



UNIVERSITI PUTRA MALAYSIA

**TECHNICAL EFFICIENCY AND ITS DETERMINANTS IN THE GAMBIA
SECONDARY HEALTH CARE SERVICE DELIVERY**

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By

GIBRIL JARJUE

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

August 2014

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DEDICATION

This thesis is dedicated to His Excellency Sheikh Professor Dr. Alh. Yahya A.J.J. Jammeh Babili Mansa President of the Republic of the Gambia, my parents, my wife, my son and siblings.

Firstly, to His Excellency the president of the Republic of the Gambia for his trust and confidence he had in awarding me a full scholarship to pursue my studies in University Putra Malaysia.

Secondly, to my beloved parents Ismaila Jarjue and Fatoumata Sanneh who didn't live long to witness this joyous day in my life. The untimely demise of my dad while am approaching my end of semester examination persuaded me to work hard.

Thirdly, to my beloved wife Mariama Ndow Jarjue for patiently waiting and taking care of my family especially my Dad during my absence. And to my son Sheikh Ahmad Tijan Jarjue for patiently been there for me.

Last but not the least, to my brothers and sisters for their continuous prayers especially during my stay in Malaysia; I truly love you all.

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

**TECHNICAL EFFICIENCY AND ITS DETERMINANTS IN THE GAMBIA
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By

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August 2014

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Faculty: Economics and Management

The amount of resources the Gambia government allocate for health care service delivery has given rise to a huge interest on how the Gambia health system is performing. This rise in interest is due to the fact that government wants to maximize the use of the existing scarce health resources. The Gambia like any other developing country is vulnerable to the emergence and re-emergence of diseases which may seriously affects the functionality of the entire health system.

For this reason, this research is conducted to investigate the *Technical Efficiency and its Determinants in the Gambia Secondary Healthcare Service Delivery*. This is because the secondary health care service delivery system of the Gambia is most of the time the first point of contact for many patients across the country irrespective of their social status and comprised of 41 health centers country wide. Furthermore, its close proximity to remote villages and towns makes it a suitable choice for people to rely on for cheaper healthcare.

The study employs three basic methodologies which are Output-oriented Data Envelopment Analysis (DEA), Bootstrapping and Tobit regression methodologies. However, to be more specific, this study uses output-oriented DEA method under Variable Return to Scale assumption. DEA is a non-parametric technique which identifies best practice within a given sample of firms and measures efficiency based on the differences between the determined DEA score and best practice score, and is used to measure technical efficiency.

The results of this study reveals that out of the forty one (41) health centers, only 9 (22%) health centers are technically efficient according to DEA method while all health centers are inefficient according to bootstrap method. The mean technical efficiency score according to the study is 0.65 under DEA and 0.55 for bootstrapping. Apparently, West Coast 1 health region out-performs all other

health regions during the study with an average efficiency score of 0.92. Interestingly, factors such as bed occupancy ratio, inpatient staff and outpatient staff ratio are reported to be highly significant and are also the main determinants of efficiency in the Gambian secondary health care service delivery system. Thus the results from the study show the need to improve efficiency level through health care service delivery in Gambia health system.



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

**KECEKAPAN TEKNIKAL DAN PENENTU SISTEM PENYAMPAIAN
PENJAGAAN KESIHATAN SEKUNDER DI GAMBIA.**

Oleh

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Jumlah sumber yang diagihkan oleh kerajaan Gambia untuk perkhidmatan penyampaian penjagaan kesihatan telah menimbulkan minat yang besar bagaimana sistem kesihatan Gambia dilaksanakan. Timbulnya minat ini adalah kerana secara dasarnya kerajaan hendak memaksimumkan penggunaan sumber kesihatan semasa yang terhad. Gambia seperti negara membangun yang lain adalah terdedah kepada kemunculan dan kemunculan semula penyakit yang akan memberi kesan yang serius ke atas fungsi sistem kesihatannya secara keseluruhan.

Atas sebab ini, kajian ini dijalankan untuk mengenalpasti Kecekapan Teknikal serta Penentunya dalam Sistem Sekunder Perkhidmatan Penyampaian Penjagaan Kesihatan di Gambia. Ini disebabkan sistem sekunder perkhidmatan penyampaian penjagaan kesihatan Gambia adalah merupakan titik pertemuan pertama panggilan untuk kebanyakan pesakit di seluruh Negara tanpa mengira status sosial mereka dan terdapat 41 buah pusat kesihatan secara keseluruhan. Tambahan pula ia berhampiran dengan kawasan kampung yang terpencil dan juga bandar yang mana ia merupakan pilihan yang sesuai untuk orang ramai mendapatkan penjagaan kesihatan yang lebih murah.

Kajian ini menggunakan tiga kaedah asas iaitu output berorientasikan kaedah “Data Envelopment Analysis (DEA)”, “Bootstrapping” dan regresi “Tobit”. Walau bagaimanapun, secara khususnya, Kajian ini menggunakan kaedah “DEA” berorientasikan output dengan andaian “Variable Return to Scale”. “DEA” adalah teknik bukan parametrik yang mengenal pasti amalan terbaik dalam sampel firma yang diberi dan mengukur kecekapan berdasarkan kepada perbezaan antara skor DEA dan skor amalan terbaik, yang kemudian digunakan untuk mengukur kecekapan teknikal.

Keputusan kajian ini menunjukkan bahawa daripada empat puluh satu (41) pusat kesihatan, hanya 9 (22%) pusat kesihatan yang mempunyai kecekapan teknikal berdasarkan kaedah DEA manakala semua pusat kesihatan tidak cekap berdasarkan

kaedah Bootstrap. Skor purata kecekapan teknikal mengikut kajian ini adalah 0.65 untuk “DEA” dan 0.55 untuk “Bootstrapping”. Kawasan kesihatan West Coast 1, mengatasi semua kawasan kesihatan yang lain semasa kajian ini dengan purata skor kecekapan 0.92. Yang menariknya, faktor seperti nisbah kadar penggunaan katil, nisbah kakitangan untuk pesakit dalam dan pesakit luar dilaporkan merupakan penentu utama kecekapan sistem penghantaran penjagaan kesihatan sekunder di Gambia. Oleh itu, keputusan daripada kajian ini menunjukkan adanya keperluan untuk meningkatkan tahap kecekapan sistem penyampaian perkhidmatan penjagaan kesihatan dalam sistem kesihatan Gambia.



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I certify that a Thesis Examination Committee has met on 29 August 2014 to conduct the final examination of Gibril Jarjue on his thesis entitled "Technical Efficiency and its Determinants in the Gambia Secondary Health Care Service Delivery" 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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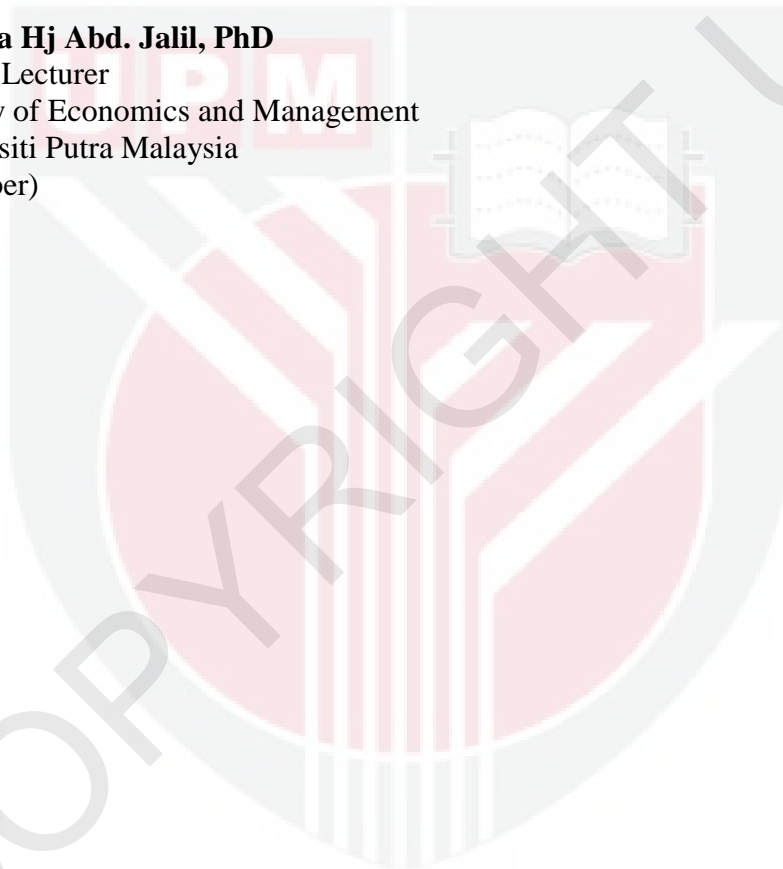
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DECLARATION

Declaration by the student

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