



AN EVALUATION OF HOSPITALITY INDUSTRY'S EFFICIENCY USING DATA ENVELOPMENT ANALYSIS (DEA)



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ABSTRACT

This research was conducted to identify the efficiency variable's influencing hospitality industry by using Data Envelopment Analysis and to evaluate of efficiency of hotel using Data Envelopment Analysis. The efficiency for the above hotels is estimated through the data envelopment analysis methodology. The efficiency ranking can be explained by interaction between variables. Then, the hotel inefficiency mainly causes of the input and output configuration. Furthermore, the inefficiency causes was identify and suggestion for the manager or hotel owners are made to increase hotel efficiency. This is one of the a few research of study measuring hotel efficiency in Malaysia. Moreover, it identify the inefficiency causes of hotel and offer suggestion to fixing the lacks that be found in hotel management.

INTRODUCTION

- ✓ Hospitality industry have wide category such as hotel sector. In this research, nine hotel are involved as a DMU to evaluate their efficiency.
- ✓ Benchmark are provided for improving the operation of poorly-performing hotels.

OBJECTIVE/S

RO1 : To identify efficiency variable's influencing hospitality industry by using Data Envelopment Analysis

RO2 : To evaluate of efficiency of hotel using Data Envelopment Analysis

METHODS

DEA

- Nonparametric method in operations research and economics for the estimation of production frontiers. It is used to empirically measure productive efficiency of different hotels.
- DEA Solver software

CCR

- ☐ This study is using basic CCR model which works under the assumption of constant returns to scale
- ☐ The condition of efficiency is $\theta=1$ and slack variables=0

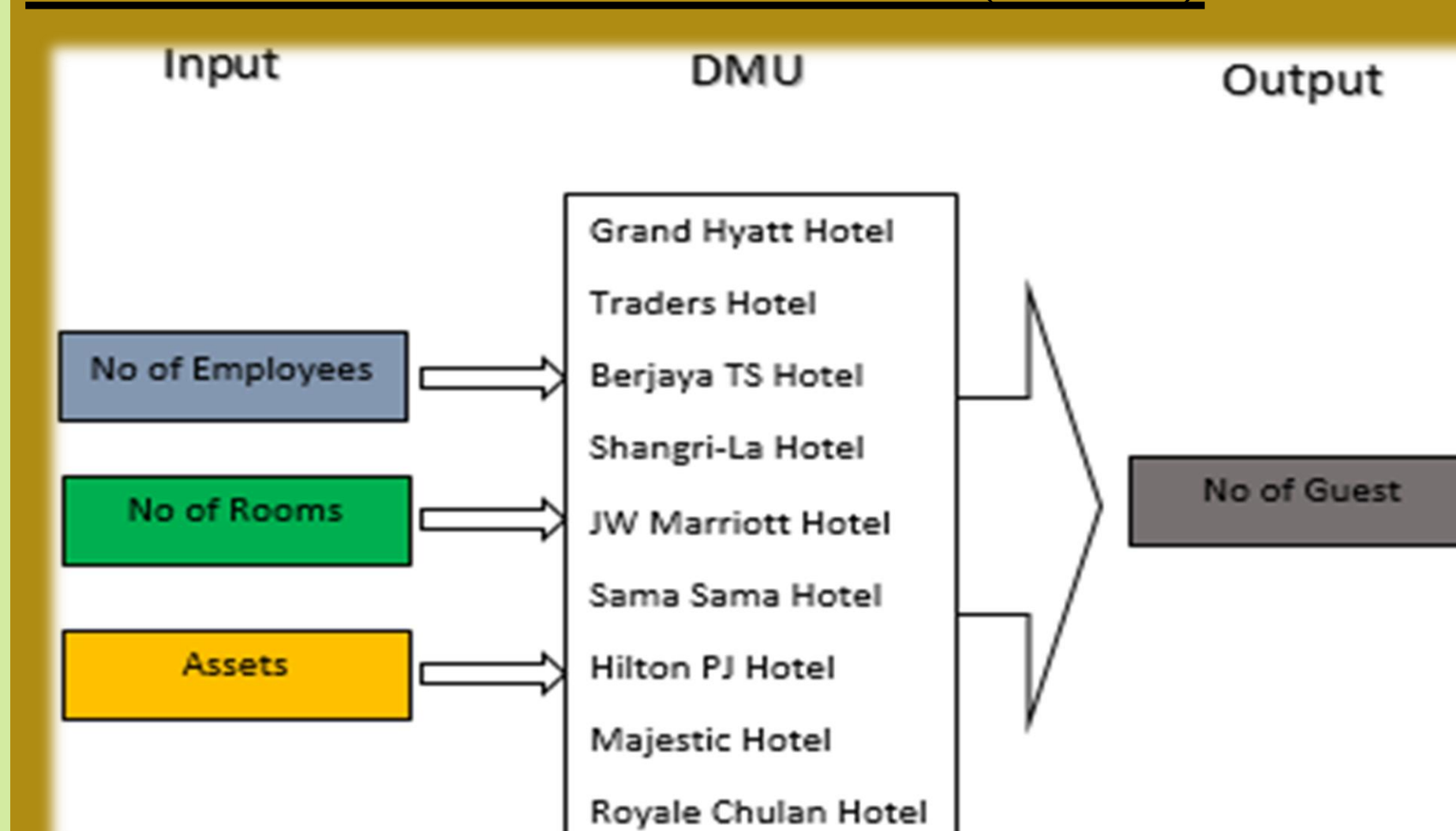
RULE OF THUMB

- ❖ Boussofiane et.al (1991)

DATA FINDINGS

- Hotel web-search
- Interview with hotelier
- Annual company report on year 2013

DECISION MAKING UNIT (DMU)



RESULTS

RO1 : To identify efficiency variable's influencing hospitality industry by using Data Envelopment Analysis

(Raab & Lichty, 2002)

The number of observations and the variables used will have to adhere to the DEA convention that the minimum number of decision making units is greater than three times the total number of inputs and outputs.

(Johns, Howcroft and Drake, 1997)

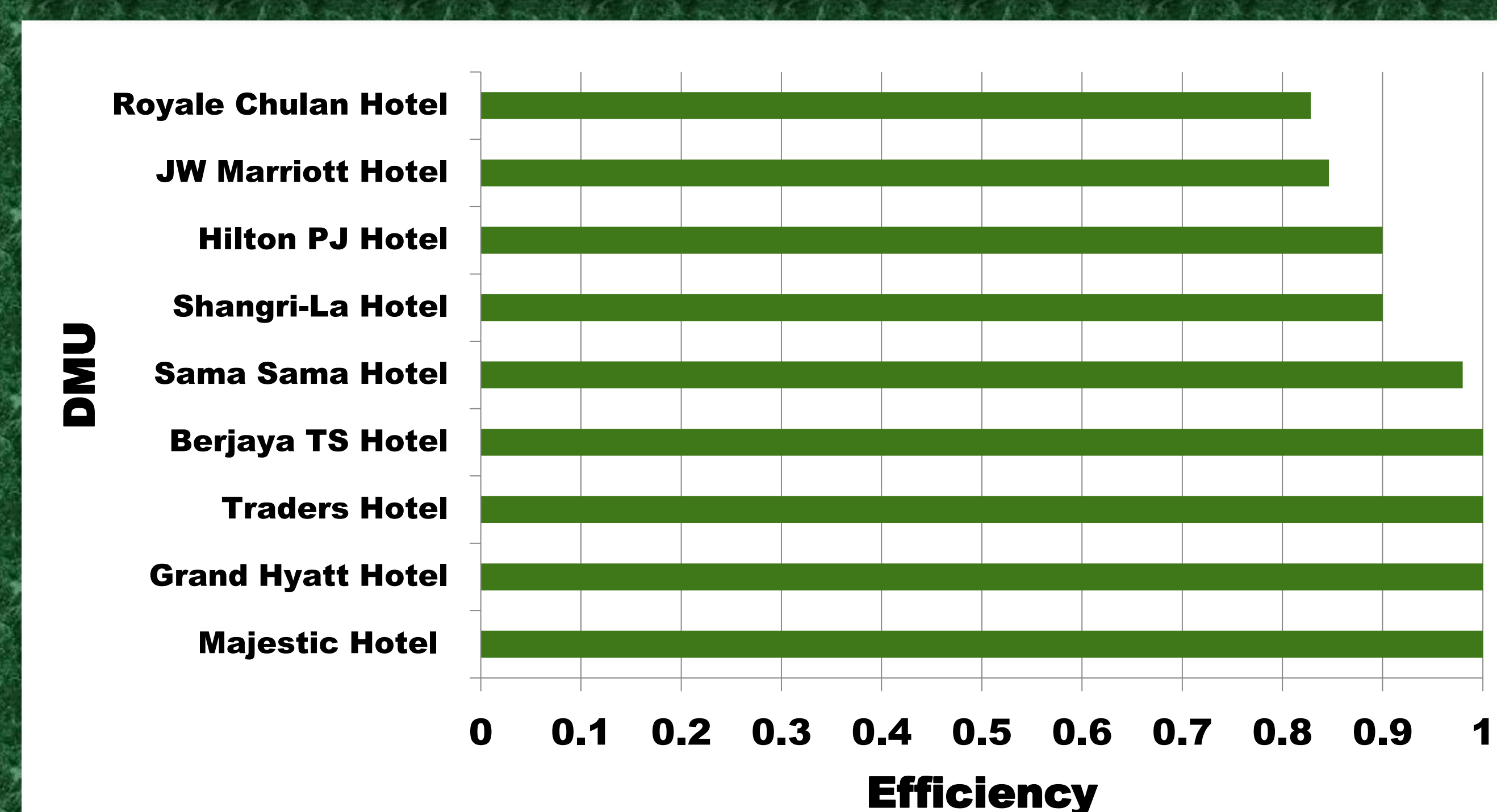
Simple inputs and outputs that have no ratio or composite data. The researchers preferred non-financial data to be used in the analysis.

RO2 : To evaluate of efficiency of hotel using Data Envelopment Analysis

| No. | DMU | Score | Rank | Reference set (lambda) |
|-----|---------------------|----------|------|------------------------|
| 1 | Grand Hyatt Hotel | 1 | 1 | Grand Hyatt Hotel |
| 2 | Traders Hotel | 1 | 1 | Traders Hotel |
| 3 | Berjaya TS Hotel | 1 | 1 | Berjaya TS Hotel |
| 4 | Shangri-La Hotel | 0.900099 | 6 | Grand Hyatt Hotel |
| 5 | JW Marriott Hotel | 0.846383 | 8 | Grand Hyatt Hotel |
| 6 | Sama Sama Hotel | 0.979961 | 5 | Grand Hyatt Hotel |
| 7 | Hilton PJ Hotel | 0.899983 | 7 | Grand Hyatt Hotel |
| 8 | Majestic Hotel | 1 | 1 | Majestic Hotel |
| 9 | Royale Chulan Hotel | 0.828322 | 9 | Grand Hyatt Hotel |

Efficiency Score:

- Efficient (score = 1)
- Inefficient (score < 1)
- Reference set: Benchmark for inefficient supplier



Graph of sequence efficiency score from the efficiency ranking until inefficient

RECOMMENDED IMPROVEMENT

| No. | DMU I/O | Score Data | Projection |
|-----|---------------------|------------|------------|
| 1 | Grand Hyatt Hotel | 1 | |
| | No of Employees | 150 | 150 |
| | No of Rooms | 412 | 412 |
| | Assets | 10556740 | 10556740 |
| | No of Guest | 70050 | 70050 |
| 2 | Traders Hotel | 1 | |
| | No of Employees | 195 | 195 |
| | No of Rooms | 571 | 571 |
| | Assets | 9415770 | 9415770 |
| | No of Guest | 79150 | 79150 |
| 3 | Berjaya TS Hotel | 1 | |
| | No of Employees | 357 | 357 |
| | No of Rooms | 650 | 650 |
| | Assets | 12266840 | 12266840 |
| | No of Guest | 95556 | 95556 |
| 4 | Shangri-La Hotel | 0.900099 | |
| | No of Employees | 450 | 317.47495 |
| | No of Rooms | 662 | 595.86555 |
| | Assets | 12890000 | 11602276 |
| | No of Guest | 88815 | 88815 |
| 5 | JW Marriott Hotel | 0.8463831 | |
| | No of Employees | 219 | 185.35789 |
| | No of Rooms | 491 | 415.57409 |
| | Assets | 10796000 | 9137551.7 |
| | No of Guest | 65500 | 65500 |
| 6 | Sama Sama Hotel | 0.979961 | |
| | No of Employees | 259 | 216.62458 |
| | No of Rooms | 442 | 433.14277 |
| | Assets | 9132890 | 8949876.3 |
| | No of Guest | 66320 | 66320 |
| 7 | Hilton PJ Hotel | 0.899983 | |
| | No of Employees | 432 | 225.30998 |
| | No of Rooms | 546 | 491.39069 |
| | Assets | 12110150 | 10898929 |
| | No of Guest | 77780 | 77780 |
| 8 | Majestic Hotel | 1 | |
| | No of Employees | 167 | 167 |
| | No of Rooms | 300 | 300 |
| | Assets | 8890560 | 8890560 |
| | No of Guest | 51120 | 51120 |
| 9 | Royale Chulan Hotel | 0.8283221 | |
| | No of Employees | 219 | 129.6319 |
| | No of Rooms | 402 | 332.98548 |
| | Assets | 10511750 | 8707114.7 |
| | No of Guest | 56632 | 56632 |

CONCLUSIONS AND RECOMMENDATION

- ❖ DEA function to calculate the efficiency between hotels from the variable that are collected, as well as to examination the relevant inefficiency causes and provide the suggestions the manager or the hotel's owner to increase their management or hotel efficiency – powerful method
- ❖ In CCR model, there are three input and one output was used in this study, hotel management always required the criteria that can be increase their performance and efficiency that was related to the project. All of that variables data was keep in Excel before it run of the process to get the results.
- ❖ **Recommendation for the future research :**
 - The number of input should be improved
 - Increasing the DMUs number
 - Using both qualitative and quantitative techniques