# UNIVERSITI TEKNOLOGI MARA

# Measuring the Efficiency of Cars in Malaysia Through Data Envelopment Analysis (DEA)

**Nurul Faqihah binti Zulkifli**

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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 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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**NURUL FAQIHAH BINTI ZULKIFLI**

**2017149785**

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# ABSTRACT

Data Envelopment Analysis (DEA) is a non-parametric method used to examine Decision Making Units (DMUs) relative efficiencies under conditions where multiple inputs and multiple outputs exist. As present in all industries, operating efficiently is very critical for the automotive market. It is therefore also necessary to calculate the efficiency and to find the source of the inefficiency. The purpose of this study is to measure the efficiency of 12 best cars in Malaysia using DEA solver. The data collection covers 12 different car models listed as the best cars in 2019-early 2020 as seen on the Zigwheels websites. Data Envelopment Analysis (DEA) is a non-parametric approach used to analyze the relative efficiency of decision-making units (DMUs) under conditions where multiple inputs and multiple outputs are present. It is very important for the automotive industry to work efficiently, as with all sectors. It is therefore also necessary to calculate the efficiency and to find the source of inefficiency. Within this report, the goal is to assist consumers in their purchases by calculating the relative efficiencies of automotive models, and to recognize successful and inefficient DMUs according to the wishes of consumers. Engines and selling prices are calculated as input variables; top speed, valves of cylinder, cubic centimeter, number of cylinder volume, horsepower, maximum torque, acceleration time from 0 to 100 km, the weight of the car and fuel tank capacity as output variables. The result shows that there are 5 efficient cars and 7 inefficient cars. There are few cars that achieve efficiency that offer worth 1. Therefore, this study helps people to choose the cars and subsequently helps the manufacturer of the car to understand and do more improvements towards their invention of car.



**Keywords**: Data Envelopment Analysis (DEA), Efficiency score, Decision-making units (DMUs)

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