MEASURING SERVICE EFFICIENCY AND PRODUCTIVITY IN MALAYSIAN COMMUNITY COLLEGES INSTITUTION

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ABSTRACT

The objective of this study is to measures the service efficiency and productivity in Malaysian Community Colleges institution before and after the National Higher Education Strategic Plan (NHESP) implementation in 2007. Non-parametric approaches were selected to answer four research questions. Bootstrapped Malmquist total factor productivity (TFP) indices and Hicks-Moorsteen TFP index were employed to explore the consequences of NHESP 2007 on the technical efficiency and productivity changes of community college individually. Thirty four community colleges were analysed over the period 2006-2010 using a balanced panel data. The results of the study showed that community colleges have recorded a large improvement in productivity growth after the implementation of the NHESP. The DEA results also showed scope for improvement in technical efficiency. Furthermore, this study found that the implementation of the NHESP beginning in 2007 has been the main driving force for efficiency changes and productivity growth score. The implication of this study suggested that the sources which caused a firm's efficiency can be a point of reference in order to improve efficiency and productivity level. Improved productivity changes over time in community colleges may enhance learning environments and reduce inefficiency; these in turn can improve and expand the community college sector's performance as a whole.

MENGUKUR KECEKAPAN DAN PRODUKTIVITI DALAM PERKHIDMATAN DI INSTITUSI KOLEJ KOMUNITI DI MALAYSIA

ABSTRAK

Objektif kajian ini ialah untuk mengukur kecekapan dan produktiviti dalam perkhidmatan di institusi kolej komuniti di Malaysia sebelum dan selepas perlaksanaan Pelan Strategik Pengajian Tinggi Negara (PSPTN) pada tahun 2007. Kaedah bukan parametrik telah dipilih untuk menjawab empat persoalan penyelidikan. Indeks Bootstrapped Malmquist produktiviti faktor keseluruhan (TFP) dan indeks Hicks-Moorsteen TFP telah digunakan untuk meneroka kesan PSPTN 2007 ke atas nilai perubahan kecekapan dan produktiviti teknikal di setiap buah kolej komuniti. Sebanyak 34 buah kolej komuniti telah dianalisis dalam tempoh 2006-2010 dengan menggunakan data panel yang seimbang. Hasil kajian menunjukkan kolej-kolej komuniti telah mencatatkan peningkatan yang besar dalam pertumbuhan produktiviti selepas pelaksanaan PSPTN. Keputusan DEA juga menunjukkan bahawa terdapat ruang untuk penambahbaikan dalam kecekapan teknikal. Selain daripada itu, kajian ini mendapati perlaksanaan awal PSPTN pada tahun 2007 merupakan penyumbang utama terhadap perubahan nilai kecekapan dan skor pertumbuhan produktiviti. Implikasi kajian mencadangkan bahawa sumber-sumber yang menyebabkan kecekapan sesebuah firma boleh menjadi titik rujukan bagi memperbaiki tahap kecekapan dan produktiviti. Perubahan produktiviti yang bertambah baik dari semasa ke semasa di kolej komuniti boleh meningkatkan persekitaran pembelajaran dan mengurangkan ketidakcekapan; ini seterusnya boleh meningkatkan dan mengembangkan prestasi sektor kolej komuniti secara keseluruhan.

TABLE OF CONTENTS

CHAPTER 3 LITERATURE REVIEW

LIST OF TABLES

No of Table		Pages
5.5	Summary of Malmquist Productivity Index and Its Components for Community College Sector	126
5.6	Malmqusit TFP Changes Indices for Individual Community Colleges (2006-2010)	128
5.7	Score of Technical Efficiency Changes for Individual Community Colleges (2006–2010)	130
5.8	Scores of Pure Efficiency Changes for Individual Community Colleges (2006–2010)	132
5.9	Estimates of Changes in Scale Efficiency for Individual Community Colleges (2006–2010)	134
5.10	Scores of Technological Changes for Individual Community Colleges (2006–2010)	136
5.11	Estimates of Changes in Pure Technology for Individual Community Colleges (2006–2010)	138
5.12	Estimates of Changes in Scale Technology for Individual Community Colleges (2006–2010	140
5.13	Summary of Malmquist Productivity indices	141
5.14	Hicks-Moorsteen Indices and its Decomposition for Individual Community Colleges (2006-2010)	144
5.15	Estimates of Output-Oriented Technical, Scale and Mix Efficiency under the Hicks-Moorsteen Method for the industry as a whole (2006-2010)	146
5.16	TFP Changes and its Components for Individual Commnity Colleges in 2006-2007 Under the Hicks-Moorsteen Method	148

LIST OF FIGURES

LIST OF ABBREVIATIONS

AOL	Action Oriented Learning
AVET	Agricultural Vocational and Educational Training
BCC	Banker, Charnes and Cooper (1984) formulation
CCR	Charnes, Cooper and Rhodes (1978) formulation
CRS	Constant Returns to Scale
DCCE	Department of Community College Education
DEA	Data Envelopment Analysis
DRS	Decreasing Returns to Scale
DMU	Decision-Making Unit
DPCCE	Department of Polytechnic and Community College Education
DPE	Department of Polytechnic Education
EPU	Economic Planning Unit
ETP	Economic Transformation Programme
FTE	Full-Time Equivalent
GDP	Gross Domestic Product
GTP	Government Transformation Programme

IRS	Increasing Returns to Scale
LAN	Lembaga Akreditasi Negara (National Accreditation Board)
LL	Lifelong learning
MARA	Majlis Amanah Rakyat
MIOS	Mix-Invariant Optimal Scale
MOE	Ministry of Education
MQA	Malaysian Qualifications Agency
MQF	Malaysian Qualifications Framework
NKRAs	Nationl Key Result Areas
NEM	New Economic Model
NHESP	National Higher Education Strategic Plan
NIRS	Non-Increasing Returns to Scale
NMC	National Modular Certificate
OECD	Organisation for Economic Co-operation and Development
OLS	Ordinary Least Square
OME	Output-Oriented Mix Efficiency
OSE	Output-Oriented Scale Efficiency
OTE	Output-Oriented Technical Efficiency

PE	Pure Efficiency
PEE	Public Expenditure on Education
PETE	Public Expenditure on Tertiary Education
PEMANDU	Performance Management and Delivery Unit
PT	Pure Technological
PTE	Pure Technical Efficiency
RTS	Returns to Scale
ROSE	Residual Output-Oriented Scale Efficiency
SE	Scale Efficiency
SFA	Stochastic Frontier Analysis
SKK	*Sijil Kolej Komuniti*
SMK	*Sijil Modular Kebangsaan*
ST	Scale Technological
T	Technological/Technical
TE	Technical Efficiency
TED	Technical Education Department
TFP	Total Factor Productivity
TVED	Technical and Vocational Education Division

TVET	Technical Vocational and Education Training
UK	United Kingdom
UNHD	United Nation Human Development
USA	United States of America
VRS	Variable Returns to Scale
QAD	Quality Assurance Division

LIST OF APPENDICES

APPENDIX

CHAPTER 1

INTRODUCTION

1.1 Background of the Study

The globalisation phenomenon which is experienced worldwide has led to changes in the Malaysian economy. The Malaysian government is dedicated to achieve the status of a high income per capita nation by the year 2020 (*Jabatan Pengajian Kolej Komuniti*, 2012). Therefore, the government has implemented various policies continuously in order to enhance the nation's economic growth to become a developed nation. This effort can be seen through the implementation of the Ninth and Tenth Malaysia Plan which emphasise on the development of a quality and competent manpower to boost the nation's economy (*Jabatan Pengajian Politeknik*, 2013). The Tenth Malaysia Plan 2010 (2011-2015) has highlighted the issues of the national

human capital deficiency and the importance to train capable students in order to generate quality manpower which is necessary to realise the country vision's and mission.

However, it is a major challenge to produce competent human capital which is competitive enough to accomplish the nation's demands in the era of knowledge-based economies (k-economies) and also to adapt towards the rapid changes in technologies in the world of work (Mustapha & Rahmat, 2013). For this reason, the role of education becomes important since it enables the production of a skilful and knowledgeable human capital which is also one of the essential elements of any nation's economy. Education also provides a firm ground for Malaysia to expand the socio-economic status of its population as well as to assist in the country's overall development (Ministry of Education Malaysia, 2013). A quality and efficient formal education acts as the main provider of competent human capital that will play an important role in realising the nation's aspiration.

In the workplace, knowledgeable and skilled workers are given the opportunity to gain new knowledge and thus make them capable to practice innovation in their workplace. According to Leiponen (2000), an innovative firm could perform better with the contributions from knowledgeable and skilled manpower in technical and research areas. High performing firms are capable to boost the nation's economic growth with the help of competent human capital. Only a few countries have successfully sustained long-term economic growth (Jimenez, Nguyen & Patrinos,

2012). Therefore, it is important for a government, through its education providers to generate supply of human capital which can act as an engine for the nation's economic growth and free Malaysia from the burden of the middle-income trap. Therefore, in any country, effective and efficient human capital development plays a primary role in sustainable economic growth (Tessaring & Wannan, 2010). A quality education delivery system is necessary to supply workers with marketable skills.

In Malaysia, education falls under the concern of several government ministries as well as the private sector in order to cover the various segments of the population. Tertiary education institutions in Malaysia hold the responsibility to facilitate a formal education system which is necessary for the formation of a competent work force in the country. Technical Vocational and Education Training (TVET) is one of the important components in tertiary education system which includes technical universities, polytechnics and community colleges. The technical universities in Malaysia consist of Universiti Kuala Lumpur, Universiti Malaysia Perlis, Universiti Teknologi Malaysia and Universiti Teknologi Melaka.

According to Izyan, Zainudin, Saud and Nordin (2012), TVET education system plays an important role for the nation to achieve the status of a developed country. Developing countries such as Malaysia, Indonesia, Philippines and Sri Lanka have started to focus more on the development of TVET education system in order to achieve the status of developed countries such as Japan, Britain, America, Singapore and Australia which also have been focusing on this sector (Tushar, 2013). The

TVET sector, as one of the providers of tertiary education, is one of the most complex sub-sectors of education, covering a wide range of ages and profiles (Izyan et al., 2012). TVET has become a critical part of mainstream education in many developed countries. Since the last decade, Malaysia has focused on this TVET education system development in order to achieve the nation's aspiration by 2020.

In the Tenth Malaysia Plan, mainstreaming and broadening access to quality technical education and vocational training are included in the main agenda to raise the skills of Malaysians so as to increase employability (Malaysia, 2010). In the effort to mainstream the quality of TVET sector, the government strategies were to improve the communities' perception, provide effective instructors, upgrade and harmonise the quality of the curriculum in accordance with the industries' needs and streamline the delivery of TVET (Izyan et al., 2012). Another strategy was to increase the number of enrolments in TVET. Since 2009, proactive measures have been taken by the government to increase the stream of enrolment in TVET with an aim to generate individuals with high employability skill as they have greater ability to learn new skills which will help them to adapt to the changes in various circumstances and to do things differently (Ali, 2011).

The purpose of the TVET sector is to increase the skilled human capital base in Malaysia by providing quality education to students who possess a keen interest, ability and talent in fields of technical and vocational work. TVET also aims to provide skills for immediate application to the labour market (Karmel & Nguyen,

2006). As a developing country, our TVET education system needs to be strengthened and efficient following the example of the developed nations' such as in the case of Germany, Finland, and Austria, whose nation strength is their technical education and vocational training programs. An efficient TVET sector can assist Malaysia to realise its Vision 2020 since it carries the responsibility of generating knowledgeable and highly skilled human capital (Ali, 2011).

In order to provide an overall improvement in the standard of education in the country, the government took the important step of reforming and transforming Malaysia's higher education system. Tertiary education institutions in Malaysia consist of public and private universities, polytechnics and community colleges. The platform used for transforming tertiary education in the country was the 2007 National Higher Education Strategic Plan (NHESP) (Ministry of Higher Education, 2007). The implementation of NHESP in 2007 clearly showed that Malaysia required radical changes from the tertiary education providers. The future of the economic, social, and spiritual well-being of the nation depends on the success of this transformation (Ministry of Higher Education, 2007).

The NHESP consists of seven major reformation objectives: widening access and increasing equity, improving the quality of teaching and learning, enhancing research and innovation, strengthening tertiary education institutions, intensifying internationalisation, culturing lifelong learning and reinforcing the Ministry of Education's delivery system (Ministry of Higher Education, 2007). As highlighted in

the NHESP 2007, the community colleges play a role to achieve the policy target of having skilled and knowledgeable workforce in the TVET sector and becoming the provider of lifelong learning education (Ministry of Higher Education, 2007).

Therefore, as one of tertiary education provider in Malaysia, community colleges have received a great attention from the government. The government had placed greater emphasis on the education and training institution by giving this sector a larger total of development budget (23%) in the Tenth Malaysia Plan (Ali, 2011). This reflects the government's concern in improving the value of the nation's human capital through the enhancement of the education provider. Besides, another commitment can be seen through the implementation of the NHESP in 2007.

The issues of efficiency and productivity changes for Malaysia's community colleges have also not yet been explored. Worthington (2001) and Çokgezen (2009) in their analysis found that most of the previous studies related to tertiary education institutions efficiency and productivity commonly focused on the developed countries. Besides, there are also studies found in developing countries such as China, Brazil, Malaysia, and India by Ng and Li (2000), Zoghbi, Rocha and Mattos (2013), Salleh (2012) and Sunitha and Duraisamy (2010), respectively.

According to Kaur and Sirat (2010) the NHESP plan can be considered as Malaysia's key policy initiative towards revolutionising and transforming the tertiary education sector. Hence, community college institutions as one of the component in