A Comparative Analysis of the Co-operative, Islamic and Conventional Banks in Malaysia

Azmah Othman[1,*], Fatimah Kari[2], Rosita Hamdan[2]

[1]Department of Development Studies, University of Malaya, Kuala Lumpur, 50603, Malaysia
[2]Department of Economics, University of Malaya, Kuala Lumpur, 50603, Malaysia

Abstract   This paper evaluates the nature and extent of productivity change of the co-operative, Islamic and conventional banks in Malaysia over the period of 2006-2010. Bank Kerjasama Rakyat Malaysia Berhad (Bank Rakyat) is a co-operative bank that has been the backbone of the Malaysian co-operative movement. Bank Rakyat had played a significant role by continuously supporting the co-operative sector in contributing to the country's economy. This study utilized a non-parametric Data Envelopment Analysis (DEA) methodology and Malmquist productivity index (MPI) to estimate the individual bank efficiency and productivity changes within this period. The results from this analysis showed that 64.3 percent of banks studied had total factor productivity (TFP) progress. Out of this 44 percent are Islamic banks. The MPI index summary had shown that TFP had regressed in 2007 by 6.2 percent. TFP summary of annual mean for the 5 year period however, showed a progressed in TFP of 1.5 percent that was contributed by 2.7 percent increase in technical efficiency. Results had indicated that Bank Rakyat is among the top banks that have achieved TFP increased out of the fourteen banks studied. The second stage empirical results based on Tobit regression also suggested that bank's assets, status and loan intensity are statistically significant in determining TFP. Environmental factors however, were found to be insignificant determinant.

Keywords   Co-operative Bank, Islamic Bank, Conventional Bank, Data Envelopment Analysis, Malmquist Productivity Index, Tobit Regression

1. Introduction

There are many studies advocating co-operative banks' involvement in communities around the world especially in the United States, United Kingdom (U.K), Germany and Australia. Apart from this, there are also considerable literatures on different types of ownership structure of firms (private, public and mutual/co-operatives) influencing firm's economic behavior. Reference[1] examined the European co-operative banks' business performances and challenges as a model in the economy. The report concluded that co-operative banks advocated customer champion and are important alternatives to the commercial banks. A study done on co-operative performance during financial and economic crisis as in[2] showed that co-operative in general and in particular co-operative banks, savings and credit co-operatives are enterprises that performed very well in crisis. Reference[3] had revealed the advantages of having co-operative banks in many economies in times of credit crunch particularly during the Asian crisis 1997-1998. Credit

and financial co-operatives are less incline to ration credit, less prone to raise loan rates and prudent in lending which reduced risk in their operations. Although considerable amount of studies done were conducted on other enterprises, organizations, financial institutions and banking industry in Malaysia, interest in co-operatives, credit and co-operative banks studies are minimal. In other developed countries, results from strong, reliable and unbiased researches had contributed to the progress of their co-operatives.

The gap in Malaysian co-operative research particularly on the performance analysis of co-operative banks had motivated the researcher to extend DEA application and attempt an evaluation of co-operative performance and investigation on the efficiency of the co-operative bank. This study on Bank Rakyat is even more important as Bank Rakyat is currently the biggest contributor besides credit co-operatives to growth and development of the co-operative movement. The monitoring and evaluation of this Islamic co-operative bank in relation to other banks is deemed beneficial not just for the future development of Bank Rakyat itself, but also for the co-operative movement.

This study firstly incorporates DEA in the first stage analysis to measure the changes in productivity Bank Rakyat in relation to other conventional banks and Islamic banks and to compare their relative efficiencies. Secondly, factors that

determine the productivity scores are investigated using Tobit regression. The remainder of this paper is as follows. Paragraph 2 discusses in brief the background of Malaysian banking system, and Bank Rakyat. Paragraph 3 presents the literature review, paragraph 4 on methodology and data, followed by paragraph 5 the empirical findings and in paragraph 6 are the discussions and conclusions.

2. The Malaysian Banking System and Bank Kerjasama Rakyat Malaysia Berhad (Bank Rakyat)

The Banking system in Malaysia is comprised of commercial, investment, Islamic and co-operative banks. Besides these banks there are non-bank financial intermediaries such as development financial institutions, provident and pension funds, insurance companies, takaful operators and credit/financial co-operatives that complement banks in mobilizing savings and meeting the financial needs of the Malaysian economy as in[4],[5]. There have been many positive changes in the last thirty years in the banking system as the Malaysian government pursues prudent macroeconomic policies, maintaining low inflation rate with strong external reserves. Malaysia was not spared from the 1997 East Asia credit crunch and financial crisis which resulted in sharp slowdown of lending activities and some banks suffered a marked deposit outflows as in[3]. Central bank bailout, structural adjustments and regulation amendments are important steps taken to ensure long term financial stability and thus creating propitious environment the development of banking and financial system.

Bank Rakyat was established under the Co-operative Ordinance 1948 in 1954. Membership is open to both co-operatives and individuals. The bank opened subsidiary companies and branches to serve customers and their members with the subsequent changes in its bylaws. Prior to 1993 Bank Rakyat only operate in Peninsular Malaysia but operates in Sabah and Sarawak after the Co-operative Act was reviewed in 1993. This bank had suffered losses amounting to RM65.233 million at the end of 1975. With debts and liabilities exceeded assets, the bank almost went bankrupt if not for the government intervention as in[6]. Bank Rakyat is both a co-operative bank and a development financial institution. Bank Kerjasama Rakyat (M) Berhad Act 1978 (Special Provision 202) and its bylaws are two important laws that governs this bank. The dual status resulted in the bank being confined under the Co-operative Act 1993 and the Development Financial Institutions Act 2002[7]. This is to ensure an effective monitoring and instill disciplined among the bank's management thereby safeguard the interest of the bank's shareholders and the general public.

Bank Rakyat became a Syariah co-operative bank and operates as an Islamic co-operative bank on the 8th May 1993 and became a full-fledged Islamic co-operative bank in 2002 as in[8]. Hence, with this major decision, Bank Rakyat marked another milestone in history where it became the third bank to offer total Islamic banking products in Malaysia. On 15 February 2002, Bank Rakyat and six other financial and development institutions were placed directly under the supervision of Bank Negara Malaysia (Central Bank of Malaysia) under the Development of Financial Institution Act (DFIA).

3. Review of Related Literature

DEA was used to study the performances of a wide range of entity such as different types of sectors in the economy (manufacturing, agriculture, banking and others) and various types of organizations (universities, schools, firms, tax offices, power plants, co-operative and others) as in[8].

3.1. DEA Studies on Co-operative Banks, Credit Unions and Islamic Banks

DEA was used in many studies to examine the technical, cost and profit efficiency of financial institutions as in[9],[10]. Comparatively DEA studies on co-operative banks and credit co-operatives are still scarce. Reference[11] on analysis of 757 German co-operative banks (1989–1992) found that smaller banks enjoy higher TFP growth in relation to bigger banks. However, their research on a bigger number of German banks which include Bavarian co-operative banks led to no evidence of economies of scope. Their study have shown that compared to cost inefficiency external factors played a strong role in explaining cost differences between high-cost and low-cost banks. The results had indicated that smaller banks are more responsive to input prices.

Reference[12] had analyzed scale and technical efficiency of the Japan Shinkin banks using 1992 data and found that overall technical inefficiency is due to pure technical inefficiency. It was also found that efficiency improves as asset size of credit co-operative increases. Reference[13] studied the efficiency and productivity growth of Japan credit co-operatives from 1992-1996 with respect to types of ownership. Results suggested that foreign-owned co-operatives are more efficient with greater productivity growth as compared to Japanese-owned co-operatives. There appears to be input allocative inefficiency among many credit co-operatives as managers are pursuing different objectives from cost minimization or output maximization.

Reference[14] the Malaysian banks over the period 1989-1998 showed productivity deterioration following the impact of regulatory extortions and inefficient technological reforms. Reference[15] investigated the impact of bank merger exercise orchestrated by the government to strengthen banking conditions in the wake of financial recessions. In the limited period of their study they have found that total factor productivity (TFP) of ten banks studied progressed by 5.1 percent. 80 percent of the banks however, had experienced regress in scale efficiency but undergone rapid technological change due to merger process.

Reference[16] analyzed the technical and scale efficiency of domestic commercial banks (1998-2003), concludes that merger exercise among banks was successful particularly for small and medium size banks. Reference[17] application of Malmquist Productivity Index (MPI) on the analysis of post-merger banks (2001-2003) and include off-balance sheet (OBS) items had concluded that the inclusion of OBS had an effect on the total factor productivity (TFP) levels for all banks studied largely on technological rather than efficiency change. Regarding the non-bank financial institutions, as in[18] studied the institution using data from 2000-2004 and revealed that finance companies overall efficiency was higher than that of merchant banks. More recently, as in[19] comparison of efficiency between domestic and foreign banks in Malaysia (2002- 2009) revealed contrasting finding from other studies where domestic banks were found having higher efficiency level than foreign banks. Tobit regression proved that capital, loan quality, expenses and asset size influenced pure technical efficiency.

Reference[20] investigated the performance of Islamic banking sector and found that as compared to local banks, foreign banks exhibited higher technical efficiency. Their second stage analysis revealed that larger banks are more efficient with more loan intensity and less non-performing loans. Reference[21] investigated factors affecting risks among Islamic banks and conventional banks operating in Malaysia. Credit risks of Islamic banks are high and risk management play an important role in the banks operation. Reference[22] found that Islamic banks exhibited higher PTE and bank profitability associated positively with technical efficiency.

4. Methodology of Research

Data Envelopment Analysis (DEA) and Free Disposal Hull (FDH) are two types of non-parametric approach. DEA is more popular non-parametric method based on mathematical programming as it was found to be a powerful quantitative and analytical tool for measuring and evaluating performance as in[23].

4.1. Research Framework and Model

Developed by[24], DEA was originally intended for use in public sector and not-for-profit settings where typical economic behavioral objectives, such as cost minimization or profit maximization, may not apply. Reference[25] proposed that efficiency of a firm consists of two components that is (1) technical efficiency, which reflects the ability of a firm to obtain maximal output from a given set of inputs, and (2) allocative efficiency, which reflects the ability of a firm to use the inputs in optimal proportions, given their respective prices and the production technology. These two measures are then combined to provide a measure of total economic efficiency as in[26]. The productivity of a firm can be defined as the ratio of the output(s) to the input(s).

It can be written as:

$$Productivity = \frac{Outputs}{Inputs}$$

The TFP is a productivity measure involving all factors of production. Banks will operate either on that frontier, if technically efficient, or beneath the frontier if not technically efficient.

The two approaches available in DEA are the input-oriented and output-oriented. Inputs are minimized in input-oriented model but outputs are kept at their current levels. Output-oriented kept inputs at their current levels and maximized outputs quantities. Following reference[26], this study chooses input-oriented approach as the management of banks has most control over inputs. This orientation will help determine input quantities to be reduced and input slacks to improve efficiency.

MPI evaluates the productivity change of DMUs (banks studied) between two time periods. It can be defined as the product of Catch-up and Frontier-shift terms. Catch-up or recovery is related to the degree in which a DMU improves or worsens its efficiency as in[28]. The TFP estimation is obtained from the decomposition of the two components known as technological change (TECHCH) and technical efficiency change (TEFFCH). The total factor productivity changes will determine the performance of the banks studied. Technical efficiency change means the banks can produce more by utilizing the existing technology and economic inputs efficiently. Banks with technological change would be the banks with technological advancements and innovations. MPI measures the TFP growth between two data points, period's t and t+1 by calculating the ratio of distances of each data point relative to a common technology. Following reference[26], the MPI index is defined as:

$$M\,(x_{t+1},y_{t+1},x_t,y_t) = \frac{d^t(x_t,y_t)}{d^{t+1}(x_{t+1},y_{t+1})} * \left[\frac{d^{t+1}(x_t,y_t)}{d^t(x_t,y_t)} * \frac{d^{t+1}(x_{t+1},y_{t+1})}{d^{t+1}(x_{t+1},y_{t+1})} \right]^{1/2}$$
$$= EC \times TC \quad\quad (1)$$

$$Efficiency\ Change\ = \frac{d^t(x_t,y_t)}{d^{t+1}(x_{t+1},y_{t+1})} \quad\quad (2)$$

$$Technical\ Change\ = \left[\frac{d^{t+1}(x_t,y_t)}{d^t(x_t,y_t)} * \frac{d^{t+1}(x_{t+1},y_{t+1})}{d^{t+1}(x_{t+1},y_{t+1})} \right]^{1/2} \quad (3)$$

A value of M greater than one indicates a positive TFP growth from period t to period t+1 while a value less than one indicates a TFP decline. Technical efficiency change (catch up, TEFFCH) measures the change in efficiency between current (t) and next ($t+1$) periods, while the technological change (innovation) captures the shift in frontier technology. The efficiency change (TEFFCH) is further decomposed into a pure efficiency change (PECH) and scale efficiency change (SECH) that reflects the use of optimal (if SECH= 1) or sup-optimal scale (if < 1) of operations by firms, written as follows:

$$TEFFCH = SECH\ x\ PECH$$

or

$$M(y_{t+1},x_{t+1},y_t,x_t) = TFPCH = (PECH \times SECH) \times TECHCH \quad (4)$$

A second stage analysis on the first stage DEA results was run. Reference[26] recommends DEA researchers to include environmental variables (characteristics of banks, macro-economic factors such as GDP per capita, export and unemployment) and investigate the influence of these variables on efficiency. Tobit regression is used to investigate factors that might have influenced the banks' inefficiencies/efficiency. According to reference[29] Tobit regression model (a special model) where dependent variable is constrained and there are clustering in the observations was proposed. Reference[30] is with the opinion that Tobit regression provides consistent estimation in DEA second stage analysis. Running OLS on these data will resulted in biased and inconsistent results. As y is the observe value of dependent variable, this study use y_i^* (latent dependent variable), the standard Tobit model is as follows for observation (bank) i:

$$y_i^* = \beta x_i + \varepsilon_i$$
$$y_i = y_i^* \quad \text{if} \quad y_i^* \geq 0$$
$$\text{and} \quad y_i = 0, \text{otherwise} \tag{5}$$

Where $\varepsilon_i \sim N(0, \sigma^2)$, x_i and β are vectors of explanatory variables and unknown parameters, respectively, while y_i^* is a latent variable and y_i is the DEA score.

The dependent variables are the efficiency scores. $\theta 2_i t$ is the TFP, TEFFCH, TECHCH, PECH and SECH scores of bank i at time t extracted from the DEA first stage. Independent variables are comprised of two groups, the endogenous and the exogenous variables. Endogenous variables are proxy of bank characteristics which is banks' loan to asset ratio (loan intensity; loan/TA$_{it}$) and banks assets value given by the natural logarithm of total assets (LNTA$_i$t). The exogenous group of independent variables is the economic environment that may have an influence on the banks' performance. These are the natural logarithm of GDP per capita (LNgdppct), natural logarithm of export (LNexportt), unemployment rate in percentage (Unemployment) and two dummy variables, the first to differentiate co-operative bank (1) and non-co-operative banks (0), (Dummy$_i$t) and the second to differentiate Islamic (1) and conventional banks (0), (Dummy2$_i$t). The Tobit regression equation is shown as:

$$\theta 2_i t = \alpha 0 + \beta_1 * loan/TA_{it} + \beta 2 * LNTA_i t + \beta 3 * LNgdppct + \beta 4 * LNexportt + \beta 5 * unemployment_t + \beta 6 * dummy_i t + \beta 7 * dummy2_i t + \varepsilon_{it} \tag{6}$$

ε_{it} is the random error term of the model.

4.2. Data

The study period covered is from 2006 to 2010. Research samples consist of a balanced panel data set from all the 14 banks studied. The samples constituted of one co-operative bank (Bank Rakyat), eight other conventional banks and five other Islamic banks in Malaysia. All these banks are Malaysian controlled banks. The financial data sets were obtained from published financial income and balance sheet statements in annual reports of the individual banks published online for the public. In this analysis Bank Rakyat, eight conventional banks (MB, RHB, AMB, EONB, AFB,

ALLIB, HLB and PUB) and five Islamic banks (AFBIS, MMLTIS, CIMBIS, RHBIS and HLBIS) were chosen as study samples.

This analysis followed the intermediation approach, run with one output and two inputs. The details of variables used are in table 1. Output (Y) is loans and inputs (X$_1$ and X$_2$) are as follows X$_1$ is labour (overhead expenses) and X$_2$ is total assets.

Table 1. Inputs and Outputs Variables (RM Million) (N= 14)

Variable: Loans (Output)

Year	Mean	Std.Deviation	Minimum	Maximum
2006	28,694.36	35,533.85	444.35	127,848.40
2007	29,502.95	34,969.52	1,734.16	118,557.04
2008	33,305.42	39,113.92	244.99	138,855.47
2009	37,501.90	41,730.16	2,880.71	144,431.80
2010	42,487.42	45,285.79	3,555.60	151,469.59

Variable: Assets (Input)

Year	Mean	Std.Deviation	Minimum	Maximum
2006	48,070.47	56,528.12	2,516.25	197,135.27
2007	53,970.06	64,892.28	6,224.29	227,447.24
2008	56,046.73	63,379.87	6,069.60	219,172.49
2009	62,147.93	67,873.57	6,525.77	238,277.14
2010	67,467.86	70,752.26	7,557.28	248,392.27

Variable: Labour (Input)

Year	Mean	Std.Deviation	Minimum	Maximum
2006	351.60	407.11	2.161	1,420.59
2007	339.13	388.82	6.17	1,418.46
2008	391.51	435.21	9.281	1,609.88
2009	455.30	528.16	8.197	2,037.045
2010	495.51	568.09	8.823	2,184.302

5. Empirical Findings

Table 2 shows the MPI summary and in table 3 the annual means summary detail from analysis. Results were obtained from data analyzed using DEAP Version 2.1. CIMBIS high TFP growth was contributed by the bank's progress in both technical efficiency change (TE) and scale efficiency change of 36.8 percent. No managerial efficiency change was detected experienced by CIMBIS. It also experienced a regression in technological change by 1.8 percent. This indicates that the TFP growth was from scale efficiency change.

RHB's TFP growth was the result of progress in technical efficiency (4 percent) in which contributed by 3.9 percent increase in managerial efficiency and 0.1 percent progress in scale efficiency and 2.2 percent increase in technological change. Investigation on RHB's Islamic counterpart indicated that RHBIS had experienced progress in TFP by 1.8 percent. This was because of the managerial efficiency progress which was evident by the 4.8 percent increase.

However unlike RHB's (conventional), RHBIS's operation is at the sub-optimal level.

Table 2. Malmquist Index Summary

Bank	TEFCH	TECHCH	PECH	SECH	TFPCH
BR	1.000	1.016	1.000	1.000	**1.016**
AFBIS	1.002	0.882	1.000	1.002	0.884
MMLTIS	1.012	1.011	1.059	0.956	**1.023**
CIMBIS	1.368	0.982	1.000	1.368	**1.343**
RHBIS	1.034	0.985	1.048	0.986	**1.018**
HLIS	1.000	0.885	1.000	1.000	0.885
AFB	1.006	1.017	1.015	0.991	**1.023**
EONB	0.982	1.017	0.983	0.999	0.999
PUB	1.033	1.000	1.000	1.033	**1.033**
RHB	1.040	1.022	1.039	1.001	**1.063**
ALLIB	1.005	1.010	1.018	0.988	**1.016**
AMB	1.000	1.008	1.000	1.000	**1.008**
HLB	0.985	1.003	0.954	1.033	0.988
MB	0.985	1.006	1.000	0.967	0.972
Mean	1.027	0.988	1.008	1.019	**1.015**

Table 3. Annual Means Summary

Year	TEFCH	TECHCH	PECH	SECH	TFPCH
2006	-	-	-	-	-
2007	0.963	0.974	0.968	0.995	**0.938**
2008	1.100	0.973	1.016	1.083	**1.070**
2009	1.012	0.995	1.033	0.980	**1.007**
2010	1.038	1.010	1.017	1.021	**1.049**
Mean	**1.027**	**0.988**	**1.008**	**1.019**	**1.015**

PUB exhibited positive growth in TFP which was mainly contributed by 3.3 percent in scale efficiency. MMLTIS and AFB experienced the same percentage of TFP growth (2.3 percent) with the same pattern of technical efficiency, technological, managerial and scale efficiency change. Both banks had a declined in scale efficiency change which means that these banks are operating at sub-optimal level.

BR and ALLIB had the same 1.6 percent growth in the TFP however, the source to the change is different. As in the first model, technological change progress is still the source for BR's TFP growth. ALLIB managerial efficiency progress of 1.8 percent and 1 percent technological progress had contributed to the TFP growth. In this model ALLIB is still operating at sub-optimal level.

Five banks that exhibited TFP regression are AFBIS (11.6 percent), HLIS (11.5 percent), MB (2.8 percent), HLB (1.2 percent) and EONB (0.1 percent). AFBIS TFP regression was mainly from technological inefficiency, EONB and HLB due to managerial inefficiency and MB from scale inefficiency.

The results of Tobit regression are in table 4. The goodness of fit of the Tobit models was assessed based on the test results for normality of residuals. The results had indicated that all models had a good fit as all the error exhibited was normally distributed with very small p-value (less than 0.05).

Tobit regression results showed that bank's asset (LNTA) and dummy2 (= 1 if Islamic bank, 0 if conventional bank) are statistically significant in determining the TFP scores of the banks. Following this, the analysis revealed that loan intensity and both dummy variables are statistically significant in determining the TEFFCH scores of the banks studied.

Table 4. Tobit Regression Results

Variables	TFP	TEFFCH	TECHCH	PECH	SECH
Constant	5.490	0.521	-3.338	10.445	-0.329
loan/TA $_{it}$	0.176 (0.419)	0.857 (<0.00001)***	0.064 (0.391)	0.505 (0.001)***	-0.661 (0.009)***
LNTA$_{t}$	0.051 (0.089)*	0.016 (0.38413)	0.014 (0.183)	0.024 (0.265)	0.030 (0.379)
LNgdppc$_t$	3.975 (0.168)	-0.399 (0.822)	-1.032 (0.301)	2.598 (0.213)	1.881 (0.574)
LNexport$_t$	-3.279 (0.236)	0.251 (0.883)	1.014 (0.291)	-2.613 (0.193)	-1.260 (0.693)
Unemployment$_t$	-0.723 (0.248)	0.053 (0.248)	0.267 (0.218)	-0.545 (0.228)	-0.383 (0.598)
Dummy$_{it}$	-0.144 (0.166)	-0.142 (0.026)**	0.029 (0.40760)	-0.191 (0.011)**	0.047 (0.69370)
Dummy2$_{it}$	0.147 (0.049)**	0.129 (0.005)***	-0.025 (0.333)	0.142 (0.008)***	0.029 (0.730)

Results obtained from data analyzed using Gretl Version 1.1
*Significant at 10 %, **Significant at 5 %, ***Significant at 1 %

It was found that none of the independent variables is statistically significant in influencing technological change. The analysis showed that loan intensity and both dummy variables are statistically significant in influencing PECH. The banks' loan intensity is also found to be statistically significant in determining the SECH.

6. Discussions and Conclusions

In the 5 year period studied, 64.3 percent of banks had total factor productivity progress and out of these 44 percent are Islamic banks. Empirical results proved that Bank Rakyat has achieved a relatively strong position in productivity performance as 6th among the nine top banks. Its source of total factor productivity progress is technological progress without any progress in pure technical efficiency and scale efficiency change (this means TE is also stagnant). Empirical findings have indicated that scale inefficiency dominates pure technical inefficiency implying that the banks have been inefficient in exploiting economies of scale given their scale of operation. The study however, suggest that progressive scale efficiency and pure technical efficiency change contributes to the banks overall technical efficiency.

Banks' loan intensity and assets was found to be statistically significant in determining TFP, TEFFCH, PECH and SECH. As bank's asset was found to be significant in determining efficiency, the result thus confirmed that banks size matters in achieving higher efficiency. Environmental factors outside the bank management control such as GDP per capita, unemployment and export performance are statistically significant in influencing progress in technological and scale efficiency changes.

This finding is consistent with research as in[20] indicating a positive and statistically significant relationship between bank's loan intensity with efficiency measure of banks. Finding is also consistent with the study on impact of global financial recession on developing economy as in[31]. The empirical findings in this analysis indicated that TFP had regressed in 2007. However, after 2008, the analysis showed that the banks had managed a substantial TFP growth i.e. 0.7 percent (2009) and 4.9 percent (2010). This result is consistent with the increasing trend of technical efficiency level experienced by the Islamic banks in 25 countries in the period 1992-2009, findings from study done as in[22]. The banks status (whether co-operative bank, Islamic or conventional bank) is statistically significant in determining technical efficiency and pure efficiency change of the banks studied thus confirming that banks' status is important in determining the banks' efficiency. These results are important as Malaysia's goal is to be Asia's Islamic Financial Hub and an International Islamic Finance Centre as in[32],[33]. This finding however, contradicts the study done as in[34] where they had found that there is no evidence to suggest that the banks type (private, public, and mutual) had influenced efficiency. Findings as in[35] on comparison between conventional and Islamic banks also suggested no

significant differences between these banks.

Bank Rakyat's loan intensity ratio has been on the higher side (0.7) as compared to other banks which is below 0.7. This suggested that bank is taking a higher risk. This meant that it is more vulnerable to risk as compared to other banks. In 2010 from the total financing and advances given out by Bank Rakyat, 76 percent were geared towards personal financing. Risk incurred by Bank Rakyat on financing was reduced as the banks mode of financing repayment is via salary deduction service provided by Angkasa. Reference[8] similarly concluded that Bank Rakyat gained from a more efficient credit control and reduced in risks as payments by borrowers were made direct from Angkasa salary deduction. Bank Rakyat had secured a niche in personal financing sector among the government servants. Success came from the relentless efforts striving for excellence, providing towards improving management and operational efficiency, increased investment in human capability enhancement and also as the result of transformation from a conventional banking system to a fully Islamic (Syariah) compliant system in 2003. With extended product range it is able to provide quality, innovative and greater diversity products to customers. This is done through networks of more than 200 branches located nationwide. With 794,199 individual members and 1,401 co-operative members Bank Rakyat had effectively secured support from non-member customers who made up of 51.2 percent of its total customers. Bank Rakyat however, cannot depend on its status as an Islamic bank to capture clients as all the other nine banks are also Syariah compliant. As a result the banking environment proves to be very competitive and challenging.

REFERENCES

[1] Oliver Wyman (2008): Co-operative Bank: Customer Champion.

[2] Birchall, J., and Ketilson, L. H. "Resilience of the Cooperative Business Model in Times of Crisis", 2009. Online Available : <www.copac.coop/publications/2009-ilo-coop-resilience.pdf

[3] Ferri, G. "Why Cooperative Banks Are Particularly Important at a Time of Credit Crunch. Research Publication, European Association of Co-operative Banks", 2008 , Online Available: :http://www.globalcube.net/clients/eacb/content/medias/publications/research/cb_particularly_important_time_credit_crunch.pdf

[4] Malaysian Industrial Development Authority (MIDA). Banking, Finance and Exchange Administration, 2008. Online Available: http://www.mida.gov.my/en _v2/index.php?page=banking-system

[5] Bank Negara Malaysia. (2010). Annual Report. Online Available: http://www.bnm.gov.my/files/publication/ar/en/2010/ar2010_book.pdf

[6] Radziah Abdul Latiff. Bank Kerjasama Rakyat Malaysia Berhad: A case of cooperative Islamic bank in Malaysia.

Paper presented in the 16th International Business Research Conference, Dubai, U.A.E. 2012, April.

[7] Bank Kerjasama Rakyat Berhad. (2010). Annual Report. Kuala Lumpur. Online Available: http://www.bankrakyat.co m.my/c/document_library/get_file?p_l_id=694494&folderId =715227&name=DLFE-7923.pdf

[8] Ramanathan, R. (2003). "An introduction to Data Envelopment Analysis". Sage Publication India Pvt. Ltd, New Delhi, 2003.

[9] Berger, A.N., & Humphrey, D.B. "Efficiency of Financial Institutions: International Survey and Directions for Future Research". European Journal of Operational Research, *98*(2), 175-212, 1997.

[10] Emrouznejad, A., Parker, B., & Tavares, G. "Evaluation of Research in Efficiency and Productivity: A Survey and Analysis of the First 30 Years of Scholarly literature in DEA". Journal of Socio-Economics Planning Science, 42(3), 151-157, 2008.

[11] Lang, G., & Welzel, P. "Efficiency and technical progress in banking Empirical results for a panel of German cooperatives banks". Journal of Banking & Finance, 20, pp. 1003-1023, 1996.

[12] Fukuyama, H. "Returns to scale and efficiency of credit associations in Japan: A Non-parametric Frontier Approach". Japan and the World Economy, *81*, 259 – 277, 1996.

[13] Fukuyama, H., Guerra, R. & Weber, W. L. (1999). "Efficiency and Ownership: Evidence from Japanese Credit Cooperatives". Journal of Economics and Business, *51*(6), 473 – 487,1999.

[14] Dogan, E., & Fausten, D. K. . "Productivity and Technical Change in Malaysian Banking:1989-1998". *Asia-Pacific Financial Markets 10*(2-3), 205 – 237, 2003.

[15] Krishnasamy,G., Alfieya Hanuum Ridzwa & Perumal, V. "Malaysian Post Merger Banks' Productivity: Application of Malmquist Productivity Index", Managerial Finance, 30 (40), 63-74, 2003.

[16] Fadzlan Sufian "The Efficiency Effects of bank Mergers and Acquisitions in Developing Economy: Evidence from Malaysia". International Journal of Applied Econometrics and Quantitative Studies, 1(4), 53-74, 2004.

[17] Fadzlan Sufian and Suraya Ibrahim."An analysis of the relevance of off-balance sheet items in explaining productivity change in post-merger bank performance: evidence from Malaysia". Management Research News, Vol. 28, Iss: 4, pp. 74-92, 2005.

[18] Fadzlan Sufian (2006). "Size and Returns to Scale of the Islamic Banking Industry in Malaysia: Foreign versus Domestic banks". IIUM Journal of economics and Management 14(2), 147-175, 2006.

[19] Ong, T. S., Lim, Y.T., and Teh, B. H." A comparison on efficiency of domestic and foreign banks in Malaysia: a DEA approach". Business Management Dynamics. 1(4), 33-49, 2011.

[20] Fadzlan Sufian and Muhd-Zulkhibri Abdul Majid "Bank Ownership, Characteristics and Performance: A Comparative

Analysis of Domestic and Foreign Islamic Banks in Malaysia", 2007, April 1. Munich Personal RePEc Archive (MPRA)

[21] Nor Hayati Ahmad and Shahrul Nizam Ahmad (2004). "Key factors influencing credit risk of Islamic bank: A Malaysian case'. The Journal of Muamalat and Islamic Finance Research, 1-10. Online Available: http://staf.uum.edu.my/shahrul/kuim %20paper-30-1-04(nha).pdf

[22] Nor Hayati Ahmad and Mohamad Akbar. "The Determinants Efficiency and Profitability of World Islamic Banks". 2010 International Conference on E-business, Management and Economics, IPEDR vol.3, IACSIT Press, Hong Kong, 2011.

[23] Cooper, W.W., Seiford, L.M., & Zhu, J. (2004)."*Handbook on Data Envelopment Analysis*". Springer, Boston, 2004.

[24] Charnes, A., Cooper,W.W., & Rhodes, E." Measuring Efficiency of Decision-making Units". European Journal of Operational Research, *2*, 429-444, 1978.

[25] Farrell, M. J. "The Measurement of Productive Efficiency". Journal of Royal Statistical Society, Series *A, CXX* (3), 253-290, 1957.

[26] Coelli, T. J., Rao, D.S.P., O'Donnell, C.J., & Battese, G.E. "An Introduction to Efficiency and Production Analysis. (2 ed.). Springer Science + Business Media, Inc., New York, 2005.

[27] Berger, A.N., & Humphrey, D.B. "Efficiency of Financial Institutions: International Survey and Directions for Future Research". European Journal of Operational Research, *98*(2), 175-212, 1997.

[28] Cooper, W. W., Seiford, L. M., & Tone, K.. "Data Envelopment Analysis A Comprehensive Text with Models, Applications, References and DEA-Solver Software". Springer, New York, 2007.

[29] Wooldridge, J. M. "Introductory econometrics: a modern approach" South Western Cengage Learning, USA, 2009.

[30] Simar, L. & Wilson, P.W. "Two-stage DEA: caveat emptor". Journal of Productivity Analysis, 36 (2), p. 205-218, 2011.

[31] The World Bank Report (2010). Global Economic Prospects, Crisis, Finance and Growth. The International Bank for Reconstruction and Development / The World Bank http://siteresources.worldbank.org/INTGEP2010/Resources/ GEP2010-Full-Report.pdf

[32] Zeti Akhtar Aziz . (2006). Islamic banking and finance progress and prospects collected speeches:2000 – 2006. Kuala Lumpur: Central Bank of Malaysia, 2006. Online Available: http://www.mifc.com/publication/p.9.5.pdf

[33] PricewaterhouseCoopers (2008). Malaysia, Asia's Islamic Financial Hub, 2008. Online Available:http://www.pwc.com /en_my/my/assets/publications/islamic-finance-hub.pdf

[34] Altunbas, Y., Evans, L. and Molyneux, P. "Bank ownership and efficiency". Journal of Money, Credit and Banking, 33(4), 926-954, 2001

[35] Mohamed Ariff (1998). The Malaysian economic experience and its relevance for the OIC member countries. *Islamic Economic Studies*, 6 (1), 1-41.