



UNIVERSITI PUTRA MALAYSIA

***EVALUATION OF OPERATING PERFORMANCE AND LEVEL OF
SERVICE OF URBAN PUBLIC TRANSPORT IN KERMAN, IRAN***

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FK 2011 68

**EVALUATION OF OPERATING PERFORMANCE AND LEVEL OF
SERVICE OF URBAN PUBLIC TRANSPORT IN KERMAN, IRAN**

By

TOORAJ NAJAFABADIPOUR

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

May 2011

DEDICATION

Dedicated to my family for their love, support and encouragement.



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

**EVALUATION OF OPERATING PERFORMANCE AND LEVEL OF
SERVICE OF URBAN PUBLIC TRANSPORT IN KERMAN, IRAN**

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May 2011

Chair: Sulisty Arintono, PhD

Faculty: Engineering

Everywhere in the world public transport faces serious competition from private vehicles, especially in Iran where fuel price is extremely low. To sustain, it should offer high quality service with good operating performance and keep the fares low. This study attempts to evaluate the operating performance and level of service of the urban bus in Kerman, to identify suitable remedial measures. Data for analysis was collected through interview with Kerman Bus Organization staff, previous reports on various urban transportation studies in Iran, observation of the bus operation, and survey of bus patronage and passenger satisfaction using questionnaires.

Results of the study in bus performance and level of service are classified into 3 categories: (1) out of standard and therefore not acceptable: average number of passengers per bus per day (736, standard 1000-1200), fleet utilization (74% , standard 80-90%), average distance travelled per bus per day (88 km, standard 210-260 km), breakdown in service (19.6%, standard 8-10%), staff ratio (2.09, standard

3-8), dead mileage (20.85 %, standard 0.6-1.00%), operating ratio (0.92, standard 1.05-1.08), interchange between routes and services more than once (51%, standard < 10%), load factor (over-loading in Line 101, under-capacity in other lines; (2) within standard: administrative staff ratio (0.3-0.4), fuel consumption (25-50 litres per 100km), walking distance to bus stop, journey time, load factor in Line 139; and (3) out of standard but still acceptable: average number of passengers per bus per day in Lines 101, 102 and 103 (1870, 1203 and 1377 respectively, standard 1000-1200).

Data analyses using Rasch method on passenger satisfaction reveals that, on average, passengers are unhappy with the bus services provided ($N = 400$, $\text{logit} = -0.65$) and can be classified into 5 groups: very happy ($n = 5$, $\text{logit} > 0.45$), happy ($n = 24$, $0 < \text{logit} < 0.45$), unhappy ($n = 169$, $-0.65 < \text{logit} < 0$), very unhappy ($n = 161$, $-1.19 < \text{logit} < -0.65$) and finally, totally unhappy ($n = 41$, $\text{logit} < -1.19$). Further, based on the Rasch analysis, this study shows that, among the bus service attributes, the followings need immediate improvement: bus timeliness, security in the bus and adequacy of information at the bus stops.

Consequently, by evaluating the bus services in Kerman using most indicators as recommended by the World Bank, this research has important implication for future practices by decision makers and bus operators to improve quality of the services for greater passengers' satisfaction not only in Iran but also in other parts of the world.

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

**MENAKSIR PRESTASI KENDALIAN DAN TAHAP PERKHIDMATAN
PENGANGKUTAN AWAM BANDAR DI KERMAN, IRAN**

Oleh

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Di mana-mana di dunia ini, pengangkutan awam menghadapi persaingan yang serius daripada kenderaan persendirian, khususnya di Iran ketika harga petrol sangat rendah. Bagi mengekalkannya, pengangkutan awam harus menawarkan kualiti perkhidmatan dengan memberikan prestasi operasi yang baik dan menetapkan tambang yang murah. Kajian ini cuba menilai prestasi operasi dan paras perkhidmatan bas bandar di Kerman, untuk mengenal pasti langkah pemulihan yang sesuai. Data untuk dianalisis dikumpul melalui temubual dengan kakitangan Organisasi Bas Kerman, laporan lampau terhadap pelbagai kajian pengangkutan luar bandar di Iran, pemerhatian terhadap operasi bas, dan tinjauan terhadap penaung bas dan kepuasan penumpang dengan menggunakan soal selidik.

Hasil kajian tentang prestasi bas dan paras perkhidmatan diklasifikasikan kepada 3 kategori:

(1) tidak menepati standard dan oleh itu tidak diterima: purata bilangan penumpang per bas setiap hari (736, standard 1000 -1200) , utilisasi armada (74%, standard 80-90 %) , purata jarak perjalanan per bas setiap hari (88 km, standard 210 – 260 km), kerosakan semasa perkhidmatan (19.6%, standard 8 -10%),ratio kakitangan (2.09, standard 3 -8) , perbatuan mati (20.85 % , standard 0.6 – 1.00 %), ratio pengoperasian (0.92, standard 1.05 -1.08),pertukaran antara perjalanan dan perkhidmatan lebih daripada sekali (52%, standard < 10%) , faktor beban (terlebih muatan pada garisan 101,kurang kapasiti pada garisan yang lain ; (2) dalam lingkungan standard: ratio kakitangan pentadbiran (0.3 – 0.4) , penggunaan petrol (25 -50 liter per 100 km), jarak berjalan ke perhentian bas, masa perjalanan, faktor beban pada garisan 139 ; dan (3) tidak ada standard tetapi masih diterima : purata bilangan penumpang per bas sehari pada garisan 101,102, dan 103 (masing-masing 1870, 1203 dan 1377 , standard 1000 – 1200).

Data dianalisis dengan menggunakan kaedah Rasch terhadap kepuasan penumpang menunjukkan bahawa , secara purata , penumpang tidak gembira terhadap perkhidmatan bas yang ditawarkan(N = 400, logit = -0.65) dan dapat diklasifikasikan kepada 5 kumpulan: sangat gembira (n = 5, logit > 0.41) ,gembira (n = 24, 0 < logit < 0.45),tidak gembira (n = 169, - 0.65 < logit < 0) , sangat tidak gembira (n= 161, - 1.19 < logit < - 0.65) , dan betul-betul tidak gembira (n = 41 , logit < - 1.19). Tambahan lagi, berdasarkan analisis Rasch, kajian ini menunjukkan antara atribut perkhidmatan bas, faktor berikut memerlukan penambahbaikan segera: ketepatan jadual perjalanan bas, keselamatan dalam bas, dan kecukupan maklumat di perhentian bas.

Oleh itu, bagi menilai perkhidmatan bas di Kerman dengan menggunakan banyak indikator seperti yang dicadangkan oleh Bank Dunia, kajian ini mempunyai implikasi yang penting bagi amalan masa hadapan oleh pembuat keputusan untuk memperbaiki kualiti perkhidmatan untuk meningkatkan kepuasan penumpang, bukan sahaja di Iran, malah di bahagian lain di dunia ini.



ACKNOWLEDGEMENTS

In the name of Allah, the Most Compassionate, the Most Merciful. All praises are for Allah, the Lord of the world, the most compassionate, the most merciful, the Sovereign of the Day of Judgment. You alone we worship, and to You alone we turn for help. Please guide us to the right way, the way of those whom You have favoured, not of those who have incurred Your wrath, nor of those who have gone astray (**Al-Fatiha**, the Opening chapter of the Holy Quran).

First, the writer would like to express his gratitude to the Chairman of the supervisory committee, Dr. Sulistyو Arintono and the thesis committee member, Dr. Hussain Hamid, for their guidance, constructive comments, untiring support, valuable advices and suggestions to complete my research successfully.

The writer would also like to thank all the organizations and companies, especially Kerman Bus Organization and Kerman Municipality, which had taken part in this study and dedicated their time and granted considerations to provide the sources of data collected in the present study. A deep appreciation also goes to all the staff of Kerman Bus Organization, specially the president, for their assistance and financial support in accomplishing the data collection necessitated in this thesis, not forgetting all the authorities and staff at the Faculty of Engineering, University Putra Malaysia, for their assistances and supports throughout this study. Last but not least, may my family be blessed with good health, long life and happiness for all the love and care...thanks for always having faith in me.

I certify that an Examination Committee met on 16 May 2011 to conduct the final examination of Tooraj Najafabadipour on his thesis entitled “Evaluation of Operating Performance and Level of Service of Urban Public Transport in Kerman, Iran” in accordance with the Universities and University Colledge 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 relevant Master of Science.

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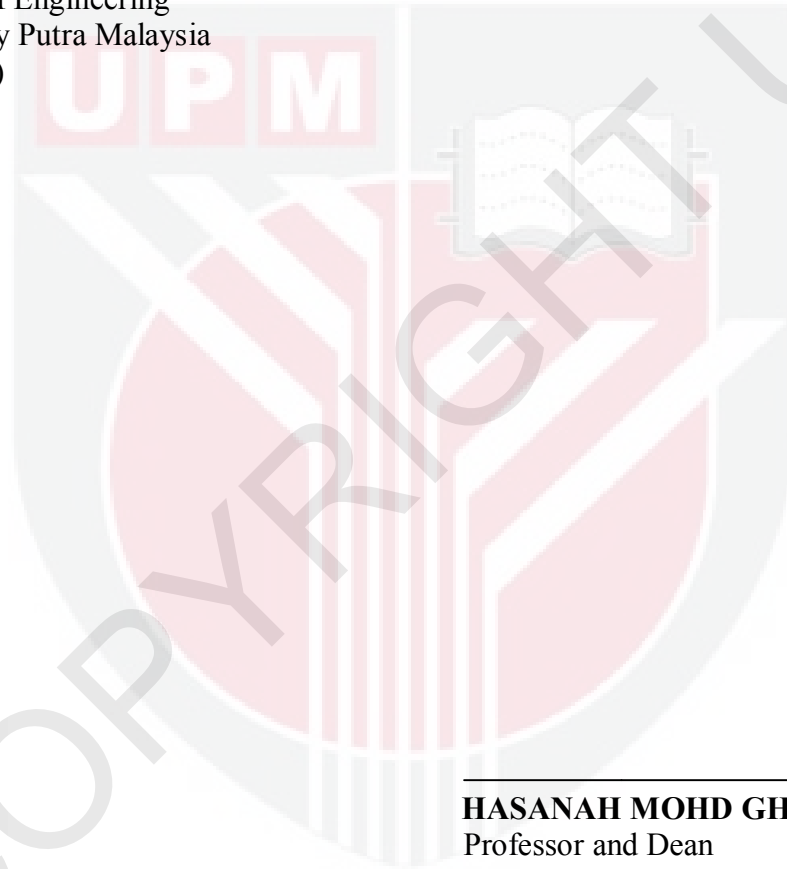
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DECLARATION

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 institutions.



TOORAJ NAJAFABADIPOUR

Date: 16 May 2011

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