatan air boleh dinyatakan sebagai proses dua peringkat, maka, dalam kajian ini, model APD dua peringkat untuk mengukur prestasi perkhidmatan air digunakan. Model ini membolehkan integrasi kecekapan dan keberkesanan perkhidmatan air serta memberikan penilaian prestasi keseluruhan perkhidmatan air Malaysia. Hasil yang diperolehi menunjukkan bahawa servis di kebanyakan daripada 14 buah negeri yang terlibat adalah cekap tetapi hanya empat buah negeri sahaja yang berkesan. Bagaimanapun, terdapat tiga buah negeri yang menunjukkan prestasi keseluruhannya dengan kecekapan penuh (cekap dan berkesan) dalam menghasilkan dan membekalkan air bersih kepada pengguna.

*Kata kunci:* analisis penyampulan data; pengukuran prestasi; utiliti air

*ABSTRACT*

The performance of the water services industry has been widely studied by the researchers and most studies have used Data Envelopment Analysis (DEA) model which only measure the efficiency scores. However, the effectiveness of the water services is rarely measured. Studies on the efficiency and effectiveness are important to measure the overall performance of an organisation. Since the production process of water services can be expressed as a two-stage process, the two-stage DEA model is applied for measuring the water service performance. This model allows integration of the efficiency and effectiveness of the water services and provides an overall evaluation of the performance of Malaysian water services. The results show that the services provided by most of the 14 states are efficient but only four of the states involved are effective. However, only three states show overall performance with full efficiency (efficient and effective) in producing and supplying clean water to consumers.

*Keywords:* data envelopment analysis; performance measurement; water utilities

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