



UNIVERSITI PUTRA MALAYSIA

**MEASURING EFFICIENCY OF A MALAYSIAN HOTEL CHAIN USING
DATA ENVELOPMENT ANALYSIS**

FOO LEE YEN

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**MASTER OF SCIENCE
UNIVERSITI PUTRA MALAYSIA**

2010



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DATA ENVELOPMENT ANALYSIS**

By

FOO LEE YEN

**Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia,
in Fulfilment of the Requirements for the Degree of Master of Science**

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Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfilment of the requirement for the degree of Master of Science

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August 2010

Chair: Mohhidin Othman, PhD

Faculty: Faculty of Food Science and Technology

The expansion of the tourism industry in Malaysia, through its linkages, has contributed to growth in other related activities such as accommodation. With the aim to enhance Malaysia as one of the global tourism destinations, hotel sector needs to operate efficiently and provide comfortable accommodations for tourists. Existing studies on the hotel industry in Malaysia has been devoted to the aspects of service quality and customer satisfaction, very little is known about the efficiency of hotels in Malaysia.

This study attempted to use Data Envelopment Analysis (DEA) method to measure efficiency in a case study of a Malaysian hotel chain. Panel data covering the observations on the input and output variables for hotels under the chain were collected through mail survey. The panel data was analyzed by the DEA – CCR model and Malmquist Total Factor Productivity (TFP) index to compute the relative efficiency score and Malmquist TFP index of the hotel chain.



The results of the CCR model have shown that the hotel chain was not efficient in year 2006 to 2008 as mean efficiency score was less than one (0.984). Hotel C and Hotel L were found to be inefficient. The main sources of inefficiency were the shortfalls in all outputs and surpluses in inputs, number of full-time equivalent employees, employment costs and total operating costs. Based on the findings, recommendations for the inefficient hotels are to improve on the hotel operation, staffing management, cost cutting and resource allocation.

As for the whole chain, TFP has increased by 0.8% and 0.7% for the period of 2002-2008 and 2004-2008 respectively, but TFP has decreased by 0.5% for the period 2006-2008. TFP change was mainly due to the technological change. These results showed that the hotel chain has potential to further increase TFP through improvement in technological advancement along with the constant upgrade of organizational factors. The technological advancement can also be associated with the investment in new methods, procedures and techniques in the hotel operation. Hotel A and Hotel D were the best performing hotels within the chain as they were in the first quadrant for all time periods. They are suggested to maintain their performance whereas other hotels under the chain are suggested to benchmark and adopt the best practices of these two hotels.

The findings of this study have important implications to the Malaysian hotels chain. The findings served as an index for hotel management to further improve their establishment's efficiency. The findings also provided hoteliers with a basis for constructing strategies and strategic decision making.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Master Sains

**PENILAIAN KECEKAPAN SEBUAH RANGKAIAN HOTEL DI MALAYSIA
DENGAN MENGGUNAKAN “DATA ENVELOPMENT ANALYSIS”**

Oleh

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Perkembangan industri pelancongan di Malaysia telah menyumbang kepada pertumbuhan aktiviti yang berkaitan dengannya seperti penginapan. Sektor perhotelan perlu beroperasi dengan cekap serta menyediakan penginapan yang selesa untuk pelancong bertujuan mengukuhkan kedudukan Malaysia sebagai salah satu destinasi pelancongan global. Kebanyakan kajian tentang hotel industri yang sedia ada hanya memberi perhatian kepada aspek kualiti perkhidmatan dan kepuasan pelanggan, sangat kurang yang diketahui tentang kecekapan hotel di Malaysia.

Kajian ini telah cuba menggunakan kaedah “Data Envelopment Analysis” (DEA) untuk mengukur kecekapan dalam kajian kes sebuah rangkaian hotel di Malaysia. Data panel yang merangkumi semua pemerhatian atas input dan output untuk hotel di bawah rangkaian telah dikumpul melalui kaji selidik secara pos. Panel data tersebut dianalisa dengan model DEA – CCR dan indeks Malmquist Produktiviti

Faktor Menyeluruh (TFP) untuk mendapatkan skor kecekapan relatif dan indeks Malmquist TFP rangkaian hotel.

Keputusan dari model CCR menunjukkan bahawa rangkaian hotel tersebut tidak cekap secara purata pada tahun 2006 hingga 2008 kerana purata skor kecekapan yang diperolehi kurang daripada satu (0.984). Hotel C dan Hotel L didapati tidak cekap. Sumber penyebab utama ketidakcekan adalah kekurangan dalam semua output dan kelebihan dalam input, bilangan pekerja sepenuh masa, kos pekerjaan dan jumlah perbelanjaan. Berdasarkan penemuan ini, cadangan untuk hotel yang tidak cekap adalah untuk meningkatkan prestasi dalam operasi hotel, pengurusan staf, pengurangan kos dan pembahagian sumber.

Secara keseluruhan, TFP rangkaian hotel telah meningkat sebanyak 0.8% dan 0.7% dalam jangkamasa 2002-2008 dan 2004-2008. Tetapi TFP telah merosot sebanyak 0.5% dalam jangkamasa 2006-2008. Perubahan TFP adalah disebabkan oleh perubahan teknologi. Keputusan ini menunjukkan bahawa rangkaian hotel ini berpotensi untuk meningkatkan TFP melalui peningkatan dalam teknologi dan pada masa yang sama juga meningkatkan faktor organisasi. Peningkatan dalam teknologi juga boleh dikaitkan dengan pelaburan dalam kaedah, prosedur dan teknik baru dalam operasi hotel. Hotel A dan Hotel D merupakan hotel yang berprestasi paling baik di dalam rangkaian hotel kerana mereka berada dalam kuadrant pertama dalam semua jangkamasa. Dua hotel ini dicadangkan supaya mengekalkan prestasi mereka manakala hotel lain dicadangkan untuk menanda aras dan mempelajari amalan terbaik dua hotel ini.

Hasil kajian ini memberi implikasi penting kepada rangkaian hotel di Malaysia. Hasil kajian ini boleh dijadikan satu indeks bagi pihak pengurusan hotel untuk meningkatkan kecekapan organisasi mereka. Hasil kajian ini juga menyediakan satu rujukan kepada pihak hotel dalam membentuk strategi dan membuat keputusan strategi.

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I certify that a Thesis Examination Committee has met on 17 August 2010 to conduct the final examination of Foo Lee Yen on her thesis entitled “Measuring Efficiency of a Malaysian Hotel Chain using Data Envelopment Analysis” in accordance with the Universities and University Colleges Act 1971 and the Constitution of the Universiti Putra Malaysia [P.U.(A) 106] 15 March 1998. The Committee recommends that the student be awarded the Master of Science.

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DECLARATION

I declare that the thesis is my original work except for quotations and citations which have been duly acknowledged. I also declare that it has not been previously, and is not concurrently, submitted for any other degree at Universiti Putra Malaysia or at any other institution.

FOO LEE YEN

Date: 17 August 2010

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