

## Abstract

This study reports the management of domestic water system practiced in the states of Kedah and Perlis, and explores a number of important issues that are relevant in increasing the capability of the water supply management system in both states. Data Envelopment Analysis (DEA) was used to measure the relative efficiency of water treatment plants operations in Kedah and Perlis. The year 2000 data shows that four out of twenty water treatment plants in Kedah were found to be efficient and the number increased to six out of twenty in the year 2001. In the year 2002 and 2003, it was found that only two water treatment plants were efficient and in 2004, the number of water treatment plant rised back to seven. Meanwhile in Perlis, the year 2000 and 2001 show that one out of two water treatment plants was efficient. Both water treatment plants were found to be efficient in the following year and in 2004, no water treatment plant was found to be efficient. As a whole, it can be concluded that the water treatment plants in Kedah is relatively less efficient compared to Perlis. In terms of the efficiency of water revenue system, a descriptive analysis has been carried out to calculate the percentage of bill collection using data from January 2004 till December 2005. Result analysis using t-test showed that percentages of bill collection in Kedah (94.4%) was higher than in Perlis (74.4%). For the state of Kedah, the highest percentages of bill collection was in 2003 (99.9%), while for the state of Perlis, the highest was in 2002 (86.0%). This study also found that the main factor of NRW for both states is leaking problem followed by inaccurate water meter reading caused by the old meter system has been applied. The correlation test showed that, NRW has significance correlation with both factors. From the NRW trend, the year 2000 shows the highest rates of NRW for both states, Kedah (46.0%) and Perlis (43.2%). Using the IWR-MAIN software, the water demand for the year 2005 until 2014 have been forecasted by considering the factors of population, income and land use. The validation process using the data from the year 2000 until 2004 showed that the difference between the forecasted value of water assumption using IWR-MAIN and the exact value of water assumption is in range 3-5%. In the year 2014, Kedah is predicted need 58665016.4 thousand gallon of water and so as Perlis is 5627714.36 thousand gallon. Both states showed that the population is the main factor affect the water assumption followed by income and land use.

**Keywords:** Water Management, APD, DEA, IWR-MAIN