ECONOMIC AND SOCIAL EFFICIENCIES
OF SELECTED AREA FARMER ORGANIZATIONS IN MALAYSIA

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To fulfill highly expectations of the government and to retain continuous supports from the members, farmer's organization is anticipated to be an efficient organization. In order to remain relevant, the organization needs to perform like other co-operative organizations where economic and social performance becomes crucially important. This implies the needs for adequate measures in both areas of interests and the evaluation is supposed to portray their overall performances.

Hence, one way to measure the ability of an organization is through efficiency measurement. Therefore, this paper examines the technical efficiency (TE) of Area Farmers Organization (AFOs) and determinant factors of efficiency for five years period; from 2006 to 2010. The efficiency is measured through three different dimensions namely as economic dimension, social dimension and socio-economic dimension. For the purpose of the study, a two stage Data Envelopment Analysis (DEA) is used.

In the first stage, DEA applied to measure the efficiency score of 56 AFOs. In the second stage, the efficiency score obtained and regressed by using Tobit model. Based on previous study, determinant factors such as assets, location, year of operation, types of business, manager's education, size of business and size of membership serve as independent variables. For complimentary, the Malmquist Productivity Index (MPI) is employed to measure productivity.

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The efficiency analysis in the study reveals most of the AFOs are plagued with inefficiency and experienced of productivity regression. The average technical efficiency scores recorded at 0.708, 0.672 and 0.790 under economic, social and socio-economic dimensions respectively. Meanwhile The Total Factor Productivity (TFP) score of less than one reflect the decline in productivity growth. The average TFP recorded as 0.981 under economic dimension, 0.975 under social dimension and 0.977 under socio-economic dimensions.

From MPI result, AFOs need to improve 8.5% scale efficiency under economic whereas 11.85% and 11.45% technology change under social and socio-economic respectively. As for determinant factors, the variables liked location, age of operation, size of business and membership are found to have a positive relationship with efficiency level.

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

KEEFISIENAN EKONOMI DAN KEEFISIENAN SOSIAL
PERTUBUHAN PELADANG KAWASAN TERPILIH DI MALAYSIA

Oleh

ANUAR BIN MAT ESA

Ogos 2013

Pengerusi   :   **Professor Madya Alias bin Radam, PhD**

Fakulti   :   **Ekonomi dan Pengurusan**

Di dalam usaha untuk memenuhi harapan tinggi kerajaan dan mengekalkan
sokongan berterusan daripada ahli, pertubuhan peladang diramalkan perlu
menjadi organisasi yang lebih efisien. Justeru itu untuk kekal releven,
pertubuhan peladang perlu bertindak seperti organisasi koperasi yang lain
dengan menekankan kepentingan prestasi dalam menjalankan aktiviti ekonomi
dan sosial. Kaedah yang sesuai adalah perlu untuk mengukur prestasi kedua
bidang berkenaan secara seimbang dan penilaian sewajarnya menggambarkan
keseluruhan prestasi.

Suatu kaedah untuk mengukurkan keupayaan organisasi adalah melalui ukuran
keefisienan. Kajian ini mengukur tahap keefisienan Pertubuhan Peladang
Kawasan (PPK) dan faktor yang mempengaruhi kecekapannya untuk tempoh 5
tahun; dari 2006 sehingga 2007. Diukur melalui tiga dimensi iaitu
ekonomi,sosial dan sosio-ekonomi. Dua peringkat *Data Envelopment Analysis*
(DEA) diaplikasikan.

Peringkat pertama, kecekapan setiap 56 PPK terpilih dinilai berdasarkan skor
yang diperolehi. Di peringkat kedua, skor yang diperolehi dijalankan proses
regresi menggunakan model Tobit. Berdasarkan kajian sebelumnya, faktor-

faktor seperti aset, lokasi, usia operasi, jenis perniagaan,pendidikan pengurus, saiz perniagaan dan bilangan ahli mempengaruhi tahap keefisienan. Bagi melengkapkan kajian Indeks Mamlquist digunakan untuk mengukur produktiviti.

Hasil daripada analisa dijalankan, didapati kebanyakan PPK tidak efisien dan rendah produktiviti. Purata kecekapan skor merekodkan 0.708, 0.672 dan 0.790 di bawah ekonomi, sosial dan sosio-ekonomi. Nilai Produktiviti Keseluruhan di bawah nilai 1 menggambarkan penurunan produktiviti. Purata produktiviti adalah 0.981 di bawah dimensi ekonomi, 0.975 dimensi sosial dan 0.935 dimensi sosio-ekonomi.

Keputusan indeks Malquist menunjukkan PPK perlu penambahbaikan 8.5% Skil Kecekapan di bawah ekonomi sementara 11.85% dan 11.45% Perubahan Teknologi di bawah sosial dan sosio-ekonomi. Untuk faktor yang mempengaruhi keefisienan, lokasi, usia operasi, saiz perniagaan dan bilangan ahli mempunyai hubungan positif dengan tahap keefisienan.

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LIST OF ABBREVIATIONS

AFOs	-	Area Farmers Organization
AHP	-	Analytical Hierarchy Process
BSC	-	Balance Scorecard
CRS	-	Constant Return to Scale
DEA	-	Data Envelopment Analysis
FOA	-	Farmers Organization Authority
FOs	-	Farmers Organization
GRA	-	Grey Relation Analysis
ICA	-	International Co-operative Alliances
ILO	-	International Labour Organization
MPI	-	Malmquist Productivity Index
NAFAS	-	National Farmers
OECD	-	Organization for Economic Cooperation and Development
OLS	-	Ordinary Least Square
PPK	-	Pertubuhan Peladang Kawasan
SFO	-	State Farmers Organization
TE	-	Technical Efficiency
TFP	-	Total Factor Productivity
VRS	-	Variables Return to Scale

CHAPTER 1

INTRODUCTION

1.0 Introduction

Malaysia has come a long way, since the agriculture-based economy in the 1960s to the industrial-based economy in the 1980s and recently the government has embarked on ambitious plan to develop the country towards the service-based economy. The roles of the public and private sector are still important to transform the economy to the highest level. Besides these two dominant sectors, co-operative institutions are expected to be the third engine of economic development in Malaysia and the government has targeted a contribution of 4 % towards Gross Domestic Product (GDP) in 2013. The numbers of co-operative are projected to increase from 6,084 in year 2008 to 10,000 by the year 2013 with an average turnover for each co-operative anticipated between RM 80,000 to RM 1.5 million. A few indications such as an increase in number of co-operatives, memberships, size of assets and capitals indicate the positive progress in many sectors especially banking and credit/finance. In contrast, agricultural co-operatives performance is not quite promising when compared to the other sectors. Although the importance of the agricultural sector has been slowly decreasing over the years, the contribution of this sector should not be ignored as proven when the prices of food commodity increases during the oil price hike, OECD (2008). No doubt, agriculture still plays an important role in the economy and has even been identified as one of the key areas in the New Key Economic Areas (NKEAs).

One of the most promising schemes which had been silently active and successful in the agriculture sector abroad is through the co-operatives organizations, as demonstrated in Japan (Nonaka, 2006).Therefore, the performance of agricultural co-operatives such as Farmers Organizations (FOs) is relevant to be put under study. This chapter covers the background of FOs, problem statement, the objectives, justifications, scopes, limitations and outline of the study.

1.1 Background of the Farmers Organization

The history of cooperative movement in Malaysia started about 90 years ago. Similar to some other countries, the formation of co-operatives served as the tool to overcome the poverty of the society. The British government formed the cooperative in 1922 with the purpose of tackling widespread poverty of rural farmers and government servants. Since then, the movement has expanded and grown.

An important aspect of FOs is that it could also be categorized as agriculture cooperatives, under the jurisdiction of Farmers Organization Authority (FOA).Thus, FOs was established along the principles, values and aspiration of co-operatives. As its name implies, FOs is owned by farmers as members and managed by a selected board of directors as policy makers to carry out a wide range of economic and social activities. The Farmers Organization Act 1973 was enacted to properly place the farmers associations and agro-based co-operatives. Through the Act, the government acknowledges the role of FOs to assist the government in developing the economic and social status of the farmer's community in Malaysia.

However, the cooperative as well as FOs need to innovate to cope more successfully with the pressure of globalization. The evaluation of cooperative performance is vital to ensure the ability of cooperative to survive, compete, grow and meet the member's aspirations. Chen (2005) pointed out that, knowledge of cooperative formation is necessary but insufficient to achieve satisfactory performance. It becomes critically important to understand the key factor on performance.

What determines the success of co-operatives? International Co-operatives Alliances (ICA) published the empirical study done by Brazda and Schediwy in 2001 and the study aligned the broad group solidarity, charismatic leaders and relatively large member shareholdings as the preconditions for successful co-operatives. Meanwhile Rajaratnam et al. (2010) explored the study on success factors of cooperatives movement in Malaysia and summarized four factors to be dominant in the findings; visionary leadership, managerial competency, functional characteristics and stability. As for the FOs, the success or the failure was determined by the ability of FOs to maximize and utilize the resources to fulfill the needs of the member's. Under section 6 of 109 Act, FOs has been empowered to run activities in order to uplift the economic and social status of the members.

Previous literature shows a large number of agricultural co-operatives are facing multi-dimensional problems that limit their performance level. The majority of cooperatives as reported in the National Cooperative Policy (NCP) from 2002 to 2010 were small in size, insufficient capital and poor networking system together with difficulties in maintaining good governance, inefficient administration and poor financial performance.

In the study of FOs, Ahmad (2006) found that the lack of competitiveness in FOs and agricultural co-operatives in Malaysia was plagued by inefficiency. In order to exemplify the statement, a few empirical data provided by FOA from the year 2006– 2010 were studied and analyzed. The data relates to the amount of government aids to Area Farmers Organizations (AFOs) (Table 1.1),capital shares (Table 1.2), categories of AFOs based on their

audited financial performances (Table 1.3), accumulated profit and loss of AFOs (Table 1.4), administration cost of AFOs (Table 1.5), and Table 1.6 actual profit and loss of AFOs.

The above list of tables can be categorized into two parts. The first part demonstrated the data of financial support by government and members as presented in Table 1.1 and Table 1.2. The second part of the tables which comprises from Table 1.3 to Table 1.6 indicated the performances of AFOs. It was learned that the first part reflects the injection of money to AFOs from the government and the continuous investment from members.

As referred to the total amount from Table 1.1, it was observed the government consistently and continuously supported the operation of AFOs. The government's financial aid was mainly to cover the overhead cost for the government personnel who were seconded to AFOs.

Table 1.1.   Government Financial Aids to AFOs by State

State	2006	2007	2008	2009	2010
Perlis	1,137,118	1,319,881	1,406,149	1,410,338	1,574,283
Kedah	3,825,746	4,919,020	5,011,193	7,902,370	5,594,655
P. Pinang	1,845,758	2,247,276	2,436,864	2,922,913	2,922,195
Perak	5,838,626	6,675,728	7,452,446	7,281,355	7,820,614
Selangor	3,172,263	3,256,992	3,308,978	3,352,057	3,331,445
N. Sembilan	2,060,120	2,277,416	2,448,434	2,492,948	2,502,173
Melaka	1,031,724	1,224,922	1,293,158	1,218,409	1,362,290
Johor	5,789,284	6,383,743	6,566,304	6,675,524	7,421,016
Pahang	4,204,495	4,075,495	4,705,416	4,434,976	4,698,742
Terengganu	3,381,311	3,496,401	3,303,335	3,851,588	4,293,828
Kelantan	4,741,042	5,131,733	5,970,900	5,591,681	5,738.849
Sabah	4,506,014	5,664,831	6,811,735	6,074,316	4,966,972
Labuan	285,142	389,589	-	419,681	397,922
Total	41,818,643	46,673,438	50,714,912	53,628,156	52,624,984

Source: Farmers Organization Authority (2011)

Capital share basically indicates the confidence and support from members to their AFOs. The more amount of capital invested will ultimately lead to more input to run economic activities. Healthy economic returns are the key to maintain the relationship between members and AFOs. As shown in Table 1.2, the total capital shares for all level of FOs increased yearly from RM 41,818,643 in 2006 to RM 103,131,413 in 2010.

Table 1.2.   Capital Shares of AFOs by State

State	2006	2007	2008	2009	2010
Perlis	1,552,954	1,712,549	1,804,170	1,930,947	2,079,813
Kedah	6,361,900	6,790,546	7,225,340	7,597,053	8,330,557
P. Pinang	4,731,955	5,753,221	6,470,227	7,191,930	8,033,236
Perak	10,815,284	12,644,901	14,480,148	17,510,359	23,060,701
Selangor	9,489,228	9,938,407	10,416,331	10,929,291	11,719,075
N. Sembilan	4,424,570	5,122,433	5,543,043	5,811,447	6,106,786
Melaka	1,795,496	1,962,719	2,217,156	2,336,756	2,602,514
Johor	11,577,342	13,359,488	14,494,999	15,975,278	18,206,758
Pahang	4,706,057	5,456,072	6,217,010	7,072,213	8,252,063
Terengganu	4,812,631	5,221,527	5,638,402	6,204,966	6,723,765
Kelantan	4,005,723	4,608,797	4,779,032	4,982,431	5,241,730
Sabah	268,941	1,934,503	2,106,058	2,249,294	2,474,670
Labuan	1,752,132	286,392	293,237	171,410	299,745
Total	66,294,213	74,505,163	81,685,153	89,963,375	103,131,413

Source: Farmers Organization Authority (2011)

In Table 1.3, FOA uses profit to categorize the level of financial performance in monitoring the AFOs. The AFOs were grouped into three categories of A, B and C, of which grade A is for stable or successful level of profit; grade B is for moderate level of profit; whereas grade C is for poor level of profit. It was noted that more than half of state AFOs fall under grade B, and there is irregularities in most of AFOs from each category and states. From 2008 – 2010, grade B has been dominating the three categories with an average of 59.8%, followed by grade A (31.2%) and grade C (9.0%).

While between 2009 and 2010, the number of AFOs in grade A reduced from 75 to 72, which in turn increases the number of AFOs in grade C from 15 to 17. The figure reflect a slight decrease; only 4.2% in grade A but it was worryingly to note that Kelantan, an agriculture based-state recorded a poor performance in AFOs due to the downgrade of its two AFOs from grade A to B and in turn, one AFOs was added to grade C

Table 1.3.   Audited Financial Performances of AFOs by Grade

Area FOs	Grade A (Stable)			Grade B (Moderate)			Grade C (Poor)		
(State)	2010	2009	2008	2010	2009	2008	2010	2009	2008
Perlis	0	0	0	6	6	5	0	0	1
Kedah	5	8	2	15	12	14	0	0	4
Penang	4	5	4	5	4	5	0	0	0
Perak	22	21	19	6	7	7	2	2	4
Selangor	6	7	4	6	6	10	2	1	0
N. Sembilan	4	1	2	7	10	8	0	0	1
Melaka	1	3	1	4	2	4	0	0	0
Johor	18	17	17	11	11	11	0	0	0
Pahang	5	6	5	11	12	15	5	3	1
Terengganu	7	5	3	7	8	10	1	2	2
Kelantan	0	2	2	16	15	13	5	4	6
Sabah	0	0	1	24	21	18	1	3	5
Labuan	0	0	0	1	2	2	1	0	0
Total	**72**	**75**	**60**	**119**	**116**	**122**	**17**	**15**	**24**

Source: Farmers Organization Authority (2011)

With reference to the accumulated profit and loss of AFOs in Table 1.4, the figures show and improvement since AFOs managed to recover the accumulated loss amounting to (RM 1,463,435) in 2006.

AFOs managed to turn the loss to profit in the year 2010 by RM 42,307,600. In spite of such good performance, some AFOs moved in different ways. For example accumulated loss for AFOs in Kelantan, Labuan and Sabah is on the rise.

Table 1.4.   Accumulated Profit and Loss of AFOs by State

State	2006	2007	2008	2009	2010
Perlis	(2,454,892)	(2,362,031)	(2,119,189)	(1,822,156)	(1,504,958)
Kedah	(4,411,689)	(4,751,910)	(4,085,656)	(2,165,803)	223,387
P. Pinang	5,136,308	6,045,197	6,592,297	11,050,650	10.174,174
Perak	1,705,524	7,383,810	11,262,708	15,441,012	18,537,467
Selangor	3,759,518	4,307,934	3,423,952	4,523,397	5,821,399
N. Sembilan	(6,118,441)	(5,535,291)	(5,258,928)	(5,722,358)	(5,543,163)
Melaka	(203,816)	(76,393)	(172,360)	(11,265)	137,847
Johor	8,362,035	14,051,470	15,891,777	18,523,429	21,863,977
Pahang	(749,126)	645,073	1,069,179	1,492,042	2,017,455
Terengganu	(3,693,680)	(1,905,963)	(1,560,966)	(947,486)	115,970
Kelantan	(3,683,485)	(4,171,813)	(4,458,827)	(5,478,174)	(6,824,639)
Sabah	(639,082)	(831,416)	(1,908,399)	(2,398,865)	(2,178,886)
Labuan	(174,677)	(210,805)	(328,520)	(407,027)	(532,430)
Total	(1,463,435)	12,798,667	18,347,068	32,077,396	42,307,600

Source: Farmers Organization Authority (2011)

Another important remark on AFOs performance was administration cost. The AFOs administration costs involving expenses on salary and allowances for AFOs hired staff, stationeries, utilities and office maintenance has greatly increased. The table 1.5 shows the cost increased tremendously every year of the study from RM 33,805,444 in 2006 to RM 41,425,270 in 2008 and in 2010 it increased up to RM 49,203,814

Table 1.5.   Administration Cost of AFOs by State

State	2006	2007	2008	2009	2010
Perlis	627,730	675,372	765,880	747,602	961,939
Kedah	2,969,911	3,164,430	3,476,128	4,349,099	5,397,653
P. Pinang	2,487,201	2,760,898	2,745,339	3,336,958	3,256,758
Perak	4,637,367	5,058,182	7,017,179	7,141,196	7,760,230
Selangor	4,431,880	5,054,881	4,734,053	5,871,481	5,922,698
N. Sembilan	1,560,682	1,230,733	1,501,196	1,736,934	1,795,235
Melaka	641,009	570,218	637,849	536,906	760,729

Johor	7,176,932	7,629,929	8,994,365	8,731,142	10,363,897
Pahang	2,250,202	2,350,593	3,132,938	3,462,399	3,808,669
Terengganu	2,876,409	3,123,971	3,005,683	2,975,761	3,192,057
Kelantan	2,030,036	2,082,049	2,382,999	2,440,085	2,531,163
Sabah	1,963,195	2,599,552	2,827,744	2,618,438	3,220,452
Labuan	152,890	216,825	203,917	244,872	232,334
Total	33,805,444	36,300,808	41,425,270	44,192,873	49,203,814

Source: Farmers Organization Authority (2011)

Table 1.6 showed the actual profit and loss of all AFOs throughout Malaysia under the supervision of FOA. The actual loss data is obtained by deducting the government aids or supporting cost from AFOs profit and loss as reported each year. The empirical data is presented with the purpose to measure the effect of supporting cost by government to AFOs operation. The figures proved that with the absence of government support, AFOs will be operated at a loss. But it worth to highlight that, AFOs managed to reduce the gap from total lost in 2006 to (RM 777,157) in 2010.

Table 1.6. Actual Profit and Loss of AFOs by State

State	2006	2007	2008	2009	2010
Perlis	(117,087)	(1,052,364)	(904,985)	(633,857)	(688,786)
Kedah	(2,876,001)	(4,310,080)	(3,372,174)	(4,004,394)	(1,072,270)
P. Pinang	505,172	1,079,218	(69,481)	5,963,520	411,777
Perak	36,650	6,438,652	6,920,794	7,516,132	8,934,148
Selangor	117,006	149,931	(1,371,883)	(334,788)	2,107,463
N. Sembilan	(1,142,935)	(530,941)	(887,981)	(1,813,077)	(1,308,708)
Melaka	(415,733)	(579,205)	(986,929)	(732,581)	(649,628)
Johor	(1,638,440)	4,850,091	5,340,181	4,978,077	6,029,225
Pahang	(3,103,215)	(1,240,450)	(2,355,726)	(2,227,312)	(2,342,685)
Terengganu	(2,432,972)	(255,088)	(1,258,859)	(1,541,451)	(1,396,177)
Kelantan	(3,146,798)	(4,863,059)	(5,439,300)	(5,819,198)	(6,351,045)
Sabah	(4,235,312)	(5,404,138)	(7,550,038)	(5,559,846)	(3,965,064)
Labuan	(359,389)	(424,637)	(117,715)	(490,267)	(485,407)
Total	(18,809,054)	(1,083,303)	(12,054,096)	(4,699,043)	(777,157)

Source: Farmers Organization Authority (2011)
Note: Actual profit and loss after deduction of government aids.

1.2   Problem Statements

AFOs are actively supported by the government through FOA in the form of managerial personnel support and development funding for financing, processing, marketing and other business activities that benefit its members. Thus, like other cooperatives, the AFOs must be efficient to fulfill the functions of their establishment.

Two major sources of funding for FOs to run the activities come from government and member's shares. The government provides the allocation of managerial grant and project development grant. The grant serves as financial injection to support the FOs to run the economic and social activities while, the shares from members are normally used as working capital. With the continuous financial support from the government and the members, FOs should be able to utilize the resources efficiently and turn to increase the economic and social performance. In other words, FOs must plan to minimize the input used and at the mean time maximize the output. However the economic achievement of AFOs has been inconsistent even though FOs received consistent support from the government and the members. One of the consequences of inconsistent performance is that the member's confidences may erode and feel the existence of co-operatives is not important (Din,2006). In particular, there is a divergence of views on how efficiently can FOs transform the input, in this case financial support received from the government and members by increasing the output proportionately. The output was anticipated in terms of economic and social output.

As noted in the previous section, the empirical data proved inconsistent performances of FOs and the symptoms reflect some of the underlying problems identified in the operation of FOs. The indicators such as downgrading from better to lower grade, increasing trend of administration cost every year and inability to recover accumulated loss shows the symptoms of inefficiency in the operation of FOs unless proper evaluation proves otherwise. Moreover, based on previous studies Mahadavan (2004), Monk et al. (2007) Lee and Heshmati (2009) linked the positive relationship between profitability and efficiency. Increase in profitability would lead to increase in technical efficiency whereas lower profitability indicated of less efficiency. Maintaining low cost of operations signifies operational efficiency and this efficiency translated into lower prices to members Rajaratnam et al. (2010)

Since the establishment of AFOs as stated in the Act was for dual purposes, economic and social objectives, hence the performance of FOs should be measured in both of the areas. Economic performance and social performance are inseparable while evaluating the entire performance of co-operative as well as AFOs. Performance evaluation can be done in many

ways and traditionally most of cooperators prefer to be measure through financial analysis. This method seems to be insufficient for co-operatives which operate with dual aims; economic and social activity. The evaluation of co-operative should not be one sided. A co-operative which exhibits excellent economic performance may not necessarily mean better social performance and vice versa. The integration of these two functions is a pre-requisite to measure co-operatives success (Din, 2006).

The method of evaluation should be specific, reliable, applicable and suitable for the co-operatives operations. According to Dulfer (1981) the request and demand for an adequate method to evaluate co-operative was raised since 1966.

The basic motives for the establishment of AFOs are to serve the members economically as well as socially with or without government assistant. Hamid (1977) anticipated that FOs can no longer be mere beneficiaries of services from the government. Thus, after 39 years of establishment, in-depth evaluation is needed to access AFOs in order to ensure that they are efficient enough to fulfill their roles to the members as well as meeting government aspirations. Therefore, the purpose of the study is to evaluate AFOs performance through measuring economic and social efficiencies.

1.3   Objectives of Study

This study aims to assess the performance of the AFOs in Malaysia. Thus the specific objectives of this study are:
1)   To measure the efficiency of AFOs.
2)   To rank and identify the most efficient AFOs.
3)   To identify the critical factors that affect AFOs efficiency

1.4   Significant of the Study

For co-operatives as well as AFOs, efficiency is rarely adopted as performance measurement even though the technical efficiency concept has been introduced since 1951. Certainly, the term 'efficiency' has wide varying meaning in different disciplines such as in economics, business and sciences. Generally, efficiency is a measurable concept, quantitatively determined by the ratio of output to input and also defined as a measure of a unit's ability to produce output for a given set of input. Prior studies proved that the efficiency is often used by other types of organization to evaluate the performance. For instance, when the efficiency measure indicates inefficiency, the scores demonstrate that the organization is running at below feasible level of output and still have the room to improve

the output from the resources used. As for FOs concern, this study is considered as the first attempt to evaluate the economic and social efficiencies of selected AFOs.

For the purpose of the study, Data Envelopment Analysis (DEA) will be used as the methodology to measure the efficiency score of the AFOs. The DEA method has been applied widely in the banking sector, the public sector and non-profit organizations. The main feature of DEA is the ability to cater to the problem of multi-input and multi-output variables. Nevertheless, the output from efficiency scores is still insufficient to analyze the variables which determine the technical efficiency of AFOs. Therefore the second stage of DEA, Tobit regression model will be employed to examine the efficiency determinants. This study will not just evaluate the efficiency level of AFOs but also identify the critical factors that determine their efficiency. In addition, for complimentary to efficiency study, Malmquist Productivity Indices ((MPI) was used to study on total factor of productivity.

Since most studies have focused on only either economic or social aspects, it is greatly envisaged that this study will create more interest in the research community to assess the dual role of economic and social efficiencies of AFOs. Furthermore, policy makers and related government agencies especially FOA will find this study beneficial in guiding them in formulating new strategies to improve the AFOs. Existing or even future AFOs also could learn more on improving their organization and perhaps contribute further towards the greater good of the agriculture sector.

1.5   Scope of the Study

Under this section, the terms and concepts that are frequently used in this dissertation will be defined and interpreted for better understanding and comprehension of the reader.

1.5.1 Definition of the term of cooperative

Recently there are many definitions on co-operatives but for the most influential organization that serves co-operatives worldwide; ICA (1995) defines co-operative as "an autonomous association of persons united voluntarily to meet their common economic, social, and cultural needs and aspirations through a jointly-owned and democratically-controlled enterprise". Worth to note again, AFOs were established in the light of co-operatives principles. In the dissertation, the term of organization, association, enterprises and cooperative are used interchangeably but definitely based on the same meaning and the same ground.

1.5.2 Concept of efficiency

As noted earlier, the concept of efficiency differs from one discipline to another. In economics, the term economic efficiency refers to the use of resources to maximize the production of goods and services for society. In general, the economists recognized efficient economic system when the system managed to provide more goods and services without using more resources. Whereas in business, efficiency relates to the cost of inputs for each unit of output produced and the comparison between the actual outputs produced or performed with what can be achieved with the same consumption of resources. Efficiency and productivity are correlated.

Efficiency of any firm as well as co-operatives can be defined in terms of either output maximization for a set of inputs or input minimization for a given output. Norman and Stoker (1991) defined efficiency as a measure of unit's ability to produce output from a given set of inputs. Farrell (1957) begins with modern efficiency measurement proposed that the efficiency of a firm consists of two components; technical efficiency and allocative efficiency. Technical efficiency reflects the ability of a firm to obtain maximum output for a given set of input while allocative efficiency refers to the ability of a firm to use the inputs in optimal proportions, given the respective prices. This concept will be discussed further in Chapter 4.

1.5.3 Relative Efficiency of Co-operative

This paper addressed two important concepts while evaluating the performance of co-operatives; concept of efficiency and productivity. Coelli et al. (1998) mentioned, when we refer to productivity, we are referring to total factor productivity (TFP) which is productivity measure involving all factors of production. They added, the terms productivity and efficiency have been used frequently and interchangeably, but unfortunately they are not precisely the same thing. Sharing the same line of thought is Kaci (2005) who clarified productivity as the ratio of output to resources used to produce it. Moreover, productivity measures the efficiency with which production process transforms input into output. Worth to note, many researchers applied the combination of efficiency and productivity while studying the efficiency of the firm especially with the application of non-parametric function, namely Data Envelopment Analysis (DEA) and Malmquist Productivity Index (MPI). DEA was used to measure efficiency score and Malmquist productivity Indices measured the productivity growth. A positive value of productivity growth is associated with increase in efficiency. Hence for the purpose of this study, the two methodologies will be employed to examine the efficiency and the productivity of AFOs in Malaysia even though, the major focus or weight of this study lies on efficiency perspectives.

1.5.4 Area Farmers' Organization (AFOs)

Essentially, the primary focus of AFOs is to provide quality services to the members. The success of any agricultural development programme depends upon efficient and effective organization to deliver services to the member's even at their farm-gate level. Thus, the formation of AFOs most likely to acts as the front line to strengthen the relationship between members and their organizations.

1.5.5 Economic Activities of AFOs

AFO's business depends heavily on the nature of economic activity in the area. After 39 years of establishments, economic activities of AFOs mainly involve in agriculture such as input suppliers, agricultural marketing, contract farming and agro-based industry. Even though some AFOs diversified their business activity to include other non-agricultural business, but still agri-business remained as the main priority due to member's interest.

1.5.6 Social Activities of AFOs

In accordance to Farmers Organization Act 1973, the formation of AFOs is not primarily as economic organization but also a member based organization with certain social obligations. The members will get the benefit offered by AFOs through quality services, lower prices and free advisory services. Moreover, the proportion of AFOs profits will returns to members in term of dividends, members fund and patronage rebate. Normally, member's funds divided into welfare funds, education, death benefits and other social interactions programmes.

1.5.7 Paddy Estate Management

Since rice is a staple food for Malaysian people, therefore paddy commodity as well as paddy planters gained special attention by the government. The negative impact from the food crisis in 2008 has pushed the government through their agency to introduce a number of programs in order to increase the production. One of the programs is AFO's Paddy Estate Management. Initially, paddy estate management has been recognized as the central management for paddy production activity, from pre-production process until marketing activity. FOA reported in 2010, 17,000 members participated in this program with 45,383 hectares of land occupied. An important note is that, 56 selected AFOs for this study were actively involved in paddy estate management

1.5.8 Three Different Dimensions

The efficiency evaluation on AFO'S should be based on the nature of AFO's themselves. As organization with two specific purposes; the study of co-operative as well as AFO's is supposed to cater both areas of interest or dimensions. Since co-operatives are well recognized as economic and social organization by many scholars, thus this paper will provide adequate evaluation in every single dimension specifically economic efficiency or economic dimension and social dimension. Harun and Mahmood (2012) recommended organizational effectiveness should also take into account other agents involved in the firm (co-operative) performance, therefore future research should also devote closer attention to measuring business performance from a multiple perspectives. In supporting the ideas, socio-economic dimensions serve as additional dimension with the combinations of social and economic dimension. An important point to emphasis is frequently used the term of three dimensions which referred to economic dimension, social dimension and socio-economic dimension.

Likewise in other types of firms, economic dimension relates to measuring the efficiency of business performance for selected AFOs, including agri-business and non-agribusiness. In different perspectives, social dimension refers to evaluating the social efficiency performance from social benefits output to members such as dividends, honorarium and member's fund. As for socio-economic dimension, it indicates the overall efficiency of AFOs since both social and economic efficiency is combined under one perspective. Therefore, it was expected to get the whole pictures of AFOs efficiency performance by measuring through three different dimensions.

1.6 Outline of the Study

The dissertation is divided into six chapters, inclusive of this chapter. As introductory chapter, the first chapter demonstrated the need and the importance of the study to be carried out. The areas discussed in this chapter were the background of the study, problem statement, the lists of objectives and justifications, the scopes and the limitations encountered. Through the chapter, the reader will be able to capture the significance and relevancy of this study.

The second chapter consists of the theory and history of co-operatives and the explanation on the features, principles and values. Since a co-operative is a unique organization, therefore this chapter covers the differences between co-operative and other firms or enterprises. As the subject of the study, Area Farmer's Organization (AFOs) background, roles and functions are also being discussed in detail in this chapter for better understanding.

Chapter 3 content of literature reviews which are appropriate and significant for the purposes of the study. This chapter is divided into two parts where the first part elaborates the cooperative theory and economic theory for cooperatives whereas the second part focuses on the efficiency and methodology used. The reader will be exposed to the co-operative practice of economic system and the application of methodologies; Data Envelopment Analysis (DEA) to measure efficiency level, Malmquist Productivity Index (MPI) for productivity and Tobit regression model to study efficiency determinants.

Chapter 4 discusses methodologies as a part of the study, specifically theoretical framework and methodology structure. Additionally, this chapter also describes the flow and step of analysis processes in order to achieve the objectives of the study.

Chapter 5 consists of the findings of the study. The results will be analyzed and discussed in this chapter. The presentation of this section is very important especially to provide the findings on efficiency level of AFOs and the factors that affects the efficiency. The analyses will be reported and discussed based on three difference dimensions.

The Chapter 6 provides a summary of the result, suggestions and recommendations. The whole findings from this study will be bound and discussed in this chapter especially related to the objectives, important remarks, recommendations and the significant of the research.

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