

**Universiti Teknologi MARA**

**Evaluation of the Efficiency and Selection of  
Smartphones using Data Envelopment Analysis  
(DEA) Method**

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## **STUDENT'S DECLARATION**

I certify that this report and the research to which it refers are the product of my own work and that any ideas or quotation from the work of other people, published or otherwise are fully acknowledged in accordance with the standard referring practices of the discipline.



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## ABSTRACT

Smartphones are one of the advanced technologies in the world and the competition among smartphone manufacturers has risen because of the increasing popularity of smartphones and the high performance of Internet services. Most people will have their own smartphone at least one and the functionality of smartphones has increased as well because of the demand in the market. The question guiding this study is to determine the efficiency of the smartphone models and to select the best smartphone based on its attributes. This study analyses the efficiency of smartphones based on 3 categories of price, which are lower price (RM700 and below), range price (RM700 – RM1,500), and maximum price (RM 1,500 and above) smartphones that were launched in Malaysia in 2019 and 2020. A non-parametric method was used, which is the CCR input-oriented model in the Data Envelopment Analysis (DEA) method to measure the efficiency score and selection of smartphones. The data were run using MaxDEA software. As a result, the best smartphones of each category are determined by an efficiency score equal to 1 and the best selection of smartphones based on their attributes can be defined through seven (7) weightage values. Finally, the findings and results are given.

**Keywords:** Smartphones, Data Envelopment Analysis (DEA), CCR input-oriented model, and efficiency score.

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