UNIVERSITI TEKNOLOGI MARA

EFFICIENCY OF MASS RAPID TRANSIT (MRT) AMONG SELECTED ASEAN COUNTRIES USING DATA ENVELOPMENT ANALYSIS (DEA) APPROACH

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JANUARY 2021

ACKNOWLEDGEMENT

IN THE NAME OF ALLAH, THE MOST GRACIOUS, THE MOST MERCIFUL

We are thankful to all those people who have helped us in this research. The success of this Final Year Project would not have been possible without the support of many individuals. Firstly, we would like to express our sincere gratitude to our supervisor, Madam Siti Sarah Januri for providing countless suggestions for the improvement of this research and guiding us throughout this journey. It is an honor to study under her guidance and a great experience indeed.

Secondly, we are extremely thankful to our lecturer, Madam Nurul Aini Abdul Wahab for encouraging us to finish this project on time. She gave a good explanation to us on how to write a proper research study. Also, assistance provided by Dr. Nurul Nisa' Khairol Azmi is greatly appreciated too. Next, Madam Noorezatty Mohd Yusop helped us a lot in explaining about the method used for this research. Without their step by step guidance, we would not be able to complete this project until the very end.

We are particularly grateful to the existence of the Ministry of Transport of the respective countries for the availability of the data provided. The assistance of respective countries in providing the data makes our study easier. Not forgetting to the Ministry of Transport of Singapore that willingly gave particular data through email. With the support of each country, we were able to complete our data thus completing this research.

Lastly, many thanks to our parents for their love, sacrifices, and continuous moral support given. Not forgetting to all our concerned friends and the people who have helped us to complete this project directly or indirectly. Their support inspired and encouraged us to overcome all the difficulties that we faced throughout this research.

ABSTRACT

This paper provides a comprehensive overview of Mass Rapid Transit (MRT) efficiency in selected ASEAN countries that includes Malaysia, Philippines, Thailand, Singapore, and Indonesia. MRT is one of the popular railway public transport that has become people's alternative to move freely. However, inadequate study of MRT produces the question of whether this development is efficient or inefficient. Using Data Envelopment Analysis (DEA) to measure efficiency, this method can also identify the ways to make improvements to increase the efficiency of the MRT of ASEAN countries that are inefficient. Data obtained from the Ministry of Transport of each respective country were analyzed using Data Envelopment Analysis Online Software (DEAOS). The study identifies the efficiency score for CCR (Charnes, Cooper, Rhodes) and BCC (Banker, Charnes, Cooper) models for both input- and output-oriented. The analysis showed different results for CCR and BCC models. CCR model indicated that only Philippines and Singapore are efficient while BCC model indicated that Indonesia, Philippines and Singapore are efficient. The improvement made for inefficient decision making units (DMUs) only focus on BCC output-oriented model as it is more reliable to the real world since the reality have several constraints. The study reveals that inefficient DMUs which are Malaysia and Thailand must increase the number of passengers by 199.57% and 80.69% respectively to increase efficiency. The findings of this study benefits the decision-makers in order to measure the smoothness operations of MRT using inputs and output obtained.

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