

**UNIVERSITI TEKNOLOGI MARA**

**TECHNICAL REPORT**

**APPLYING CRITIC-TOPSIS WITH INTEGRATED DATA  
ENVELOPMENT ANALYSIS APPROACH TO RANK  
EFFICIENCY OF FINANCIAL INSTITUTIONS IN MALAYSIA**

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## **ABSTRACT**

Ranking efficiency of financial institutions usually helps managements to take lessons and actions for improving their companies' performance. Financial institutions deal with financial and monetary operations such as deposits, mortgages, investments and exchange of currencies. This includes banks, insurance companies, investments and other finance based companies. Overall performance of the financial institutions can be measured by using financial ratios. This study presents an empirical investigation to rank different financial institutions in Malaysia. All data were obtained from BURSA Malaysia for the period 2016 to 2018. Data Envelopment Analysis (DEA) was used to calculate the efficiency score of the decision making units (DMUs) where the number of inputs and outputs can be the same or fewer. However, DEA is not able to fully rank the DMUs so that another method is needed to resolve the problem. Technique for Order Preference by Similarity to the Ideal Solution (TOPSIS) was used for the next step in finding the fully ranking of the DMUs. As stated above, the aim of this study was to measure the relative efficiency of the financial institutions by using DEA model and to rank the efficient unit of financial institution using CRITIC and TOPSIS method. There are 2 phases in the methodology which is for Phase 1, we described about the steps of DEA. DEA has 2 models which are Constant Return to Scale (CCR) and Variable Return Scale (BCC). In this study, we use CCR input for calculating the efficiency score. For Phase 2, we applied TOPSIS to fully rank the efficient units of the DMUs. Before that, we needed to evaluate the weightage of each criterion applied by CRITIC method. The study shows that there are seven efficient financial institutions since these institutions manage to archive 100% efficiency score while another six institutions were deemed inefficient since those institutions did not fully utilize their inputs in maximizing their outputs. List of efficient institutions when using DEA are APEX, AEON, PUBLIC, BURSA, RCE, JOHAN and TA. After applying TOPSIS, result indicated that Apex Equity Holdings Berhad (APEX) is the most efficient unit and Malayan Banking Berhad (MBB) is the lowest efficient unit.